Towards a Hierarchical Artistic Self-Concept

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Abstract

Australian students in a teacher education course (N = 284) responded to questions about their perceptions of 21 specific skills in 4 artistic domains which constituted the 4 major areas of an Arts education program. Confirmatory factor analysis found that the skill-specific perceptions formed 4 a priori domain-specific higher order factors corresponding to the 4 major areas: music, drama, dance and visual arts. These 4 domain-specific factors could also form a higher order factor which reflected a global representation of the 4 major artistic domains. The distinctiveness of the skill-specific and domain-specific factors supported the multidimensionality of self-concept. The higher order factor structure supported the hierarchical relationship of a global artistic self-concept with domain-specific and skill-specific self-concepts at subordinate levels of the hierarchy. In a specific domain such as Arts, the structure of self-concept tends to be both multidimensional and hierarchical.

Since Shavelson, Hubner, and Stanton (1976) proposed a multidimensional, hierarchical model of self-concept, researchers have attempted to investigate the multidimensional and hierarchical nature of self-concept. Recent research has supported the multidimensionality of self-concepts in various areas (e.g., Byrne & Gavin, 1996; Marsh, Hey, Johnson, & Perry, 1997; Marsh & Yeung, 1997a, 1998a; Vispoel, 1993, 1995). However the hierarchy of academic self-concept has been found to be weak. Findings have shown that global academic self-concept may not be able to explain the characteristics of the diverse self-concepts in various curriculum areas in the school. Based on these findings, researchers have queried the usefulness of a global self-concept in a range of academic areas (e.g.,
Marsh, 1987; Marsh, Byrne, & Shavelson, 1988). However, Lau, Yeung, Jin, and Low (in press) have demonstrated that self-concepts in a specific subject domain such as English can be both multidimensional and hierarchical. Yeung, Chui, and Lau (in press) have also suggested that self-concepts in a school setting where there is a distinct focus can also be both multidimensional and hierarchical. The present study extends these findings in a tertiary education studies setting where Creative Arts forms a key focus in a teacher education program. For the promotion of teaching effectiveness and teacher commitment in the Creative Arts areas, a thorough understanding of self-concept in Creative Arts is essential.

**Multidimensional Academic Self-Concept**

Self-concept has been recognized as both an important educational outcome and an important factor that contributes to other desired educational outcomes (Marsh, 1993a). Recent research has shown appreciable relations between academic self-concept and academic achievement (e.g., Chapman & Tunmer, 1997; Hay, 1997; Helmke & van Aken, 1995; Marsh & Yeung, 1997a; Muijs, 1997; Yeung & Lee, 1999). Extending studies on expectancy-value models of achievement motivation (e.g., Eccles & Wigfield, 1995; Wigfield & Eccles, 1992), Marsh and Yeung (1997b; also see Yeung, Chui, & Lau, in press) found noteworthy effects of academic self-concept on high school students' coursework selection. More importantly, the relations between academic self-concept and academic behavior have been found to be domain specific (e.g., Marsh & Yeung, 1997a). Thus, for example, students clearly distinguished between self-concepts in math and in English, and these self-concepts influenced academic performance and behavior only in their respective curriculum areas.

Recent findings have shown that even though the correlation between verbal and math achievement scores is typically high, the correlation between students' self-concepts in verbal and math areas is typically near-zero (e.g., Marsh, 1987; Marsh, Byrne, & Shavelson, 1988) or even negative (Yeung & Lee, in press). It is therefore unlikely for a hierarchical representation of verbal and math self-concepts by a global academic self-concept construct (Marsh, 1986; Marsh & Shavelson, 1985; also see Skaalvik & Rankin, 1995). Thus recent research in academic self-concept has emphasized the domain specificity rather than the hierarchical nature of the self-concept structure (e.g., Byrne & Gavin, 1996; Cross & Markus, 1994; Harter, 1996; Hattie, 1992; Marsh, 1993a; Marsh, Byrne, & Shavelson, 1988).

