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Development and Validation of a Music Self-Concept Inventory for College Students

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Abstract

The purpose of this study was to develop a Music Self-Concept Inventory (MSCI) for college students that is easy to administer and reflects the global nature of this construct. Students (N = 237) at a private college in the midwestern United States completed the initial survey, which contained 15 items rated on a 5-point Likert scale. Three subscales determined by previous research included (a) support or recognition from others, (b) personal interest or desire, and (c) self-perception of music ability. A series of exploratory factor analyses supported this model and indicated that deleting two items loading <.40 on their intended subscales improved validity and helped attain simple structure. The final version of the MSCI contains 13 items, explains 63.6% of the variance, and maintains high reliability (total: α = .94; subscales: α = .83–.92). Validity was demonstrated through correlation between the MSCI and another measure of music self-perception (r = .94), MSCI scores and years of participation in music activities (r = .64), and interfactor correlations (r = .71–.75). This instrument will provide a tool for researchers and educators to assess change or development in music self-concept and examine other variables related to this construct.

Keywords

self-concept, inventory, college/adult learners

Self-concept is important to psychological well-being, facilitates the attainment of personal goals, and can potentially explain and predict how a person will act. Therefore, maximizing this construct within an individual can bring about desirable outcomes in

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many diverse educational and noneducational settings (Marsh, Craven, & Mclnerney, 2003). Following a widely accepted model (Shavelson, Hubner, & Stanton, 1976), Marsh, Parker, and Craven (2015) defined self-concept as "an individual's relatively stable and organized perception and evaluation of themselves within socially important domains that are formed through experience with and interpretations of one's environments" (p. 116). According to this model, self-concept is hierarchical in that individuals hold both global self-concepts about the totality of their being and subordinate academic and nonacademic self-concepts related to various aspects of their lives. This hierarchy can progressively narrow to more discreet types of nonacademic (e.g., social, emotional, or physical) and academic (e.g., language arts, history, mathematics) self-concepts and tends to become more defined within individuals as they grow older.

A revision of this model (Marsh & Shavelson, 1985) resulted in dividing academic self-concept into a continuum anchored by two higher-order factors: Math/Academic (e.g., math, physical science) and Verbal/Academic (e.g., English, foreign language, history). Although arts did not appear on the continuum, Vispoel (1995) integrated the Shavelson, Hubner, and Stanton (1976) framework with a model of artistic self-concept (Vispoel, 1993) that includes four hierarchically subordinate components: music, art, dance, and drama. Extensions of this theory have identified lower order aspects of these domains, which in music include singing, instrument playing, music reading, composing, listening, and creating dance movements (Vispoel, 1994). An alternative model (Spychiger, Gruber, & Olbertz, 2009) places global music self-concept at the top and academic and nonacademic musical components below. The academic components address subdomains of musical ability (e.g., singing, rhythmic ability, listening, playing instruments, arranging, and composing), and the nonacademic components relate to emotional, social, physical, cognitive, and spiritual aspects of the musical self.

Variables Related to Music Self-Concept

Students' self-concepts in relation to particular domains and tasks are important for educators to consider and can influence participation, persistence, achievement, and attainment (Marsh et al., 2015; Reynolds, 1993). Schmitt (1979) found a moderate correlation ($r = .60$) between the music self-concept of students in grades five, seven, and nine and the number of music activities in which they participated. Subsequent studies found moderate correlations between music self-concept and the in-school ($r = .43$) and out-of-school ($r = .42$) music involvement of upper elementary students (Austin, 1990) and participation in music groups ($r = .38$) and instrumental study ($r = .55$) among middle school students (Morin, Scalas, Vispoel, Marsh, & Wen, 2015). Vispoel (1993, 1996) identified similar correlations between this construct and interest in performing music among adolescents ($r = .67$) and adults ($r = .82$). Sanders (2000) and Sanders and Browne (1998) found moderate correlations ($r = .40$–$.71$) between college students' music self-concept and enjoyment for making music and years in

choral ensembles, instrumental ensembles, and private lessons. Additional research (Demorest, Kelley, & Pfordresher, 2017) determined that music self-concept was significantly ($p < .001$) higher among sixth graders who enrolled in a music class compared to those who did not and a unique predictor ($p = .016$) of music participation in a logistic regression analysis.

