Texas Music Education Research

Reports of Research in Music Education
Presented at the Annual Meeting of the Texas Music Educators Association
February 2019

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Published by the Texas Music Educators Association, Austin, Texas
https://www.tmea.org/resources/teaching-resources/research

ISSN 2379-9021 (Online); ISSN 2379-9005 (Print)

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The Perceived Effects of Specified Singer Gestures on Singers' Vowel Production

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Abstract

The purpose of this study is to examine selected perceptual measurements of the effects of four specified singer gestures on male collegiate singers' (N = 27) performance on the [u] vowel. Two of these singer gestures involved inactive stationary gestures and two other gestures involved active gestures. In addition to inactive and active gestures, using both hands and only one hand was imbedded in the four gestures. Finally, singers were audio recorded using their most preferred gesture. After collectively singing the [u] vowel with each gesture, each male singer individually rated each gesture on a 1-10 Likert scale according to quality of resonance. The choir was audio recorded during each motion, and expert listeners (N = 12) rated the randomized audio files on quality of resonance. The results indicated that singers and expert listeners both rated the active two-handed gesture as eliciting the most resonant sound and the stationary one-handed gesture as eliciting the least resonant sound. Expert listeners rated the recording as most resonant when singers chose individually preferred gestures.

Keywords

singer gestures, resonance, male collegiate singers, choir rehearsal techniques

The Perceived Effects of Specified Singer Gestures on Singers' Vowel Production

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Background

Kinesthetic movements are a recommended pedagogical device in choral rehearsal (Apfelstadt, 1985; Benson, 2011; Briggs, 2011; Dickson, 1992; Jordan, 2008; Peterson, 2000; Wis, 1999). Wis (1999) illustrated that "Choral directors teach not only in an abstract medium (music), but also work with an abstract instrument (voice). Therefore, expanding rehearsal techniques with the physical domain along with verbal domain is beneficial" (Wis, 1999, p. 2). Numerous choral music pedagogues have recommended the use of kinesthetic movements for teaching musical elements in a choral rehearsal setting: internalizing rhythm (Dickson, 1992; Peterson, 2000), keeping steady pulse (Apfelstadt, 1985), shaping various musical phrases (Apfelstadt, 1985; Manganello, 2011; Peterson 2000), dynamic contrast (Manganello, 2011; Peterson, 2000) and intonation (Apfelstadt, 1985; Briggs, 2011).

In addition to the musical elements, pedagogues have also illustrated the effects of kinesthetic engagement in teaching vocal techniques: vowel formations (Benson, 2011; Briggs, 2011), blending choral sound (Peterson, 2000), breathing mechanism (Apfelstadt, 1985; Manganello, 2011; Peterson, 2000), resonance (Skoog, 2004), posture (Benson, 2011; Jordan, 2008), and achieving various tone qualities (Benson, 2011; Jordan, 2008). Apfelstadt (1985), Briggs (2011), Jordan (2008), and Hylton (1987) especially emphasized the benefits of regular use of kinesthetic gestures in warm-ups: relaxing physical tension, creating group sound, and preparing singers mentally and physically to sing. Silvey (2014) also examined that kinesthetic gestures that emphasize vowel formations and intonation allow students to be musically sensitive and detail oriented.

When the rehearsal is effective and efficient, the use of kinesthetic gestures also enables singers to engage in the choral rehearsal (Briggs, 2011; Manganello, 2011; Peterson, 2000). This active engagement enables singers to take ownership of their growth (Peterson, 2000) and have positive

attitudes (Briggs, 2011; Dickson, 1992; Manganello, 2011). As a result, gestures help create a positive rehearsal atmosphere (Peterson, 2000). Many practitioners have recommended the use of kinesthetic gesture in the choral rehearsal as an instructional device for teaching musical elements and vocal techniques. It is also likely that gestures engage singers in the rehearsal process and convey to singers that singing results from the coordination of the whole-body, not only the voice.

While there is much anecdotal evidence supporting the use of singer gesture, especially during the choral warm-up, relatively few research studies have provided empirical data regarding perceptual measures from both choir members and expert listeners of choral sound. Cook-Cunningham and Grady (2017a, 2017b) conducted a series of research studies examining the effects of singer gestures during warm-up on acoustic and perceptual measures of choir sound. The first study (Cook-Cunningham & Grady, 2017a) was conducted with collegiate choirs (N = 3) participating in three warm-up procedures—vocal only, physical only, and vocal and physical combination. The acoustical results demonstrated that the majority of the choirs sang with more resonance and closer to the targeted pitch after completing the vocal and physical combination warm-up session. Singers also expressed their preferences for the warm-up that combined vocal and physical procedures. The researchers (Cook-Cunningham & Grady, 2017b) replicated the previous study with two children's choirs and one high school choir, indicating similar results to the first investigation. In the third study, Grady and Cook-Cunningham (2018) investigated the effects of choral warm-ups, especially under two conditions, vocal only and vocal plus physical combination, on acoustic and perceptual measures of four collegiate choirs. Similar to their first two studies, the results demonstrated the majority of the singers performed with more resonance and preferred the warm-up with singer gesture.