**The Hierarchy of Academic Self-Concept**

Indeed, recent research has generated more queries than evidence for the hierarchy of academic self-concept. For example, Marsh and Yeung (1998b) tested the causal flow between global and domain-specific self-concepts in two longitudinal studies. In both academic and physical areas, they found little support for a top-down or a bottom-up causal flow from either global self-concept to subsequent specific self-concept or from specific to subsequent global self-concept. In the high school, the curriculum areas are so diverse that it may be difficult for a global academic self-concept to capture the characteristics of all the school subjects so as to be representative of the self-concepts in a wide range of subject domains. Likewise, a global physical self-concept may not be able to represent a diverse range of self-concepts in physical performance, skill and fitness.

However, for elite athletes whose success in sports may require a combination of high level physical performance, skill and fitness, a global representation of physical self-concepts may be much more meaningful. Marsh, Hey, Johnson, and Perry (1997) tested elite athletes from a sports high school and from the Australian representative teams. Applying confirmatory factor analysis (CFA), they found that a higher order factor was able to represent six specific physical self-concepts (Skills, Body, Aerobic, Anerobic, Mental, and Performance). Hence
the structure of physical self-concepts can be both hierarchical and multidimensional in elite athletes. Probably, all the six components were salient for the elite athletes in the formation of their physical self-concept.

Also in the areas of sport psychology and physical self-concept, Fox (1990) suggested that self-perceptions can vary from the superordinate (global self-esteem), domain (physical), subdomain (sports competence), facet (soccer ability), subfacet (shooting ability), and state (I can score this penalty). Fox therefore implied a strong hierarchical structure of physical self-concept such that specific self-concepts at lower levels of the hierarchy tend to influence more global perceptions. The proposed hierarchical structure was supported using partial correlation techniques demonstrating, for example, that global self-concept was more strongly related to the global physical scale than to the more specific physical scales. However, Fox's hypothesis was not thoroughly tested at the subdomain and facet levels which are the focus of our present study. In fact, no study has seriously examined the self-concept structure at more than two levels of the potential hierarchy.

Another study that demonstrated a hierarchy within a specific curriculum area is Vispoel's (1995) study on artistic self-concept. Although Vispoel found only partial support for an academic self-concept factor to explain the relations of all the domain-specific self-concepts, his results showed a hierarchical representation within each subject domain. Thus although the self-concept hierarchy may not be as strong near the apex of the Shavelson et al. model, stronger hierarchical relations may be expected at the more domain-specific levels.

In testing the hierarchical relations of self-concepts within a specific subject domain, Lau et al. (in press) tested the ability of a higher order English self-concept to represent self-concepts in listening, speaking, reading and writing English. They found support for the hierarchical relations and also demonstrated the equivalence of the higher order factor to an independently measured global English self-concept factor. Furthermore, instead of examining the self-concept structure of a specific subject domain, Yeung, Chui, and Lau (in press) examined the self-concepts of students in a school of commerce and found that academic self-concepts within a school where there was a strong focus tended to be both hierarchical and multidimensional.

While most researchers are focusing on the multidimensionality of self-concept, the hierarchy of self-concept has almost been neglected. Hattie and Marsh (1996) have commented that the hierarchical aspect of self-concept should be an important direction for further research. Even though the hierarchy of academic self-concept in the high school may be weak, in a specific curriculum domain where the components are focused—such as Creative Arts considered here—we may expect reasonably strong hierarchical and multidimensional relations of self-concepts. The present study examines the hierarchical and multidimensional nature of self-concept in Creative Arts by testing the ability of second order factors (domain-specific level) to represent first-order factors (skill subdomains), and a third order factor (global level) to represent the domain-specific factors.

Method

Participants

Creative Arts is one of the key learning areas in the schools of the state of New South Wales, Australia and comprises a crucial component in the teacher education program. Of 329 university students enrolled in a teacher education program in a university in Sydney, Australia, 284 completed a survey on self-concept in four domains of art education. For the present purpose, after listwise deletion of missing data, the sample size for analysis was
Consent to participate in the study was obtained from the participants before they completed the survey.