Gender and interest might also relate to music self-concept and affect participation. Morin et al. (2015) found that seventh- and eighth-grade females presented significantly higher levels of self-concept than did males for dancing, instrument playing, reading notation, and singing but not comparable levels for composing and listening. Nevertheless, females held significantly higher levels of global music self-concept compared to their male peers. These results support previous research that elementary (Austin, 1990; Eccles, Wigfield, Harold, & Blumenfeld, 1993), adolescent (Vispoel, 1993), and college (Vispoel & Forte, 2000) females tend to present higher levels of music self-concept than do males. This trend, however, might result from greater interest (Evans, Schweingruber, & Stevenson, 2002) and higher participation (Warnock, 2009) in music by females rather than inherent gender differences. Simpkins, Vest, and Becnel (2010) determined no significant difference in the relationship between music self-concept, interest, and participation among adolescent boys and girls. Others have found that gender had little predictive power on music involvement after controlling for music self-concept (Austin, 1990) and that gender differences in this characteristic might be statistically insignificant among adults with similar levels of interest and participation (Kruse, 2012).

Extant literature supports the assertion that self-concept and academic achievement interact. Previous theories related to the causal ordering of these constructs have stated that either achievement leads to self-concept (skill development model) or self-concept causes achievement (self-enhancement model). Most researchers today, however, accept the reciprocal effects model (Marsh, 1990), which states that achievement and self-concept are causes and effects of each other. As a result, an increase or decrease in one of these constructs will cause a similar change to the other within the same domain (Marsh & Martin, 2011).

Research supporting the relationship between self-concept and achievement in music is limited and inconclusive. Hedden (1982) found that music self-concept combined with academic achievement predicted 34% of the variance in music achievement among fifth and sixth graders ($N = 79$) at one of two research locations. Austin and Vispoel (1998) attained a moderate correlation ($r = .50$) between seventh-grade students' music self-concept and scores on portions of Colwell's Music Achievement Test. A linear regression analysis by Demorest et al. (2017) found that music self-concept was a significant ($p \leq .001$) predictor of singing accuracy and that every standard deviation increase in this variable corresponded to a predicted increase of 16% in echo singing accuracy and 1.05 points in song-singing accuracy. Other authors, however, found nonsignificant interaction (Austin, 1991) and weak to moderately weak correlation ($r = .02–.36$) between music self-concept and the performance achievement of upper elementary (Austin, 1988; Klinedinst, 1991) and secondary (Schmidt, 2005) instrumentalists.

Music Self-Concept Inventories

Several authors have designed instruments to measure various models of music self-concept. The Self-Concept in Music Scale (Svengalis, 1978) contained 36 dichotomous yes/no questions including 16 items related to singing ability, 9 that addressed other musical skills, and 9 that assessed the influence of parents, siblings, peers, and music teachers. The author attained acceptable reliability ($\rho_{KR21} = .84$) and found moderate correlations among the total sample and various subgroups for music self-concept and music attitude ($r = .39–.74$) and music self-concept and music background ($r = .36–.73$).

VanderArk (n.d.) created a measure of music self-concept consisting of eight dichotomous items. Participants responded to statements such as "Music is usually quite easy for me" and "I don't like music" by indicating *like me* or *unlike me*. Although high correlations ($r = .84–.96$) with the Coopersmith Self-Esteem Inventory supported the validity of the instrument, Gumm (1990) attained only moderate internal reliability ($\alpha = .60$) among high school choral singers, which might have been due to the relatively low number of items on the survey (Muijs, 2011).

Vispoel created separate forms of the Arts Self-Perception Inventory (ASPI) to assess self-concept in music, visual arts, dance, and dramatic arts among adolescents (1993) and adults (1996). The music subscale on each of these versions includes 10 to 12 items related to respondents' perceptions of their skill, confidence, inclination to participate, learning facility, and natural ability. Vispoel also constructed the Music Self-Perception Inventory (MUSPI) for adolescents and adults/college students to focus exclusively on general and specific skills in music. Both 84-item forms contain one subscale similar to the ASPI music scale that assesses perceptions of general music ability and six additional subscales that measure perceptions of skill in each subdomain. High subscale reliabilities ($\alpha = .91–.96$), high factor loadings, and low interfactor correlations on the ASPI and MUSPI provide strong evidence that each artistic domain represents a distinct dimension of self-concept (Vispoel, 1994). Further research has validated a 28-item form among seventh- and eighth-grade adolescents (Morin et al., 2015) and two 48-item forms (A and B) with students 11 to 16 years of age (Morin, Scalas, & Vispoel, 2016).

