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The purpose of this study was to investigate the relationships among musical characteristics and musicians' and nonmusicians' preferences for world musics. World musics were drawn from Africa, Asia, and Latin America. Musical characteristics included tempo, pitch redundancy, tonal centeredness, consonance, brightness in timbre, percussiveness, loudness, textural complexity, and richness in embellishment. Preference was also examined in relation to familiarity. Subjects were 449 undergraduate students (180 music majors and 269 nonmusic majors). Subjects completed a preference-rating scale that included a total of 36 instrumental excerpts from nine countries. Results showed that all nine musical characteristics were significant sources of variance in world music preferences. The following musical characteristics were preferred by both musicians and nonmusicians: fast tempo, loud, tonal-centered, having many different pitches, consonant, moderately embellished, smooth-sounding, and bright timbre. Musicians preferred excerpts with complex texture, whereas nonmusicians preferred moderately complex textures. A positive relationship between familiarity and preference was found across all musical styles. In general, musicians had significantly higher preference means than did nonmusicians.

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Musicians' and Nonmusicians' Preferences for World Musics: Relation to Musical Characteristics and Familiarity

The inclusion of world musics in music education programs in the United States has become increasingly important in recent decades. Musics from all cultures began to emerge in music programs, and listening activities have served as a gateway to transmit world musics into

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American music classrooms. Although a number of researchers have examined various responses to music listening, the use of music other than Western art music and popular genres as stimuli in research is relatively rare. The enormous number of music preference studies can be seen in several reviews of the literature (e.g., Finnäs, 1989; Wapnick, 1976). Music preference is also among the most frequently cited research topics in research articles published in major music education research journals (Schmidt & Zdzinski, 1993).

Both qualitative and quantitative evidence suggests that preference can be an important mediating agent in the process of music education. Although music preference may well be different from aesthetic judgment (Kant 1790/1987), liking for certain musics may be a bridge for development of a musical novice into a musically educated individual who is capable of aesthetic judgment. Asmus (1989) found that, from the standpoint of motivation for music learning, affect for music was one of the five factors that significantly explained motivations in music learning. Therefore, music preference may be a springboard for further music learning.

According to LeBlanc, "music preference decisions are based upon the interaction of input information and the characteristics of the listener, with input information consisting of the musical stimulus and the listener's cultural environment" (LeBlanc, 1987, p. 139). Studies in musical characteristics have explained some variance in preference. Judging from the percentage of variance explained in individual studies, one may postulate that some musical characteristics tend to explain more variance than others. In some studies, tempo, loudness, and complexity have explained more than 50% of the variance (LeBlanc & McCrary, 1983; Martindale & Moore, 1990; Russell, 1982), while timbre and consonance have explained less than 3% of the variance (LeBlanc, 1981; Martindale & Moore, 1990).

As far as can be determined, only one study (Fung, 1992) has involved the use of world music excerpts to investigate the relationship between musical characteristics and preference. In that study, 32 music excerpts were drawn from eight geographic regions: Africa, China, India, Indonesia, Japan, Korea, the Middle East, and Thailand. Results showed that graduate music students indicated higher preferences for the excerpts that were perceived as having fast tempo, regular rhythm, clear melody, tonal centers, consonance, regular phrasing, bright timbre, high complexity, and similarity to Western music. The characteristic of regular rhythm explained 35% of the variance in preference ratings. Other variables explaining variance in preference included complexity (24%), similarity to Western music (23%), melodic clarity (22%), phrasing regularity (19%), tonal centeredness (19%), tempo (17%), consonance (14%), and brightness in timbre (13%). However, pitch register, pitch redundancy, smoothness, and the loudness level of these world music styles were not significantly correlated with preference. The extent to which these relationships generalize to nonmusicians is not known.

Although a number of researchers (e.g., Hargreaves, 1988; Radocy,

1982) have empirically examined the relationship between preference and familiarity, once again, most of these studies have used Western musical stimuli. Two researchers (Geisler, 1990; Hicken, 1992) have examined the familiarity issue with world music excerpts. Geisler (1990) used six Chinese and 13 Western music excerpts while examining the rank-order correlation between preference and familiarity. The rank-order correlation between familiarity and preference for the 19 excerpts was .92 in the United States and .74 in Hong Kong. Hicken (1992) used three world music excerpts (two Japanese and one Indian). Among all predictor variables in the study (familiarity, gender, socioeconomic status, musical experience, music aptitude, and field-dependence/independence), familiarity was the strongest predictor of world music preferences, explaining almost 11% of the variance.