Material

The students responded to 42 items about their self-concepts in Arts, each on a 5-point scale (1 = strongly disagree; 5 = strongly agree). The two items strictly parallel for each of 21 skills in four Arts domains (Music, Visual Art, Dance, and Drama) were: "I enjoy the following aspects of music tutorial: (skill)" and "I am confident in teaching activities based on the following (subject) activities: (skill)". For example, the questions about singing in the Music subdomain were: "I enjoy the following aspects of music tutorial: Singing" and "I am confident in teaching activities based on the following music activities: Singing". The 21 skills were: singing, moving, listening to music, playing instruments, and creating musical pieces in Music; drawing, painting, creating collages, creating 3-D artworks, printmaking in Visual Art; folk dancing, modem dancing, teacher-directed dances, improvisé dances, and performing dances in the Dance domain; and improvisation, miming, story telling, readers' theatre, role playing, and masks and puppets in Drama.

Statistical Analyses

The items were coded such that higher scores reflected more favourable self-concept. In preliminary analyses we examined the internal consistency of each skill-specific measure. Applying confirmatory factor analysis (CFA), we first examined the multidimensionality of the self-concept responses that has been widely supported in previous research. Then we tested the possibility of a hierarchical representation of the skill-specific measures. The conduct of CFA has been described elsewhere (e.g., Bollen, 1989; Byrne, 1989, 1998; Joreskog & Sorbom, 1993; Marsh, 1992; Marsh & Hocevar, 1985; Pedhazur & Schmelkin, 1991) and is not further detailed here. All analyses throughout this paper were conducted with the SPSS version of PRELIS and LISREL (Joreskog & Sorbom, 1988) based on a 42 x 42 covariance matrix. The goodness of fit of models is evaluated based on suggestions of Marsh, Balla, and McDonald (1988) and Marsh, Balla, and Hau (1996) with an emphasis on the Tucker-Lewis index (TLI). The chi-square test statistic and the relative noncentrality index (RNI) are also presented. For acceptable model fit (TLI > .9), for parallel items (with similar wording) correlated uniquenesses were included in the models (Marsh, 1993b; Marsh & Hau, 1996).

We hypothesized that the skill-specific self-concepts are multidimensional and that there is a hierarchical relation among the skill-specific self-concepts so that they can be represented by higher order factors. Specifically, we tested the following models:

Model 1. This model posited a unidimensional representation of the 42 items such that all the items can be represented by a single factor. This model was expected to result in a poor fit.

Model 2. This model posited a four-factor structure such that the skill-specific items in each artistic domain formed a domain-specific factor. Hence, for example, the 10 items in music were posited to form a Music factor, the 10 items in dance were posited to form a Dance factor, and so on.

Model 3. This model posited a strong multidimensional, domain-specific structure of artistic self-concept by allowing the items in each skill to load on a skill-specific factor. This model therefore tested whether a structure with 21 skill-specific factors derived from 42 items would fit the data better than Models 1 and 2. Because each skill-specific construct had only two indicators, for model identification, the factor coefficients for the second indicators for each
construct in each of the four a priori subdomains (Music, Visual art, Dance, Drama) were constrained to be equal (Byrne, 1998). The same strategy was used for all models where constructs were inferred from only two indicators.

Model 4. This model provided a test for the possibility of the 21 first-order factors derived from 42 items to be represented by four second order factors each reflecting one of the four a priori artistic domains. A reasonable hierarchical representation requires the higher order factor coefficients (i.e., paths from the higher order factor to the first-order factors) to be substantial and statistically significant.

Model 5. This model extended previous research by including more than two levels of the potential hierarchy in examining the possibility of a hierarchical structure of artistic self-concept. In this model, four second order factors were derived from 21 skill-specific first-order factors each formed from two indicators. The four second order factors were then represented by a single higher order artistic self-concept factor. A reasonable hierarchical representation requires the factor coefficients for the second order and the third order factors to be substantial and statistically significant.

Results

Preliminary Analysis

Reliability estimates were good for the 21 skill-specific self-conceptss: singing, moving, listening to music, playing instruments, and creating musical pieces in Music (a_s = .78, .81, .80, .74, .81); drawing, painting, creating collages, creating 3-D artworks, printmaking in Visual Art (a_s = .77, .72, .73, .77, .72); folk dancing, modern dancing, teacher-directed dances, improvised dances, and performing dances in the Dance domain (a_s = .75, .77, .72, .77, .79); and improvisation, miming, story telling, readers' theatre, role playing, and masks and puppets in Drama (a_s = .81, .82, .76, .78, .82, .76). In the CFA models, because parallel items were used across the four subject areas, the inclusion of correlated uniquenesses for identical items was necessary for model fit (Joreskog, 1979; Marsh, 1993b; Marsh & Hau, 1996). Thus each of the models presented throughout this paper had 90 correlated uniquenesses included. A summary of the goodness of fit of models is presented in Table 1 in which all solutions are proper. Multidimensional Artistic Self-concept