Even though Cook-Cunningham and Grady's series of research studies revealed positive correlations when using singer gesture during the choral warm-up sessions, the specific types of gestures employed were not detailed in the studies. Brunkan (2012) investigated the effects of three singer gestures on acoustic and perceptual measures of singing in solo and choral contexts.

The author conducted two separate experiments for choral singing and solo singing. The choral singing participants (N = 31), consisting of both collegiate males (n = 15) and females (n = 16), sang three songs with three different gestures with the [i] vowel. "Over the Rainbow" was sung with a low, circular gesture, "Singing in the Rain" was sung with an upward pointing gesture, and "Hawaiian Rainbows" was sung with an arched hand gesture. The results indicated that the low, circular gesture and the upward pointing gesture displayed significant acoustic changes in amplitude within both choral and solo singing. The singers from both choral and solo singing experiments agreed that there were positive effects when using gestures in singing activity. In her later study, Brunkan (2016) examined the effects of a specific gesture, low circular arm gesture, on choral sound and singers' physical movements using motion capture devices. Participants sang the same excerpt under two conditions: no motion, then a low, circular arm gesture. The results were similar to her previous study; most singers (N = 33, 67.37%) sang more in-tune when adding the movement to their singing. Thus, Brunkan concluded that singing with this specific gesture could affect choral sound (intonation and tone quality). Brunkan (2016) encouraged future researchers to explore singers' individually preferred gesture instead of designated gestures.

Although a few research studies provide empirical data regarding the effects of singer gestures in choral singing (Brunkan, 2012, 2016; Cook-Cunningham & Grady, 2017a, 2017b; Grady & Cook-Cunningham, 2018), there are limited empirical resources available concerning: specific singer gestures designed to improve choral tone (resonance), the effects of each specified singer gesture on perceptional measurements, the comparison of given gestures with singers' individually preferred gestures, or a comparison between tenors and basses and between music majors and non-music majors. The purpose of the current study was to examine the effects of four specified singer gestures (active vs. stationary and one hand vs. both hands) on selected perceptual measures (two sets of ratings from collegiate male singers and expert listeners) of choral resonance with the [u] vowel sound and to compare singers' individually preferred gestures with expert listeners' ratings of choral resonance. Additionally, the researcher analyzed potential differences between tenors and basses, and between music major and non-music major singers.

Thus, the researcher compared the singers' individually preferred gestures with expert listeners' ratings of choral resonance.

The following research questions guided this investigation. The researcher considered two perceptual measures of choral resonance from choir members and expert listeners with the following questions:

1. Are there any differences in resonance among the four specified singer gestures (active vs. stationary movements and one hand vs. both hands)?
2. Are there any perceptual differences in resonance between tenor and bass, and between non-music majors and music majors?
3. Are there any differences among the four specified singer gestures and the singers' individually preferred singer gesture based on expert listeners' perceptual measure of choral resonance?
4. Are there any perceptual differences in resonance between choral singers and expert listeners?

Method

Participants (N = 27) were male singers at a large southwestern university. Because pilot study (Redacted) revealed that male and female singers responded differently to singer gestures, this study was limited to male university choral singers. The choir members reported an average of eight years (M = 8.30, SD = 3.84) of choral experience prior to the study. All choir members demonstrated their sight singing ability and their vocal technique when they auditioned for choir membership at the beginning of the semester. They were placed in voice sections based on their audition (tenor = 11, bass = 16). Expert listeners (N = 12) consisted of experienced choral educators with an average of 14 years of teaching experience (SD = 3.18).

As a choir, the men sang the [u] vowel on F# below middle C under five gestural conditions. The [u] vowel is a closed and back vowel and it has the lowest first and second formant frequencies of all vowels. As a result, choral pedagogues have found that it is challenging to create resonance

on the [u] vowel (Davids & LaTour, 2012). Because of this natural closeness and backness of the [u] vowel, it might more readily be affected by gestural changes in resonance than a more forward vowel. Therefore, the singers sang the [u] vowel with five singer gesture conditions to examine any differences on choral resonance.

The five singer gesture conditions (see Figure 1) included the four specified singer gestures (A-D) and a gesture chosen by individual singers. Two singer gestures (A, C) involved active gestures. In the first active gesture (A), each singer pinched his right-hand index finger and thumb together and placed these fingers in the middle of the forehead and pulled these two fingers away from the forehead (active gesture). In the third gesture (C), the men placed the left thumb on the left temple and the right thumb on the right temple with fingers extending upward and palms facing each other. Singers then moved their hands away from their faces (active gesture). Two other singer gestures (B, D) involved inactive stationary gestures. In the second gesture (B), singers curved fingers on both hands to make a letter "C" and placed the back of the palms on each cheek. In the fourth gesture (D), each singer placed his right hand horizontally below the nose with his elbow out. In addition to active (A, C) and inactive (B, D) gestures, using both hands (B, C) and only one hand (A, D) was embedded in the four singer gestures.