Many music preference studies have examined preferences of nonmusicians. Even though some researchers included both musicians and nonmusicians in the sample (Geringer & Madsen, 1981; Hedden, 1974; Huber & Holbrook, 1980; Radocy, 1982; Sims, 1987), there have been few direct comparisons between the groups' music preferences. In studies that directly compared the preference means between musicians and nonmusicians (Burke & Gridley, 1990; Hargreaves, Messerschmidt, & Rubert, 1980; Smith & Cuddy, 1986), findings consistently indicated that musicians had significantly higher preferences than did nonmusicians regardless of musical style (electronic tones, piano, classical, and popular). However, no such group comparison has been made in preferences for world musics.

Another issue in preference for world musics is sampling of excerpts. The musical styles used in world music preference studies have included African (Flowers, 1980; Fung, 1992, 1994; Nakazawa, 1988; Shehan, 1981, 1985), Chinese (Fung, 1992, 1994; Geisler, 1990), Indian (Fung, 1990, 1992, 1994; Hicken, 1992; May, 1985; Shehan, 1981, 1985), Indonesian (Fung, 1992, 1994; Nakazawa, 1988; Shehan, 1981, 1984), Japanese (Darrow, Haack, & Kuribayashi, 1987; Fung, 1992, 1994; Hicken, 1992; Nakazawa, 1988; Shah, 1990; Shehan, 1981, 1985), Korean (Fung, 1992, 1994), Lao (Shehan, 1987), Malaysian (Shah, 1990), Middle Eastern (Fung, 1992, 1994), Pakistani (Heingartner & Hall, 1974), Persian (Nakazawa, 1988), Puerto Rican (Nakazawa, 1988), and Thai (Fung, 1992, 1994). Most of the cited research used Asian musical styles rather extensively. However, relatively little research attention has been given to Latin American styles and specific music styles found within the continent of Africa.

Given the results of the previous literature, a range of musical characteristics, musical training (i.e., musicians versus nonmusicians), and familiarity emerge as prominent independent variables and predictors of world music preferences. These results are preliminary, however, because of the limited range of world musics found in most of the previous studies. Therefore, the purpose of this study was to investigate the relationships among musical characteristics, familiarity, and musicians' and nonmusicians' preferences for world musics. World musics

were drawn from Africa (Congo, Malawi, and Nigeria), Asia (China, Japan, and Korea), and Latin America (Cuba, Mexico, and Peru). Musical characteristics included tempo, pitch redundancy, tonal centeredness, consonance, brightness in timbre, percussiveness, loudness, textural complexity, and richness in embellishment. Musical characteristics were limited to those judged by individuals with training in the Western art-music tradition in American music schools. These judgments were not necessarily representative of all musical cultures. Specific research questions included:

1. To what extent did musical characteristics relate to musicians' and nonmusicians' preferences for world musics?
2. To what extent did musical characteristics interact with musicians' and nonmusicians' preference ratings?
3. To what extent did world music preference ratings differ between musicians and nonmusicians?
4. What relationship existed between familiarity and preference ratings across musical styles?

METHOD

This study involved 24 judges and 449 undergraduate students (180 music majors and 269 nonmusic majors). Undergraduate students (N = 449) provided (1) music preference ratings, (2) familiarity ratings, and (3) demographic data. Undergraduate music majors were enrolled in an undergraduate music program at two large midwestern universities. They were recruited from undergraduate music history, music theory, and music education classes. Undergraduate nonmusic majors were enrolled in a nonmusic undergraduate program at a major midwestern university. They were recruited from undergraduate classes in music for elementary education majors, speech and hearing, and physical education.

The age range of the subjects (undergraduate musicians and nonmusicians, N = 449) was 18 to 69 years, with a mean of 20.65 years (SD = 3.89). Ninety-four percent of the sample were citizens of the United States. Only 8% of the sample were born outside of the United States, and 5.6% indicated that English was not their native language. The sample could be broken down as follows: 3.6% African/Black, 0.7% American Indian, 4.9% Asian, 87.5% European/White, 1.3% His-panic, and 2% other. The mean number of instruments played by the musician sample was 2.5, and the mean number of years they played such instruments was 18.6. Musicians also had a mean of 16.8 years' ensemble experience. Nonmusicians had played a mean of 1.1 instruments and played for a mean of 4.3 years. They also had a mean of 4.1 years' ensemble experience.