Schmitt (1979) developed the Self-Esteem of Musical Ability (SEMA) scale for children between 10 and 15 years old. This instrument consisted of 43 four-point Likert scale statements such as "I can read music well," "I enjoy playing music for others," and "I have such a rough time in music class that I often feel worthless" (p. 73). Test–retest analysis among fifth-, seventh-, and ninth-grade students ($N = 173$) yielded a reliability of $r = .91$. Factor analysis identified three aspects of music self-esteem that Schmitt interpreted as (a) self-confidence coupled with a strong interest in music, (b) skills and abilities in music, and (c) students' feelings of acceptance and reinforcement by parents, teachers, and friends.

A subsequent study by Austin (1990) involving fifth and sixth graders ($N = 252$) confirmed the reliability ($\alpha = .94$) and three-factor structure of the SEMA, which the author labeled as (a) Self-Perception of Music Ability, (b) Personal Interest or Desire,

and (c) Support or Recognition From Others. A 15-item short form generated from this analysis consisted of the five highest loading items within each subscale and demonstrated high reliability ($\alpha = .92$) and correlation with the original measure ($r = .95$) among seventh-grade participants (Austin & Vispoel, 1998). Although Schmitt (1979) used the term *self-esteem* rather than *self-concept*, contemporary authors have acknowledged that these labels describe constructs that are similar, dependent, overlapping, difficult to separate, and often used interchangeably (Kruse, 2012; Marsh & Martin, 2011; Pajares & Schunk, 2005).

Purpose

Researchers continue to use the SEMA (Schmitt, 1979) to measure music self-concept among high school (Randles, 2010), college (Draves, 2008), and adult (Kruse, 2012) populations. However, this instrument was designed specifically for adolescents, requires reverse scoring, and might contain more questions than necessary to measure this construct. Therefore, the purpose of this study was to develop a brief inventory of global music self-concept for college students that is easy to administer, fits the three-factor model defined by Austin (1990), and demonstrates acceptable internal reliability of $\alpha \geq .80$ (e.g., Carmines & Zeller, 1979; Krippendorff, 2004).

Many experts believe that "maximizing self-concept is . . . a critical goal in itself and a means to facilitate desirable outcomes in a diversity of settings" (Marsh et al., 2003, p. 3). Therefore, the construct of music self-concept is important for educators to understand because it can influence one's decisions to participate and persist in music activities and affect accomplishment and enjoyment in this domain. By measuring music self-concept, researchers can identify instructional strategies that prove effective for increasing this characteristic (e.g., Randles, 2010; Sanders, 2000) or populations who might benefit from curricular revision (Gumm, 1990) or various forms of intervention (e.g., Austin & Vispoel, 1998; Sichivitsa, 2004).

Method

Instrument Design

The initial draft of the Music Self-Concept Inventory (MSCI) consisted of 15 statements divided into three equal subscales related to (a) Support or Recognition From Others, (b) Personal Interest or Desire, and (c) Perception of Music Ability (Austin, 1990). Development of the inventory began by identifying items from the SEMA that addressed music self-concept as a global construct such as "I am glad when asked to play or sing for others" (Schmitt, 1979, p. 130) and "At least one member of my family says I am really good in music" (Schmitt, 1979, p. 132). I avoided indicators that might have addressed subordinate levels of music self-concept (Vispoel, 1994) or the more task-oriented construct of self-efficacy (e.g., "I could write music if I got a little help"; Schmitt, 1979, p. 130), which Bandura (1997) defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given

attainments" (p. 3). I then used the selected items as a guide to create new statements appropriate for adult learners and matched them to the appropriate subscales. Although this process resulted in similarities between items on the MSCI, the SEMA, and other measures (e.g., Svengalis, 1978), readers should consider the MSCI as an original instrument.

Each statement on the MSCI was rated on a 5-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *somewhat disagree/agree*, 4 = *agree*, 5 = *strongly agree*), which resulted in a total score of 15 to 75 and individual subscales scores of 5 to 25. All items were stated positively to facilitate administration. Although experts often have recommend including both positively and negatively worded items on attitudinal surveys to control for acquiescent and extreme response biases (Furr & Bacharach, 2014; Sauro & Lewis, 2011), this format might result in lower internal reliability, a distorted factor structure (Barnette, 2000; Roszkowski & Soven, 2010), and misinterpretation with cross-cultural use (Supple, Su, Plunkett, Peterson, & Bush, 2013). Questionnaires containing only positive items, however, can help prevent respondent mistakes and misinterpretation (Colosi, 2005; Gendall & Hoek, 1990; Schriesheim & Hill, 1981) as well as miscoding due to the need for reverse scoring (Finstad, 2006; Lewis & Sauro, 2009).