A
Active one-handed

B
Stationary two-handed

C
Active two-handed

D
Stationary one-handed

Figure 1. The four specified singer gestures.

This protocol was conducted during the choir's regular rehearsal and administered by one of the choir directors. All data collection was IRB approved by the researcher's university. The choir director modeled the four singer gestures on the [u] vowel on F sharp below middle C, and then

the choir members (N = 23) sang the [u] vowel once for each kinesthetic movement with the director. After singing the [u] vowel with each movement, each male singer rated each movement on a 1-10 Likert scale by amount of resonance, and then sang the [u] vowel again as a choir with each individual using the singer gesture he considered most resonant.

While the experiment was conducted, the researcher recorded the entire experiment with a canon HP 700 camcorder with a microphone to verify procedures and to allow subsequent randomization of sound files. The choir was video recorded throughout the experiment and the resulting recordings were edited into five audio files, which the twelve judges listened to individually. Each panel member listened to the audio files using headphones to isolate the sound on the recordings and to avoid distracting sounds. The randomized audio files included the vowel sung using the four singer gestures and singers' individually chosen gesture. Each judge individually listened to ten recordings (five audio files in random order, then played again in reverse order), and then rated each recording on a 10-point Likert-type scale anchored by no resonance (1) and the most resonance (10).

Results

Singer Gestures

I used a two-way between-subjects ANOVA to compare the two perceptual measures of choral resonance from choir members and expert listeners on the four specified singer gestures. Results indicated that there was a significant difference among the four specified singer gestures on choral resonance (F [3, 35] = 3.44, p = 0.02). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the one-handed stationary gesture (D) (M = 4.91, SD = 2.09) was perceived as significantly less resonant than both of the active two-handed gesture (C) (M = 6.75, SD = 1.98), and the stationary two-handed gesture (B) (M = 6.25, SD = 1.95). However, the active one-handed gesture (A) (M = 6.01, SD = 2.01) did not significantly differ from the other three gestures. The two gestures judged most resonant were those using both hands, whether active or stationary. In terms of the two gestures using only one hand (A, D), the active gesture (A) was rated as significantly more

resonant than the stationary one (D). However, a comparison of the ratings from choir members and expert listeners revealed no significant differences (F [3, 35] = 1.86, p = 0.15).

Expert Listeners

I conducted a one-way ANOVA to analyze expert listeners' ratings of the five recordings resulting from the four specified singer gestures and the singers' individually preferred singer gesture. Results indicated that there was no significant difference among the five gestural conditions (F [4, 55] = 1.96, p = 0.11). The highest rating from expert listeners was the singer' individually preferred gesture (M = 6.66, SD = 1.09), and the lowest rating was the stationary one-handed gesture which was the same as the results from the choral members (D) (M = 5.54, SD = 1.40). When singers picked their individually preferred gesture, 14 singers out of 27 (51.9%) chose the active two-handed gesture (C), 7/27 (26%) chose the stationary two-handed gesture (B), 5/27 (18.5%) chose the active one-handed gesture (A) and 1/27 (3.7%) chose the stationary one-handed gesture (D) (see Table 1).

To analyze the third set of data, I used a 2 (tenor and bass) x 2 (non-music major and music major) x 4 (four specified gestures) ANOVA. Results indicated that there was a significant difference (F [3, 21] = 0.179, p = 0.025) among the four gestures. Post hoc comparisons using the Tukey HSD test indicated that the one-handed stationary gesture (D) was significantly less resonant than the two-handed stationary gesture (B). Perceptions from tenors and basses differed with respect to the ratings of the most resonant gesture. More specifically, the tenors rated the two-handed active gesture (C) (M = 7.31, SE = 0.74) as the most resonant whereas the basses rated the two-handed stationary gesture (B) (M = 7.04, SE = 0.64) as the most resonant gesture, both of which were two-handed gestures. Similar results were found between music majors and non-music majors. Choir members who were music majors rated the two-handed active gesture (C) (M = 7.09, SE = 0.56) as the most resonant gesture while the non-music majors rated the two-handed stationary gesture (B) (M = 7.5, SE = 0.77) as the most resonant gesture. There was no significant difference between the four groups of participants.