Judges (N = 24) provided ratings of musical characteristics for each excerpt (described below). All judges had earned a master's degree in music and currently were enrolled as majors in one of six doctoral programs in music at a large midwestern university.

Two author-developed instruments were used in this study: the

Musical Characteristics Rating Form (MCRF) and the World Musics Preference Rating Scale (WMPRS). Both instruments contained the same 36 musical excerpts (see Table 1). Each excerpt presented the first 40 seconds of a piece or of a section. Only instrumental excerpts were selected in order to avoid intervening factors such as a language barrier or gender of singer(s). Four instrumental excerpts were sampled from each of the following musical styles: Congo, Malawi, Nigeria, China, Japan, Korea, Cuba, Mexico, and Peru. These nine world-music styles were selected because they provided music samples that reflected some ethnic origins of the major non-European ethnic groups in the United States (i.e., African, Asian, and Latin American). Native American music was not selected due to its heavy emphasis on voice.

To ensure sound quality, all excerpts were drawn from cassette tapes, compact discs, or LP recordings classified as commercial recordings (not field recordings) produced after 1971 and located in the Archives of Traditional Music, Indiana University, Bloomington. To assure a variety of musical characteristics, excerpts were selected randomly from the archives. Seventy items were included in a pilot study. All excerpts were presented in random order. Based on a pilot study of 35 college students' preference ratings using 7-point Likert scales, interitem correlation coefficients were computed among items in each of the nine music styles. Four items in each category with the highest interitem correlation coefficients were selected for the main study.

To examine the reliability of musical characteristic ratings in the pilot study, five music doctoral students rated the excerpts using the following semantic differential pairs, based on Fung (1992) and Lomax (1968), in 7-point scales (1 to 7) for each of the 70 pilot excerpts: (a) slow—fast, (b) irregular rhythm—regular rhythm, (c) short phrasing—long phrasing, (d) irregular phrasing—regular phrasing, (e) low pitch—high pitch, (f) narrow pitch range—wide pitch range, (g) redundant pitches—different pitches, (h) unclear melody—clear melody, (i) nontonal-centered—tonal-centered, (j) dissonant—consonant, (k) dull timbre—bright timbre, (l) smooth—percussive, (m) soft—loud, (n) unison/solo—many independent parts, (o) simple texture—complex texture, (p) little or no embellishment—rich embellishment, and (q) similar to Western music—dissimilar to Western music. In Fung's (1992) study, 13 of the 17 scales (all except scales c, f, n, and p) were found to have high reliability coefficients (α range from .82 to .97). Scales c, f, n, and p were adopted from Lomax's (1968) "cantometric coding" and were included in the pilot study. Based on ratings of five judges in the pilot study, scales with low interjudge reliability (irregular phrasing—regular phrasing and short phrasing—long phrasing) were excluded in the main study. Further elimination took place in the main study due to the significant correlations among some scales. The following scales remained for the main analysis: slow—fast, redundant pitches—different pitches, nontonal-centered—tonal centered, dissonant—consonant, dull timbre—bright timbre, smooth—percussive, soft—loud, simple texture—complex texture, and little or no embellishment—rich embellishment.

Judges ($N = 24$) listened to the musical stimuli recorded on a cassette tape and responded to the MCRF individually. They provided ratings of musical characteristics for each musical excerpt using the semantic differential scales described above. Judges were informed that they could listen to the excerpts as many times as they wished.

The same 36 music excerpts were used in the World Music Preference Rating Scale (WMPRS). The WMPRS had a 10-second interstimulus interval for musicians and nonmusicians to rate their preferences for the excerpts on a 7-point Likert scale (1 = strongly dislike, 7 = strongly like) and to rate their familiarity with the styles on a 3-point scale (1 = unfamiliar, 2 = somewhat familiar, 3 = familiar). Undergraduate musicians ($n = 180$) and nonmusicians ($n = 269$) responded to the WMPRS in small groups ($n < 35$).