Three music education faculty reviewed the first draft of the MSCI and affirmed the validity of the 15 statements. However, they recommended changes to items related to demographic information, which I incorporated in a subsequent revision. A pilot test ($N = 20$) indicated that the total inventory ($\alpha = .93$) and two of the subscales ($\alpha \geq .85$) attained acceptable reliability but that the Perception of Music Ability subscale did not ($\alpha = .60$). Revisions to items in this subscale as well as others helped improve clarity and ensure focus on global music self-concept (Vispoel, 1994). Some statements broadened as a result. For example, "I am good at creating original songs" became "I can be creative with music." A subsequent pilot ($N = 19$) involving a revised draft resulted in acceptable reliability for the total scale ($\alpha = .96$) and all subscales ($\alpha = .89$–$.91$). I therefore created two randomized (Random.org, 1998–2016) forms to control for ordering effect (Groves et al., 2009) and administered the initial draft to participants in the main study.

Data Analysis

Data were analyzed using Predictive Analytics SoftWare (PASW) 18. Cronbach's alpha provided a measure of internal reliability of the total scale and subscales of the MSCI. Missing data for single items ($n = 3$) were replaced with the individual respondent's mean rounded to a whole number. A series of exploratory factor analyses tested the efficacy of the three subscales and provided a measure of construct validity. This process involved principal axis factoring using Kaiser normalization and promax rotation with kappa set at the default value of 4. I compared various solutions derived from an eigenvalue of one criteria with those constrained to three factors. The goal was to determine the best model fit using criteria for *simple structure*, which includes the following:

1. Each variable produces at least one zero loading (–.10 to +.10) on some factor.
2. Each factor has at least as many zero loadings as there are factors.
3. Each pair of factors contains variables with significant loadings (≥.30) on one and zero loadings on the other.
4. Each pair of factors contains only a few complex variables (loading ≥.30 on more than one factor).

In addition to their contribution to simple structure, I also considered the effectiveness of individual items based on the extent to which they achieved a high loading (≥.40) (Matsunaga, 2010) on their intended factor. According to Holt, van Duijn, and Boomsma (2010),

> researchers could take far better advantage of their theoretical knowledge and/or expectations by incorporating their a priori knowledge of the items and scales in the analyses. This should be reflected . . . by adding interpretability of factors and content of items to the criteria used for model evaluation. (p. 288)

Although the pattern matrix (unique contribution of each factor to a variable's variance) served as the primary determinant used to identify which items clustered into factors, the structure matrix (correlation of each variable and factor) and communalities (proportion of each variable's total variance accounted for by all factors) also contributed to the interpretation. Bartlett's test of sphericity indicated if there were adequate correlations for data reduction, and the Kaiser–Meyer–Olkin (KMO) measure determined sampling adequacy (Asmus, 1989; J. D. Brown, 2009).

As a measure of construct validity, a subset of respondents ($n = 55$) also completed a modified version of the SEMA (Schmitt, 1979) to determine the correlation between total and subscale scores on this instrument and the MSCI. Revisions to the SEMA included only minimal changes to make the language appropriate for college students. For example, "I expect to play or sing in performing groups in high school" became "I expect to play or sing in performing groups after college." "Music teachers often embarrass me . . . " became "Music teachers often embarrass*ed* me . . . ." Negatively phrased items were reverse scored, and the sum of all items provided a total scale score. Subscale scores for the SEMA consisted of item totals on the five statements determined by previous research (Austin, 1990) to have the highest loadings within each factor. Only about half of these items were similar to those on the MSCI.

Establishing criterion validity involved comparing MSCI scores with two theoretically relevant external variables. The first analysis determined the correlation between the MSCI and the number of years that respondents took part in elective music activities in school, outside of school, and combined from Grades K through 16 (e.g., Austin, 1990; Sanders, 2000; Vispoel, 1993, 1996). In-school participation involved performance ensembles, musicals, courses, and any other nonrequired activities. Outside-of-school participation included applied lessons, church music, or other pursuits not connected with school such as community programs or ensembles. The

second analysis compared average MSCI factor and combined scores to determine if differences existed by gender, as determined by previous studies (e.g., Morin et al., 2015; Vispoel & Forte, 2000).