Discussion

The male singers and expert listeners in this study rated the active two-handed gesture (C) as the most resonant. The results corroborated Atkins and Duke's (2013) research indicating that guiding sound to the microphone while the singers were singing improved perceived tone quality. A connection between emphasizing the singers' attention to a distal point may be related to the (A) and (C) singer gestures, moving the gestures away from the body. Atkins and Duke called for further research to discover whether the different length of a distal focus has an impact on the vocal mechanism. In the current study, the findings suggest that when singer gestures lead to a further distal point with an active gesture, singers and listeners both hear more resonance in choral sound. However, it should be noted that each study used a different vowel choice; Atkins and Duke chose an [a] vowel while this study used a [u] vowel.

The male singers and expert listeners rated the same active two-handed gesture (C) as the most resonant. This result challenges music educators to trust singers' own perceptions of choral sound. In our classrooms, teachers are often the main decision maker in terms of rehearsal techniques and problem solving skills. Results from the current study indicated that students were able to make the same decisions as expert listeners under these limited circumstances.

Another finding worth noting is that when students chose their individually preferred gesture out of the four given gestures, it was also the most resonant sound from the perspective of expert listeners. Students presumably were able to understand how each gesture worked within their own bodies and choose a single gesture that created the most resonance. When they were given an opportunity to select a gesture for themselves as part of the rehearsal procedure, they sounded more resonant. Consider that the singers rated each movement according to only choral resonance. Perhaps students might benefit from specified directions, especially when they are asked to listen to their own choral sound. Singers might also benefit from a specific thing(s) to listen for rather than general assumptions of good sound.

Results comparing different majors and voice parts illustrated that each group (tenors/basses

and music majors/non-music majors) expressed different preferences among the gestures. Each group selected a different gesture as their most resonant sound. This might be an indication of how each singer or voice part is different, and teachers should consider how singers may react different to certain rehearsal procedures. Results should be generalized with caution due to a small sample size and population limited to one institution. In addition to the size of the sample, the selection of the vowel and expert listeners may have also had an impact. Future studies using measurement with documented validity and reliability are warranted.

Implications for further research

These results show the necessity of further investigation exploring the effect of different types of singer gestures on singing vowels, such as [a], [e], [i] and [o]. Determining whether different singer gestures affect various vocal ranges differently could impact choral educators' ability to use singer gestures effectively. Expanding the number of participants and including gender and various age groups as factors might be considered for future stud. Finally, it may be beneficial to utilize specific targets when addressing intonation and resonance in the choral rehearsal, rather than simply asking general questions of the singers.

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Traversing Two Worlds: Influences Upon Career Perspectives of Mexican-American Music Education Majors

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Abstract

The present study examines the career pathways of Mexican-American music majors. Participants included 42 (17 female, 25 male) music majors enrolled at a Hispanic-Serving Institution in South Texas. The study focused on identifying relations among students' levels of acculturation and career goals. Students' cultural behavior, career self-efficacy, extrinsic and intrinsic work values, motivation, and social bonding were measured via standardized questionnaires. Results indicate that a greater degree of adhering to both traditional and American culture predict higher career outcomes, including culture and gender interactions.

Keywords

Mexican-American, acculturation, music majors, career self-efficacy

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Background

For young people embarking on their undergraduate education, choice of a major may be among the most important decisions. Students choose college majors for a number of reasons such as preparation, perceived ability or competence (Ma, 2009; Riza & Heller, 2015), as well as personality characteristics and family support (Astin, 1993). Music majors report being influenced by role models and family influences (Rickels et al., 2010) as well as an intrinsic enjoyment of music (Parkes & Jones, 2011; 2012). Perceived musical ability also might contribute to intrinsic motivation for music majors (Riza & Heller, 2015). For Mexican-American students, influences such as language and culture also play a large role in students' post-secondary choices (Tornatsky, Cutler, & Lee, 2002). In this study, we examine the career pathways of predominantly bilingual Mexican-American music majors. As Mexican-American students become more prevalent in United States (US) institutions of higher education (Snyder, Tan, & Hoffman, 2006), there is an increasing need to investigate how the unique experiences of these students relate to career choices and persistence toward degrees.

In Texas, as across the country, music teacher recruitment continues to be important. Some educators suggest that K-12 school music participation might be increasing (Lautzenheiser, 2001) and that a music teacher shortage might exist in many areas (Hill, 2003). Given these findings and the increase in Hispanic students across the country (National Center for Education Statistics, 2016), higher education professionals could benefit from knowledge regarding music teacher career choice that might help attract and retain well-educated, bilingual Hispanic music teachers in American schools. Thus, we examine career motivation, career self-efficacy, and cultural

orientation in an effort to further understand the role of language and culture in the career outlooks of Mexican-American music education majors. Participants were of Mexican descent, self-identifying as "Mexican-American," and so hereafter are referred to as such.

Career Motivation

Although the choice to pursue music education as a major does not guarantee that students will seek employment in that field, it is a major which likely leads to a career. From the 1960s and 70s, teaching has been considered a stable career with job security (Haubrich, 1960; Wright, 1977). In studies of students in education majors, researchers have found that the majority did plan to teach at least 5 years (West & Brousseau, 1987; Zimpher, 1989). These studies and others, such as Rickels et al. (2010), suggest that it is appropriate to examine the career outlooks of undergraduate students.