RESULTS

On the basis of ratings provided by 24 judges (MCRF), interjudge reliability coefficients for the musical characteristics scales were determined. All coefficients were acceptable and generally high (smooth—percussive: $\alpha = .82$; slow—fast: $\alpha = .83$; dull timbre—bright timbre: $\alpha = .88$; soft—loud: $\alpha = .88$; simple texture—complex texture: $\alpha = .92$; little or no embellishment—rich embellishment: $\alpha = .92$; redundant pitches—different pitches: $\alpha = .93$; dissonance—consonance: $\alpha = .93$; nontonal centered—tonal centered: $\alpha = .94$). Thus, judges' ratings of individual musical characteristics were generally very consistent. In addition, all Pearson correlation coefficients among these nine musical characteristic scales were nonsignificant and were below .45, indicating that, across music excerpts, musical characteristics were generally discrete; that is, the presence or absence of one characteristic did not predict the presence or absence of others. For the composite measure of preference for 36 items (WMPRS), reliability coefficients were consistently high: $\alpha = .96$; split-halves = .93. Likewise, the composite familiarity measure yielded high reliability coefficients: $\alpha = .94$; split-halves =.90.

In addition, interitem correlations within each country category were computed for preference and familiarity. All coefficients were significant at .01 level. Median coefficients within each country category ranged from .50 to .68. Furthermore, all four items in each country category correlated highly with preferences for their respective composites at the country level. These coefficients ranged from .72 to .90, with most of the coefficients in the .80 range. Interitem (Spearman) correlations for familiarity ranged from .22 to .65. All coefficients were significant at .01 level. Familiarity was rated on a 3-point scale; correlation coefficients were generally lower than were those for preference. Most of the coefficients were ranged from the .30s to the .50s. As in the preference ratings, all four items in each country category correlated highly with their respective composite familiarity ratings. Intracountry correlation coefficients ranged from .48 to .85, with most of the coefficients ranged from the .60s to the .80s.

Table 1
Titles of Excerpts for the Main Study

Order	Title	Recording & Label
Congo		
7	"Mambala"	*The Music of African Series, Musical Instruments 3. Drums,* Kaleidophone KMA3 (1972)
3	"Congo Bereji"	*The Music of African Series, Musical Instruments 3. Drums,* Kaleidophone KMA3 (1972)
2	"Mishiba"	*The Music of African Series, Musical Instruments 4. Flutes & Horns,* Kaleidophone KMA4 (1972)
21	"Kalubambu tambo abibongo"	*The Music of African Series, Musical Instruments 5. Xylophones,* Kaleidophone KMA5 (1972)
Malawi		
26	"Kukapanda mbale kumaliza"	*Musiker aus Malawi,* Collection Berlin, Museum Collection MC15 (1989)
19	"Makang'ombe"	*Musiker aus Malawi,* Collection Berlin, Museum Collection MC15 (1989)
32	"Maguluve kumala imanga"	Musiker aus Malawi, Collection Berlin, Museum Collection MC15 (1989)
18	"Ulendo wa kumigunda"	*Musiker aus Malawi,* Collection Berlin, Museum Collection MC15 (1989)
Nigeria		
6	Elewe Music: "Ila Rangun"	*Yoruba Bata Drums: Elewe Music and Dance,* Folkways FE4294 (1980)
33	"Asida, Siko"	*Yoruba Bata Drums: Elewe Music and Dance,* Folkways FE4294 (1980)
27	"Ewo"	*Yoruba Bata Drums: Elewe Music and Dance,* Folkways FE4294 (1980)
14	"Wrestling music"	*An Anthology of Africa Music: Nigeria III; Igbo music,* Barenreiter-Musicaphon BM3022311 (1976)
China		
11	"Flying Kites"	*West Meets East,* Folkways FSS37455 (1981)
16	"Thunder in the Drought"	*West Meets East,* Folkways FSS37455 (1981)
1	"La petite pêche rouge"	*Chine Musique du Foukien,* CBS 65574 (1973)
15	"Rythme rapide"	*Chine Musique du Foukien,* CBS 65574 (1973)
20	"Gakkaen"	*Japon: Gagaku,* Ocora C55999018 (1988)
10	"Ajikan"	*Shakuhachi Honkyoku,* Folkways FE4229 (1980)
17	"Shika-no tone"	*Asia, Japan, Musical Atlas,* EMI Italiana C064-17967 (1974)

(Table 1 continues on next page)