Administration and Participants

Testing of the MSCI occurred during the 2014–2015 academic year at a private college in the midwestern United States. The sample included 237 students enrolled in various courses for the general population who did not take part in either of the pilots. Prior to completing the inventory, respondents listened to a scripted set of instructions and supplied demographic information related to gender, age, college grade level, and years of music participation. In addition, the researcher and course instructor classified participants as White or non-White based on color photographs and knowledge of individuals. Race was not included among the demographic questions to ensure that individual responses from non-White participants remained untraceable in classes of mostly White students.

Participants who took both the MSCI and the SEMA completed the MSCI first. Administration procedures took approximately 5 to 10 minutes and received approval from the institutional review board of the college.

Respondents (male = 97, 40.9%; female = 137, 57.8%; unspecified = 3, 1.3%) ranged from 18 to 48 years of age (M = 19.87, SD = 2.77); represented the freshman (n = 63, 26.6%), sophomore (n = 70, 29.5%), junior (n = 59, 24.9%), and senior (n = 46, 19.4%) classes; and included White (n = 174, 73.4%) and non-White (n = 63, 26.6%) students. Involvement in music activities ranged from 0 to 15 years (M = 5.86, SD = 3.82) for in-school participation, 0 to 17 years (M = 6.10, SD = 4.66) for out-of-school participation, and 0 to 30 years (M = 12.06, SD = 7.24) for combined in-school and out-of-school participation.

Results

Initial Draft

The initial draft of the MSCI yielded an internal reliability of $\alpha = .95$ with no significant increase by any item deletion. An exploratory factor analysis using an eigenvalue of one criteria accounted for 59.5% of the variance and required three iterations to converge. Bartlett's test ($\chi^2 = 2{,}552.22$, $p < .001$) determined that there were correlations in the data appropriate for factor analysis, and the KMO measure (.94) indicated adequate sample size. Subject-to-variable ratio equaled 15.8:1.

This analysis somewhat supported the a priori model but generated only two factors, which I interpreted as (a) perception of ability with influence from others and (b) personal interest or desire. All items in the subscales related to ability and support/recognition from others loaded together onto a single factor, and the five items intended to measure interest/desire remained intact. A two-factor model did not meet the criteria for simple structure because only 3 of 15 items achieved 0 loadings on any factor and just one factor contained as many 0 loadings as factors.

A subsequent analysis constrained to three factors measured the extent to which the data fit the a priori model. This process explained 63.1% of the variance, aligned with the predetermined subscales, and yielded eigenvalues of 8.57 (Factor 1: others), 1.18 (Factor 2: interest), and 0.84 (Factor 3: ability). The factor related to support/recognition of others (54.9%) accounted for the majority of the variance, followed by interest (5.0%) and ability (3.3%). A three-factor model met all of the criteria for simple structure except that two items, "I am a capable singer or instrumentalist" and "I can be creative with music," did not achieve a 0 loading on any factor. In addition, both items failed to attain high loadings (≥.40) on their intended subscales. "I can be creative with music" loaded onto Factor 2 (interest) at .31 and Factor 1 (others) at .29 but only at .14 on its targeted factor (Factor 3: ability). "I am a capable singer or instrumentalist" loaded onto Factor 1 (others) at a higher level (.49) than it loaded onto its intended factor (Factor 3: ability) (.29). Although this indicator achieved a high loading on one of the factors (Factor 1: others), its content was incongruent with the construct represented by this subscale. Therefore, both items were deleted from the final version of the inventory to meet the criteria for simple structure (e.g., J. D. Brown, 2009) and improve validity of the ability (Factor 3) subscale (e.g., Holt et al., 2010). Regardless, Factor 3 retained the minimum number of indicators generally considered necessary to define a latent variable (T. A. Brown, 2015).

Final Version

The final version of the MSCI (see the Appendix in the online version of the article) contains 13 items with a possible total score of 13 to 65. Subscale scores range from 5 to 25 on Factors 1 (others) and 2 (interest) and 3 to 15 on Factor 3 (ability). The inventory maintained high reliability on both the total scale ($\alpha = .94$) and subscales (others: $\alpha = .92$, interest: $\alpha = .84$, ability: $\alpha = .83$) with no significant increase by any item deletion. Reliability for the total scale remained stable ($\alpha \geq .93$) regardless of gender or presentation order.