Career Self-Efficacy

Self-efficacy, defined as a person's belief in his/her ability to succeed in a particular situation, has been shown to relate to career choice. Students' perceptions of their own abilities, including their musical and teaching abilities, play an important role in motivation toward their major and career choice (Bergee & Grashel, 2002; Parkes, 2007). Jones and Parkes (2010) found that one factor related to music education majors' decisions to teach music was their identification with perceived music teaching talent. Beliefs about teaching efficacy, defined as a teacher's expectation that they can positively influence student learning (Wagoner, 2011), also positively relate to career persistence and commitment and can be a predictor of career longevity (Erwan, 2010; Tschannen-Moran & Woolfolk-Hoy, 2001). These factors are especially important to investigate, as national estimates suggest that career burn-out can lead music teachers toward choosing alternate careers (Hancock, 2009). Efficacy beliefs are thought to develop slowly during courses in an undergraduate major and even into the first years of teaching. Also, they have been found to be future-oriented, suggesting that undergraduate education majors look ahead toward a career in teaching (Gavin, 2012; Pritchard, 2017; Woolfolk-Hoy & Spero, 2005).

Cultural Orientation

Mexican-American music majors may have unique features and experiences that affect career pursuits, self-efficacy, and persistence. For example, Mexican-American students have strong connections to family–referred to as *familism*– which manifests itself in community cohesiveness, obedience within the family, respect for adults, and traditional gender roles (Villanueva et al., 2008) and a tendency toward religiosity, particularly Catholicism (Pew Research Center, 2014). Researchers have found evidence that these values affect Mexican-American college students' choices and subsequent degrees of success. For example, in a study of eight Mexican-American women, Rosas and Hamrick (2002) found that family members played key roles in providing encouraging messages of expectations for college attendance and that participants strongly considered how their selection of major would strengthen their abilities to carry out their obligations to family and community. Morgan Consoli, Llamas, and Consol (2016) also found that cultural values played a role in Mexican-American college students' lives: thriving among these students was positively correlated with resilience, family support, respect, and religion. Thus, for Mexican-American students, influences such as family and cultural background should be examined as key influences on post-secondary choices.

In examining cultural influences, it is important to consider how much the individual still adheres to traditional values. The process by which immigrants acclimate to the predominant culture of their new community is known as *acculturation*. Acculturation begins when two or more different cultures come into continuous first-hand contact with each other, resulting in subsequent changes in the original cultural patterns of either or both groups (Cuéllar, Arnold, & Maldonado, 1995). Among Mexican-American students, acculturation can be recognized as youth begin to acquire behaviors, attitudes, values, and other cultural elements of the dominant U.S. culture (Cabassa 2003; Schwartz et al., 2010). By contrast, *enculturation* is the degree to which people adhere to their own culture (Aguayo, Herman, Ojeda & Flores, 2011). Enculturation is the process by which Mexican-American youth learn and engage in the practices, values, and identifications of their Mexican-American culture (Schwartz et al., 2010). Although at one time the processes of acculturation and enculturation were thought to be mutually exclusive,

researchers now suggest that Mexican-American youth can acculturate and enculturate simultaneously (Cabassa, 2003).

Some gender differences among Mexican-American attitudes toward family and career roles have also been documented. For example, Gowan and Trevino (1998) found that males were significantly more likely to hold traditional gender role values (e.g., about women in the workplace and parental responsibilities for child care). Thus, when exploring cultural influences, gender is an important consideration, and students' acculturation and enculturation may interact accordingly (Schwartz et al., 2010). Understanding how cultural factors affect Mexican-American music majors could aid in the advisement and support of students, and guide those seeking to use culturally relevant practices specific to this population.

In the present study, we investigated Mexican-American college students who chose music as a major at an American university to begin to determine the role of cultural influences (both American and Mexican) on these students' career outlooks. We explored factors important in predicting students' feelings of career success. Specifically, we addressed the following questions:

1. What factors influence Mexican-American students' choice of music as a career?
2. How does students' cultural background relate to career decision self-efficacy?
3. Do these effects differ by gender? Do gender by cultural interaction effects exist?

Method

Participants and Recruitment

Students enrolled in music courses at a large Mexican-American-serving institution, located in South Texas, were recruited to complete an online survey. They were offered incentives such as extra credit or recital lab attendance credit. There were 73 participants that initiated the survey, but only complete cases of those who met the cultural group criteria were included in final participant counts. Thus, final participants included 54 (26 female, 28 male) music majors. Most were upperclassmen (18 seniors and 22 juniors), with some (11) sophomores and (3) freshmen. All (100%) self-identified as Mexican-American and 72% as bilingual in Spanish and English.