Table 1 (continued)
Titles of Excerpts for the Main Study

Order	Title	Recording & Label
Japan		
	"Edo Matsuri Bayashi"	*Asia, Japan, Musical Atlas,* EMI Italiana C064-17967 (1974)
Korea		
9	"Binavi" (2nd section)	*Samul-Nori, Drums and Voices of Korea,* Nonesuch 72093 (1984)
5	"Woodo-kut" (2nd section)	*Samul-Nori, Drums and Voices of Korea,* Nonesuch 72093 (1984)
4	"Kayagum sanjo"	*Sounds of the World, Music of East Asia: Korean,* Music Educators National Conference 3036 (1989)
13	"Tanso I"	*Sounds of the World, Music of East Asia: Korean,* Music Educators National Conference 3036 (1989)
Cuba		
29	"Conga Santiaguera"	*Music of Cuba,* Folkways FE4064 (1985)
31	"Toque a Orunla"	*Antologia de la Musica Afrocubana,* Vol. II, EGREM LD-3995 (1981)
34	"Ayacutá (para Aggayú)"	*Antologia de la Musica Afrocubana,* Vol. II, EGREM LD-3995 (1981)
12	"Toque yubá macota"	*Antologia de la Musica Afrocubana,* Vol. VII, EGREM LD-3606 (1981)
Mexico		
24	"La Zandunga"	*Raíces Musicales,* The National Council for the Traditional Arts (1988)
36	"Luzita"	*Chulas Fronteras,* Arhoolie 3005 (1976)
28	"Muchachos Alegres"	*Chulas Fronteras,* Arhoolie 300 (1976)
30	"Cotula"	*Chulas Fronteras,* Arhoolie 3005 (1976)
Peru		
35	"Corazón I"	*Corazón,* Folkways FSS34035 (1985)
8	"Coca K'intuchay"	*Perou,* Ocora 45586647 (1985)
25	"Wanka"	*Perou,* Ocora 45586647 (1985)
23	"Volcan"	*Perou,* Ocora 45586647 (1985)

Table 2
Groupings of Excerpts by Musical Characteristics (Judge N = 24)

	Slow	Moderate	Fast
Mean rating range	1.5–3.9	4.0–5.1	5.2–6.1
Item numbers	1, 4, 5, 8, 10, 13, 15, 17, 20, 22, 31, 35	2, 7, 9, 11, 16, 18, 21, 23, 24, 25, 34, 36	3, 6, 12, 14, 19, 26, 27, 28, 29, 30, 32, 33
	Redundant pitches	Moderate	Different pitches
Mean rating range	1.5–2.2	2.2–3.8	3.9–5.1
Item numbers	3, 5, 6, 7, 9, 12, 14, 27, 29, 31, 33, 34	2, 4, 8, 10, 17, 18, 19, 20, 21, 22, 26, 32	1, 11, 13, 15, 16, 23, 24 25, 28, 30, 35, 36
	Nontonal	Moderate	Tonal
Mean rating range	1.5–2.9	2.9–4.0	4.9–6.8
Item numbers	3, 5, 6, 7, 9, 12, 27, 29, 31, 32, 33, 34	2, 4, 10, 13, 14, 17, 18, 19, 20, 21, 22, 26	1, 8, 11, 15, 16, 23, 24, 25, 28, 30, 35, 36
	Dissonance	Moderate	Consonance
Mean rating range	3.4–4.2	4.3–5.2	5.7–6.5
Item numbers	2, 4, 12, 19, 20, 21, 27, 29, 31, 32, 33, 34	1, 3, 5, 6, 7, 10, 13, 14, 18, 22, 24, 26	8, 9, 11, 15, 16, 17, 23, 24, 28, 30, 35, 36
	Dull timbre	Moderate	Bright timbre
Mean rating range	2.9–4.0	4.0–5.1	5.2–6.1
Item numbers	2, 3, 4, 5, 7, 9, 10, 12, 19, 26, 27, 33	1, 6, 13, 14, 17, 18, 21, 29, 31, 32, 34, 35	8, 11, 15, 16, 20, 22, 23, 24, 25, 28, 30, 36
	Smooth	Moderate	Percussive
Mean rating range	2.1–4.4	4.4–4.6	6.3–6.8
Item numbers	1, 8, 10, 11, 13, 17, 22, 24, 28, 30, 35, 36	2, 4, 5, 15, 16, 18, 19, 20, 21, 23, 25, 26	3, 6, 7, 9, 12, 14, 27, 29, 31, 32, 33, 34
	Soft	Moderate	Loud
Mean rating range	2.2–4.0	4.1–4.6	4.6–5.6
Item numbers	1, 2, 4, 5, 9, 10, 11, 15, 17, 22, 23, 35	8, 13, 14, 16, 18, 19, 20, 24, 25, 26, 31, 32	3, 6, 7, 12, 21, 27, 28, 29, 30, 33, 34, 36
	Simple texture	Moderate	Complex texture
Mean rating range	1.1–3.1	3.1–3.9	4.1–5.0
Item numbers	4, 5, 10, 11, 13, 15, 17, 20, 22, 23, 30, 35	1, 7, 8, 9, 16, 24, 25, 28, 29, 31, 34, 36	2, 3, 6, 12, 14, 18, 19, 21, 26, 27, 32, 33
	Little/no embellishment	Moderate	Rich embellishment
Mean rating range	2.0–3.0	3.1–3.8	3.8–5.3
Item numbers	4, 5, 6, 7, 9, 19, 21, 29, 30, 31, 32, 34	3, 12, 14, 18, 20, 23, 2 26, 27, 28, 33, 35	1, 8, 10, 11, 13, 15, 16, 17, 22, 24, 25, 36