Exploratory factor analysis using an eigenvalue of one criterion yielded the same two-factor structure obtained with the 15-item inventory, explained 59.4% of the variance, and required three iterations to converge. Bartlett's test ($\chi^2 = 2{,}077.78$, $p < .001$) and the KMO measure (.94) remained adequate, and the subject-to-variable ratio equaled 18.2:1. However, this model also failed to attain simple structure due to a lack of indicators producing 0 loadings between and within factors.

A subsequent analysis constrained to three factors explained 63.6% of the variance (Factor 1: support/recognition of others, 54.1%; Factor 2: interest, 5.7%; Factor 3: ability, 3.7%). Initial eigenvalues equaled 7.37, 1.17, and 0.84, respectively, and the rotation converged in six iterations. All but one of the rotated factor loadings exceeded .50, and only three items cross-loaded above .30 (see Table 1). With one exception, all communalities (.38–.80) were ≥.50 ($M = .64$, $SD = .12$) and all criteria for simple structure were met.

Correlations ($N = 55$) between total and subscale scores on the final version of the MSCI and the SEMA (total: $r = .94$; others: $r = .85$; interest: $r = .80$; ability: $r = .81$)

Table 1. Pattern Matrix for Principal Factor Analysis With Promax Rotation of the Music Self-Concept Inventory (MSCI; Final Version).

	Factors		
Item	1: Others	2: Interest	3: Abilities
My family encouraged me to participate in music.	**.95**		
I have received praise or recognition for my musical abilities.	**.92**		
Teachers have told me I have musical potential.	**.85**		
My friends think I have musical talent.	**.60**	.32	
Other people like to make music with me.	**.52**	.39	
I like to sing or play music for my own enjoyment.		**.85**	
Music is an important part of my life.		**.74**	
I want to improve my musical skills.		**.71**	
I enjoy singing or playing music in a group.		**.62**	
I like to sing or play music for other people.		**.56**	
I can hear subtle differences or changes in musical sounds.			**.84**
I have a good sense of rhythm.			**.76**
Learning new musical skills would be easy for me.	.39		**.45**

Note: Factor loadings <.30 were suppressed. Boldface indicates loadings for items representing each factor. Factor 1 = Support or Recognition From Others, Factor 2 = Personal Interest or Desire, and Factor 3 = Perception of Music Ability.

indicated a high level of construct validity. Correlation between total MSCI scores and in-school ($r = .51$), out-of-school ($r = .58$), and combined ($r = .64$) years of music participation were similar to those obtained in previous studies (Austin, 1990; Sanders, 2000; Sanders & Browne, 1998) and supported the criterion validity of the instrument. However, a series of one-way analysis of variance (ANOVA) found no significant differences ($p > .05$) in factor or combined MSCI scores between males and females as reported in the extant literature (e.g., Vispoel & Forte, 2000), even though females had significantly more combined music experience than males, $F(1, 232) = 20.77$, $p < .001$.

A multiple linear regression analysis examined the extent to which gender, music experience, and their interaction predicted music self-concept. Data indicated that the combination of these variables explained 44.0% of the variance in MSCI scores, $F(3, 230) = 60.25$, $p < .001$. Significant effects for gender ($t = 2.68$, $p = .008$) and music experience ($t = 9.74$, $p < .001$) predicted that males would outscore females by 3.20 points after controlling for experience and that each additional year of experience would result in a 0.95 increase in music self-concept regardless of gender. Furthermore, a significant interaction effect ($t = 2.10$, $p = .037$) predicted that males would attain a 0.34 increase in music self-concept over females for each year of music experience.

Subscale scores on the MSCI were moderately correlated with each other ($r = .65$–$.72$) and highly correlated to the total scale ($r = .84$–$.94$). Nonetheless, interfactor

correlations (r = .71–.75) met the ≤.85 cutoff that generally serves as the criterion for discriminant validity in applied research (Brown, 2015).

Discussion

The purpose of this study was to develop a brief, valid, and reliable measure of music self-concept for use by educators and researchers. Results indicated that the MSCI is an effective measure of this construct as described by (a) Support or Recognition From Others, (b) Personal Interest or Desire, and (c) Perception of Music Ability. However, readers should interpret results with caution until further studies verify the reliability and efficacy of the instrument among students from a wider variety of cultures and ethnicities at public and private institutions of various sizes.