Design and Procedures

An online survey was created and distributed using the survey software *Qualtrics*. The study was correlational by design and focused on identifying the nature of relationship(s) among cultural behavior, career self-efficacy, motivation, and values.

Measures

Demographics. We obtained basic demographic (e.g., age, sex, ethnicity) and student classification (e.g., major, year in school) information.

Cultural behavior. We utilized the Acculturation Rating Scale for MexicanAmericans II (ARSMA-II) by Cuéllar et al. (1995), which consists of a) the Mexican-Orientation Scale (MOS), a measure of traditional culture adherence, and b) the Anglo Orientation Scale (AOS), a measure of adoption of American culture. The original scale has a test-retest reliability of .96, which was .76 in the present study. MOS and AOS scores used to derive acculturation typologies: Traditional, High Integrated Bicultural, Low Integrated Bicultural, and Assimilated, using cut-points based on standardized procedures as describe in the ARSMA-II. Participants who did not clearly fall into one or another of the four acculturative typologies were excluded from analyses. We computed a biculturalism score, derived from scores on the ARSMA-II items, to provide a value of participants' degree of biculturalism, with more positive scores reflecting a greater degree of adherence to both cultures.

Career Decision Self-Efficacy. We administered the Career Decision Self-Efficacy Scale-Short Form (CDSE-SF; Betz, Klein, & Taylor, 1996; Betz & Taylor, 2001), a 25-question measure using 5-point Likert-type responses (from 1 indicating no confidence at all, to 5 indicating complete confidence) to study career self-efficacy beliefs. The CDSE-SF includes questions such as how much confidence one has that one can "make a plan of goals for the next five years," and "determine what [your] ideal job would be." The scale validity was original reported to be greater than .80; .94 and .87 for other similar studies (Betz, Hammond, & Multon, 2005); the current study showed a validity score with a Cronbach's alpha of .94.

Career Motivation. The Career Motivation subscale (Bradley, Maschi, O'Brien, Morgen, &

Ward, 2012) includes 19 items that assess career motivations of individuals entering the social work field. It asks participants to rate (from 1-10) how strongly they agree with statements such as "I knew someone in the field," "A family member encouraged me," and "I enjoy helping people." Cronbach's alpha for the original scale was .83, and in the current study, alpha was .70.

Career Maturity Inventory. The Career Maturity Inventory Form C (CMI Form C), developed by Savickas and Porfeli (2011) from the preexisting CMI measure of vocational development, was restructured to measure career choice readiness, or career maturity. It is a 24-item questionnaire where participants agree or disagree with statements such as, "Everyone seems to tell me something different; as a result, I don't know what kind of work to choose," and "I am having difficulty in preparing myself for the work that I want to do." The Cronbach's alpha for the composite scale measuring degree of career choice readiness was .70.

Boundaryless and Protean Career Attitudes. Two scales measured participants' attitudes about future career as 1) offering flexibility and freedom (Boundaryless), and 2) offering mobility (i.e., Protean). The Boundaryless Career Attitudes Scale (Briscoe & Hall, 2006) is a 13-item measure formed by two 5-point Likert-type scales with answer choices ranging from "too little or no intent," to "a great extent." Items were re-worded to be applicable towards music majors. For the original scales, the reliability coefficient was .81 and for the present study, Cronbach's alpha was .75. The Protean Career Attitudes Scale included 14-items, with original reliability of .81, and with Cronbach's alpha of .84 for the present study.

Valuing of Education. The Value of Education Scale (VOE; Battle & Wigfield, 2003) is a 51-item, 5-point Likert-type response measure of the degree of "liking" or "enjoyment" of the pursuit of graduate school, attainment value, utility value, and the anticipated costs. The Cronbach's alpha for this composite scale was high, $\alpha = .93$.

Results

We conducted initial analyses to ensure that there was adequate variability across participant responses. Table 1 shows the range, means, and standard deviations for all variables by gender. We

centralized all variables to reduce multicollinearity. We then conducted analyses to address the three research questions.

Table 1. Range, means, and standard deviations for culture and career-related variables by gender.

Table 1.
Range, Means, and Standard Deviations for Culture and Career-related Variables by Gender

	Female, *n* = 26			Male, *n* = 28		
Variable	Range	Mean	SD	Range	Mean	SD
Biculturalism	-4.00-0.00	-2.50	1.14	-4.00-0.00	-1.98	1.38
Enculturation	1.00-4.00	2.26	.91	1.00-5.00	2.71	1.19
Acculturation	3.00-5.00	4.76	.47	3.00-5.00	4.60	.61
Career Decision Self-Efficacy	2.96-5.00	3.98	.59	2.72-5.00	3.81	.62
Career Motivation	4.94-8.13	6.31	.86	4.22-7.78	6.38	1.04
Career Maturity	1.00-1.61	1.29	.17	1.13-1.57	1.35	.13
Boundaryless Career Attitudes	1.83-4.17	3.24	.60	1.83-3.75	2.90	.50
Protean Career Attitudes	2.50-5.00	4.16	.54	3.07-4.86	4.11	.54
Valuing Education	1.92-4.84	3.16	.52	2.00-4.65	3.27	.60

To investigate factors that influence Mexican-American students' choice of music as a career, we examined the intercorrelations among the variables. Table 2 displays a correlation matrix of all variables that measured career influences.