In examining the multidimensional structure of artistic self-concept, we summarize results based on Models 1, 2 and 3. Surprisingly, Model 1 positing a unidimensional structure provided a reasonable fit to the data (TLI = .818) although not up to the typical guideline of TLI > .9. Model 2 positing four artistic domain factors did better than Model 1 (TLI = .856) but not as well as Model 3 positing 21 skill-specific factors (TLI = .955) yielding substantial and statistically significant factor coefficients for all factors. Thus a comparison between Models 1 and 2 indicates that the artistic self-concept structure is multidimensional whereas a comparison between Models 2 and 3 indicates that the structure of artistic self-concept is probably more domain specific than would have been expected on the basis of the existing literature.

A Potential Hierarchy

Model 4 positing a second order factor representing 21 first-order factors derived from 42 items. The model provided a good fit to the data (TLI = .933). The factor coefficients for the first- and second order factors were all statistically significant. Particularly essential for a hierarchical representation of the first-order factors by the second order factors, the factor coefficients for the second order factor were all substantial (b_s > .6). There is therefore a reasonable representation of the hierarchical relations between the first-order and second
order artistic factors. However, a comparison between the \( \chi^2 \) and \( df \) values of Models 3 and 4 also shows that Model 4 did not fit the data as well as Model 3 (a \( \chi^2 \) difference of 486.04 for a \( df \) difference of 183, \( p < .05 \)). Thus, the potential hierarchical relations may not be as strong as the multidimensional relations evidenced in previous research. Model 5 further extended the hierarchical structure to three levels: a third order global Creative Arts factor, four second order domain-specific artistic self-concept factors, and 21 first-order skill-specific factors. The solution for this model is presented in Table 2 (also see Figure 1). The model provided a reasonably good fit to the data (TLI = .931) and the factor coefficients for first-order, second order, and third order factors were all substantial and statistically significant. There is therefore support for a hierarchical representation of a three-level hierarchy of artistic self-concept (Figure 1). However, a comparison between Models 4 and 5 found that Model 5 did not fit as well as Model 4 (a \( \chi^2 \) difference of 17.49 for a \( df \) difference of 2, \( p < .05 \)). Thus some of the relations among the factors could not be explained by the third order Creative Arts factor. Thus although the relations among the skill-specific artistic self-concept factors tended to be multidimensional and hierarchical, the hierarchical relations were not as strong as the domain specificity.

**Discussion**

Consistent with previous research, the present study found support for the multidimensional nature of self-concepts in Creative Arts. Not only were the skill-specific self-concepts in music, visual arts, dance and drama found to be multifaceted in nature, but the domain specificity in various skills tended to be even stronger than expected on the basis of previous research. The students distinguished reasonably well the multiple skills such as singing and playing instruments in music, drawing and painting in visual art, folk dance and modern dance in the dance domain, and improvisation and role play in drama. This distinction of the multifacets was explained better in terms of 21 specific skills than in terms of the four factors at the domain level that has been emphasized in most of the recent self-concept research. This result has provided further support for the domain specificity of self-concept found in other studies.

In testing the hierarchical structure of the creative arts self-concepts, CFA models found that the 42 skill-specific responses formed 21 skill-specific factors represented by four domain-specific factors. Also, the inter-correlations of the four factors at the domain level were strong enough to be accounted for by a single higher order Creative Arts factor. Although the hierarchical representation did not seem to be as strong as the multidimensional representation, the results provided some support for the hypothesis that self-concepts within a specific curriculum focus such as Creative Arts can be both hierarchical and multidimensional.