Although other instruments for examining music self-concept exist (e.g., Morin et al., 2015; Schmitt, 1979; Vispoel, 1993, 1996), Vispoel (1994) acknowledged the possibility that alternative frameworks (e.g., Spychiger et al., 2009) might represent this construct as well or better than previous models. The MSCI will provide another tool for researchers who wish to (a) assess change or development in music self-concept (e.g., Austin, 1988), (b) compare music self-concept among different populations (Gumm, 1990), or (c) examine relationships between music self-concept and other variables (e.g., Austin, 1990). Authors might also use this instrument to (d) identify differences in various aspects of music self-concept (e.g., Randles, 2010). However, they should do so with caution due to the limited number of indicators in the ability subscale and the small percentage of variance explained by Factors 2 (interest) and 3 (ability).

Instructors of musicianship courses for elementary classroom teachers or the general college population could use the MSCI to identify students who might require extra support or serve as leaders in the class. A pre- and posttest administration of this instrument also could serve as one indicator of effectiveness in these types of courses intended to increase musical competence and encourage future activity since self-concept will likely influence these outcomes (Marsh et al., 2015; Marsh & Martin, 2011).

The MSCI also might be useful for students below the college level. Although previous research has shown some age- and grade-related differences (e.g., Eccles et al., 1993), Vispoel (2003) determined that the structure of music self-concept as measured by the MSPI does not change between junior high school and college. The same might also be true of the model measured by the MSCI. Readability statistics for the MSCI yielded a Flesch-Kincaid Reading Ease score of 67.3 and an average grade-level score of 7.0 (Readability-Score.com, 2011–2016), thus indicating the possibility of administering the survey to students as young as middle school (Mesmer, 2008).

Based on the theory that music self-concept and music achievement potentially have a reciprocal and mutually reinforcing effect (e.g., Marsh & Martin, 2011), music educators should work to improve both simultaneously and consider measures of each when making decisions related to curriculum and instruction. Secondary music educators could use the MSCI to monitor music self-concept over time, provided additional research supports the reliability and validity of the instrument among these populations.

Diverse interpretations of "I can be creative with music" and "I am a capable singer or instrumentalist" might explain why these items did not load onto their targeted factors. Some participants, for example, could have thought that "creative with music" referred to composing, improvising, or arranging, while others associated this item with ways they utilize music alone or within social contexts. Likewise, students might have associated "I am a capable singer or instrumentalist" with their experiences in ensembles rather than their individual ability. Many participants who learned to sing or play an instrument probably did so within school or community ensembles and developed perceptions of their ability based on feedback from teachers, parents, peers, and others.

Perhaps music self-concept as a global construct extends beyond one's ability to sing or play an instrument. Some respondents might have considered themselves musical in spite of having what they considered weak performance skills. Others might have believed they were capable performers but lacked the broader skills stated in Factor 3 (e.g., "I can hear subtle differences or changes in musical sounds"). It is also possible that this indicator was less effective because it relates to music self-concept at subdomains below the global level (Vispoel, 1994) measured by the MSCI. Regardless, communalities (". . . creative with music," .46; ". . . capable singer or instrumentalist," .75) and correlations of these statements to the three factors in this study (". . . creative with music," $r = .58–.63$; ". . . capable singer or instrumentalist," $r = .75–.83$) suggest that they are connected with music self-concept in some way. Perhaps revised wording of these items would improve their effectiveness on the ability subscale (Factor 3).

It is unclear how the interaction of music experience and gender affects music self-concept. Although previous studies have noted higher levels of music self-concept among females (e.g., Vispoel, 1993), gender—at least as a binary construct—appears not to affect this characteristic in analyses that control for other variables (Austin, 1990; Simpkins et al., 2010). Higher levels of music self-concept among males in this study after controlling for music experience might be due to unique characteristics of the sample rather than actual differences within the population. Further research is needed to examine how the interaction of gender, music experience, and other variables affects music self-concept.

The MSCI has the potential to contribute to the field by providing researchers and educators with a practical instrument for measuring music self-concept. Replications and extensions of this study should seek to confirm the factor structure of the inventory and test additional indicators targeted to the ability subscale. Future studies also should test this instrument among people of varying ages and backgrounds and examine additional factors, models, and theories that might explain this construct (e.g., Schnare, MacIntyre, & Doucette, 2012; Spychiger et al., 2009). This line of research will continue to develop our understanding of music self-concept and its effect on music teaching and learning.

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Supplemental Material

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