Table 2. Intercorrelations among cultural and career-related variables.

Table 2.
Intercorrelations among Cultural and Career-related Variables

Variables	1	2	3	4	5	6	7	8	9
1. Biculturalism	-	.90**	-.58**	.04	.11	.02	.32*	-.08	.17
2. Enculturation		-	-.25	.17	.18	.00	.34*	.08	.30
3. Acculturation			-	.24	.29	-.01	-.15	.36*	.07
4. Career Decision Self-Efficacy				-	.72**	-.61**	.48**	.62**	.29
5. Career Motivation					-	-.33**	.40**	.52**	.27
6. Career Maturity						-	-.26	-.35*	-.04
7. Boundaryless Career Attitude							-	.27	-.05
8. Protean Career Attitude								-	.11
9. Valuing Education									-

$N = 42$; * = $p < .05$; ** = $p < .01$.

Anglo Orientation Scale scores positively related to Protean Career Attitudes scores ($r = .36$, $p < .05$), and Mexican Orientation scale correlated with boundaryless career attitudes ($r = .34$, $p < .05$). Career Decision Self Efficacy scores positively correlated with career motivation ($r = .72$, $p < .01$), boundaryless career attitudes ($r = .48$, $p < .01$), protean career attitudes ($r = .62$, $p < .01$), and inversely with career maturity ($r = -.61$, $p < .01$). Additionally, degree of biculturalism positively correlated with boundaryless career attitudes ($r = .32$, $p < .05$).

To address the question of whether Mexican-American music majors of differing cultural backgrounds differed in career decisions, we compared the means of groups of students who varied in acculturation level, as shown in Table 3. We conducted a Multivariate Analysis of Covariance (MANCOVA) to compare effects of means of groups of students of similar acculturation levels on career decision self-efficacy, valuing education, career motivation, boundaryless career attitudes, and protean career attitudes, while holding career maturity constant. Results revealed significant main effects, Pillai's Trace = .62, $F(10, 70) = 3.17$, $p < .01$, $\eta 2 = .31$. We also found significant effects for high-bicultural participants in career decision self-efficacy [$F(2, 38) = 4.38$, $p < .05$, $\eta 2 = .19$], valuing education [$F(2, 38) = 3.67$, $p < .05$, $\eta 2 = .16$], boundaryless career attitudes [$F(2, 38) = 3.62$, $p < .05$, $\eta 2 = .16$], protean career attitudes [$F(2, 38) = 5.61$, $p < .01$, $\eta 2 = .23$], and career motivation

[$F(2, 38) = 5.97$, $p < .01$, $\eta 2 = .24$]. Post-hoc analyses, using the Bonferroni correction, revealed that highly bicultural participants reported greater reports of valuing education ($M = .79$), career decision self-efficacy ($M = .71$), $p < .05$, protean career attitudes ($M = .66$), and career motivation ($M = 1.69$), $p < .01$, than low bicultural participants; additionally, we found higher boundaryless career attitudes for highly bicultural participants ($M = .51$) than for assimilated participants, although this difference not significant, $p < .06$. Assimilated participants also reported higher protean career attitudes ($M = .46$) than low bicultural participants, $p < .05$.

Table 2. MANCOVA adjusted means of career-related variables by culture groups.

Table 3.
MANCOVA Adjusted Means of Career-related Variables by Culture Groups

Variables	Low-Bicultural	High-Bicultural	Assimilated
Career Decision Self-Efficacy	-.26	.46*	.03
Career Motivation	-.95	.74*	-.07
Boundaryless Career Attitudes	.19	.31	-.20
Protean Career Attitudes	-.38	.28*	.08*
Valuing Education	-.28	.51*	-.02

$N = 42$; * = $p < .05$; ** = $p < .01$

To examine how gender affected individuals of varying cultural backgrounds, we conducted a MANCOVA to examine the interaction effects between culture groups, gender, and career maturity on career decision self-efficacy, valuing education, career motivation, boundaryless career attitudes, and protean career attitudes. Overall, there was a statistically significant effect, Pillai's Trace = 1.73, $F(30, 140) = 2.48$, $p < .001$, $\eta 2 = .35$. Significant differences between gender were found for career decision self-efficacy [$F(6, 28) = 8.28$, $p < .001$, $\eta 2 = .64$], valuing education [$F(6, 28) = 3.02$, $p < .05$, $\eta 2 = .39$], career motivation [$F(6, 29) = 6.47$, $p < .001$, $\eta 2 = .58$], and protean career attitudes [$F(6, 28) = 2.51$, $p < .05$, $\eta 2 = .35$]. Post-hoc mean difference analyses, using the Bonferroni correction, revealed that males ($M = 1.02$) reported higher boundaryless career attitudes than female participants, and this difference was significant, $p < .05$.