This finding of a potential hierarchical self-concept structure in the present study are consistent with the Marsh, Hey, Johnson, and Perry (1997) study with elite athletes and the Lau et al. (in press) study investigating self-concepts in four skill areas within the English domain. Like these studies, the present findings suggest that a clear hierarchical nature can be substantiated at the lower levels of the Shavelson et al. (1976) self-concept model. That is, the academic self-concept structure within a specific curriculum area where the factors are less diverse and more domain-relevant tends to be hierarchical in nature. Perhaps the hierarchical relations are more stable at the domain and subdomain levels whereas the hierarchy becomes less stable and less representative as it moves up the hierarchy where a more diverse array of unrelated academic self-concepts are subsumed under a single higher order factor (e.g., global academic self-concept). This interpretation is consistent with the literature showing that the self-perceptions at the higher end of the apex (e.g., general self-concept) tend to be less stable and more susceptible to situational and environmental
changes (e.g., Marsh, 1993a, Marsh & Yeung, 1999; Nurius & Markus, 1990, Shaveslon & Bolus, 1982).

The results also provided some support for Fox's (1990) proposal of relations between domain and subdomain self-concepts. The ability of higher order self-concepts at a domain-specific level (music, visual art, dance and drama) to represent skill-specific self-concepts at a facet level (singing, drawing, folk dance and role play) as well as a third order factor at the global domain level (Creative Arts) to represent the subdomain self-concepts partially supported Fox's suggestion of a hierarchical self-concept structure. However, the support for a hierarchical Creative Arts self-concept does not undermine the importance of the multidimensionality of the Creative Arts self-concept structure. In particular, Model 3 has provided evidence that the domain specificity of self-concept in specific areas may be even more specific than would have been expected.

Although previous research mostly found the hierarchical structure of academic self-concept to be rather weak, for academic self-concept to be really useful, it has to be hierarchical because any reliable measure of self-concept is necessarily derived from measures at a lower level, and is therefore necessarily a global measure of some kind. The fact that a global measure of academic self-concept has been found to be unable to represent verbal and math self-concepts in the high school setting should warrant vigorous investigation. A conclusion refuting the usefulness of a global academic self-concept measure should not be drawn too soon.
References


Table 1. Goodness of Fit Summary for Models

Model
c 2 df RNI TLI
Null model 12497.17 861
1. 42 items to form 1 factor 2517.99 729 .846 .818
2. 42 items to form 4 factors 2131.70 723 .879 .856
3. 42 items to form 21 factors 861.71 536 .972 .955
   4. 21 1st-order & 4 2nd order factors 1374.75 719 .944 .933
5. 21 1st-order, 4 2nd order, 1 3rd order factors 1392.24 721 .942 .931

Note: N = 255 after listwise deletion of missing data. RNI= Relative noncentrality index. TLI=Tucker-Lewis index.

3rd Order

Creative Arts SC
.58* .57* .63* .84*

2nd Order 2nd Order 2nd Order 2nd Order

Music SC Visual Art SC Dance SC Drama SC
.68* .60* .50* .66* .72* .82* .74* .66* .64* .66* .68* .82* .76* .81* .81* .80* .75* .71* .74* .73* .63*

Figure 1. Model 5: A hierarchy of self-concept (SC) in 21 skill-specific areas.

Table 2. CFA Solutions for Model 2b: 21 Subdomain Factors to Form 4 Second Order and 1 Third Order Factors

Variable Factor Coefficients

Item1 .80* .83* .80* .75* .81* .88* .86* .84* .81* .79* .85* .79* .84* .88* .86* .86* .77* .81* .86* .78* -- -- -- -- --
### Uniquenesses

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Note: N = 255. The 4 first-order skill-specific factors were singing, moving, listening to music, playing instruments, and creating musical pieces (sing, move, list, play, crea) which formed a second order Music factor (O2MU); drawing, painting, creating collages, creating 3-D artworks, and printmaking (draw, pain, coll, 3D, prin) which formed a second order Visual Art factor (O2AR); folkdancing, modern dancing, teacher-directed dances, improvised dances, and performing dances (folk, mode, tdir, impr, perf) which formed a second order Dance factor (O2DA); and improvization, miming, story telling, readers' theatre, role playing, and masks and puppets (impd, mime, stor, read, role, pupp) which formed a second order Drama factor (O2DR). The third order Creative Arts factor (O3CA) was formed from the 4 second order factors. Resi = residuals. Parameters estimates are completely standardized.

* p < .05