Table 3
ANOVA Results of Preference with One Between-Subjects Factor and Two Within-Subjects Factors (N = *449*)

Source	SS	*df*	MS	*F*	*p*
Between factor					
Musicians/nonmusicians (*M*)	1839.39926	1	1839.39926	79.98	< .0001
Error	10279.87197	447	22.99748		
Within factors					
Scale (S)	0.92515	8	0.11564	79.93	< .0001
Error	5.17356	3576	0.00145		
Level (L)	287.38382	2	143.69191	405.86	< .0001
Error	316.51264	894	0.35404		
Interactions					
M × S	0.05776	8	0.00722	4.99	< .0001
M × L	13.33969	2	6.66984	18.84	< .0001
S × L	397.59640	16	24.84978	85.01	< .0001
M × S × L	32.23368	16	2.01461	6.89	< .0001

Results by Scale

Scale	*SS*	*df*	*MS*	*F*	*p*
Slow/Fast (S/F)	113.01401	2	56.50700	266.32	< .0001
S/F × Musician/nonmusician	2.08443	2	1.04221	4.91	< .05
Redundant/Different pitches (R/D)	134.01454	2	67.00727	161.99	< .0001
R/D × Musician/nonmusician	9.96204	2	4.98102	12.04	< .0001
Nontonal/Tonal-centered (N/T)	141.26403	2	70.63202	188.79	< .0001
N/T × Musician/nonmusician	8.88994	2	4.44497	11.88	< .0001
Dissonance/Consonance (D/C)	93.65660	2	46.82830	147.59	< .0001
D/C × Musician/nonmusician	5.55198	2	2.77599	8.75	< .001
Dull/Bright timbre (D/B)	20.02381	2	10.01190	29.95	< .0001
D/B × Musician/nonmusician	5.20938	2	2.60469	7.79	< .001
Smooth/Percussive (S/P)	43.09794	2	21.54897	61.48	< .0001
S/P × Musician/nonmusician	4.92663	2	2.46331	7.03	< .001
Soft/Loud (S/L)	80.90884	2	40.45442	234.19	< .0001
S/L × Musician/nonmusician	5.71876	2	2.85938	16.55	< .001
Simple/Complex texture (S/C)	29.05241	2	14.52621	50.49	< .0001
S/C × Musician/nonmusician	2.96056	2	1.48028	5.14	< .01
Little or no/Rich embellishment (L/R)	29.94804	2	14.97402	65.07	< .0001
L/R × Musician/nonmusician	0.26964	2	0.13482	0.59	N.S.