Discussion

As Mexican-American students increasingly pursue higher education degrees, music majors among them, it is important to understand the factors that affect their academic and career paths. The present study has identified several factors that influence Mexican-American students' choice and persistence in music as a career.

We found that cultural background relates to student burnout, with more acculturated students less likely to report career burnout; similarly, students higher in Anglo orientation reportedly were more career motivated. These findings support previous studies, which indicate that acculturation to Anglo culture positively influences Latina/o students' success (Cavazos Vela, Johnson, Cavazos, Ikonomopoulos, & Gonzalez, 2014; Flores, Navarro, & DeWitz, 2008) and educational aspirations (Lopez, Ehly, & Garcia-Vasquez, 2002) in US schools. The acculturation process that takes place as a student participates in a course of music study at an American university (classes in English, traditional Western classical music focus, etc.) may also influence students' perceptions of career possibilities. In addition, these more Americanized students likely struggle less with language-learning issues and familiarity with Western music, leading to experiences of success in school in terms of good grades, performance opportunities, and the like. A number of the more "successful" students in the music department have also had the opportunity to work in the field while still in school–teaching private lessons and leading sectionals or serving as assistants for marching band activities, for example–forging important contacts in the local music education community. These contacts and feelings of familiarity in the working world then may lead to their perception of future success.

For many of these students, the pervasive pressure to "assimilate" into American culture (including prejudice and discrimination) undoubtedly plays an important role. Students' engagement in Mexican-American-influenced cultural practices might affect major decisions and perceptions of self-efficacy for the music education majors in this study. Due to the complicated relationship between the US and Mexico and their physical proximity, Mexican-Americans are

unsurprisingly affected by high rates of prejudice and discrimination (Lopez & Stanton-Salazar, 2001). Ongoing anti-immigrant policies may increase minority stress and discrimination experienced by Mexican-American college students, particularly immigrant students, which then plays a role in their academic outcomes. The participants in this study, mostly acculturated into mainstream American society, are advancing in their chosen major and do report high aspirations for obtaining a good job. They are considered success stories, on track to contribute to rising graduation rates for Mexican-American college students.

Findings also strengthen past calls by scholars to develop and implement initiatives aimed at increasing Latina/o students' knowledge of processes and landscapes of institutes of higher education, particularly first-generation college students (Aguayo, Herman, Ojeda, & Flores, 2011). It is especially important, then, that music educators and career counselors engage the families of low-acculturated students to discover how they can best encourage and support their child's pursuits. In this way, access to careers in music can be opened to students who might not have considered majoring in music, or perhaps not considered attending college at all. With the knowledge that less-acculturated Mexican-American students may be more likely to burn-out, advisers are encouraged to examine the educational barriers specific to these students' academic and professional success in music. Given that students' high value of education correlated positively with their career decision self-efficacy, programs that seek to build academic aspirations in music careers early are warranted. As more young Mexican-American children are encouraged to pursue music as a major, the field will see a rise in confident, persistent musicians with culturally unique contributions.

The present study also found gender differences in the effects of cultural background on career-related variables, favoring women with higher career maturity and biculturalism. These findings might be attributed to the still-evolving gender roles seen in recent decades, among all cultural groups. The Mexican-American culture has historically been known for traditional gender roles (Rosas & Hamrick, 2002). These students, shown in this study to be primarily acculturated into American mainstream society, are once again straddling two worlds. Female students are

increasingly encountering empowering messages in higher education– that they can compete on an even playing field with their male counterparts. At home, however, they may receive contradictory messages from family members and/or community elders, who may rely on women to perform household duties and a majority of the child-rearing. The current findings, then, can be seen as encouraging for college-age women with career aspirations. Additional research is needed to further explore the nature of cultural dissonance and how it is experienced by Mexican-American students of both genders, as well as students who identify as non-binary or LGBTQ.

More research on Mexican-American college students is warranted to determine whether they have different needs than college students from other cultural backgrounds. As we work to encourage students toward success, particularly at Mexican-American-serving institutions, we want to discover whether conventional methods of teaching and learning are acceptable or if new techniques should be pursued. As culturally-responsive teaching and learning models become more prevalent in music education, we hope to contribute to effective higher education practices that can benefit and empower all students.

Authors' note

The authors wish to thank our undergraduate research team: Chelsey Rodriguez, Renata Garcia Prieto Palacios Roji, Nadia Salazar, Jose Palomo, Kattie Guerrero, and Jeremy Thompson for their tireless work on this project. This study could not have been completed without their thoughtful, engaged participation and effort.

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