Table 4
Preference Means and Standard Deviations Broken Down by Level of Musical Characteristics

		Level of musical characteristics *		
Scale	Group	Low	Moderate	High
Slow/Fast	Both groups (N = 449)	3.27 (1.03)	3.88 (1.04)	3.95 (1.13)
	Musicians (n = 180)	3.82 (1.06)	4.33 (1.01)	4.38 (1.16)
	Nonmusicians (n = 269)	2.91 (0.84)	3.58 (0.95)	3.65 (1.02)
Redundant/Different pitches	Both groups (N = 449)	3.75 (1.22)	3.26 (1.10)	4.09 (1.08)
	Musicians (n = 180)	4.24 (1.26)	3.86 (1.13)	4.43 (1.03)
	Nonmusicians (n = 269)	3.42 (1.07)	2.86 (0.87)	3.86 (1.06)
Nontonal/Tonal centered	Both groups (N = 449)	3.67 (1.16)	3.29 (1.10)	4.14 (1.09)
	Musicians (n = 180)	4.16 (1.20)	3.87 (1.13)	4.48 (1.03)
	Nonmusicians (n = 269)	3.33 (1.01)	2.90 (0.89)	3.91 (1.08)
Dissonance/ Consonance	Both groups (N = 449)	3.44 (1.16)	3.63 (1.07)	4.11 (1.07)
	Musicians (n = 180)	3.98 (1.21)	4.14 (1.09)	4.47 (1.00)
	Nonmusicians (n = 269)	3.08 (0.97)	3.29 (0.91)	3.87 (1.05)
Dull/Bright timbre	Both groups (N = 449)	3.54 (1.16)	3.70 (1.09)	3.87 (1.08)
	Musicians (n = 180)	4.09 (1.20)	4.21 (1.10)	4.24 (1.04)
	Nonmusicians (n = 269)	3.17 (0.96)	3.36 (0.94)	3.62 (1.03)
Smooth/Percussive	Both groups (N = 449)	3.90 (1.02)	3.44 (1.06)	3.76 (1.25)
	Musicians (n = 180)	4.27 (0.97)	3.98 (1.10)	4.28 (1.29)
	Nonmusicians (n = 269)	3.65 (0.97)	3.08 (0.87)	3.41 (1.09)
Soft/ Loud	Both groups (N = 449)	3.45 (1.02)	3.58 (1.08)	4.07 (1.08)
	Musicians (n = 180)	4.01 (1.00)	4.09 (1.11)	4.43 (1.07)
	Nonmusicians (n = 269)	3.08 (0.84)	3.25 (0.93)	3.82 (1.01)
Simple/Complex texture	Both groups (N = 449)	3.49 (1.02)	3.80 (1.01)	3.81 (1.24)
	Musicians (n = 180)	3.98 (1.00)	4.20 (1.02)	4.35 (1.26)
	Nonmusicians (n = 269)	3.16 (0.89)	3.53 (0.92)	3.45 (1.08)
No/Rich embellishment	Both groups (N = 449)	3.58 (1.08)	3.91 (1.07)	3.61 (1.08)
	Musicians (n = 180)	4.03 (1.13)	4.40 (1.08)	4.10 (1.05)
	Nonmusicians (n = 269)	3.28 (0.93)	3.59 (0.93)	3.28 (0.97)

Note. Standard deviations indicated in parentheses.

* Low refers to the left side of the musical characteristic scale (e.g., slow), moderate refers to the middle of the scale, and high refers to the right side of the scale (e.g., fast).

On the basis of 24 judges' ratings, a mean was computed for each characteristic for each excerpt. Then excerpts were ranked from the lowest to the highest for each musical characteristic scale. Based on these ranks, the 12 excerpts receiving the lowest 33% of the distribution of means were classified as low in the scale characteristic, the 12 excerpts receiving the middle 33% of the distribution of means were classified as moderate in the scale characteristic, and the 12 excerpts receiving the highest 33% of the distribution of means were classified as high in the scale characteristic. Table 2 presents the distribution of excerpts across the three levels (low, moderate, high) for each musical characteristic. It also presents the ranges of the mean characteristic ratings for each scale level. The 36 excerpts were well distributed across the three levels of each musical characteristic. On the basis of these results, a profile of musical characteristics was derived for each item.

To investigate the relationship between musical characteristics and world music preferences, a mixed-design analysis of variance (ANOVA) was used with one between-subjects factor (musician/nonmusician) and two within-subjects factors: (1) nine musical characteristic scales and (2) three levels within each musical characteristic scale (low/moderate/high). Table 3 shows the results, which revealed significant differences ($p < .0001$) for all main effects and interaction effects. At a general level, results indicated that musicians' and nonmusicians' preferences for world musics were significantly different. As can be seen in Table 4, musicians' means were significantly higher than those for nonmusicians. In addition, different musical characteristic scales were significant in world music preference ratings, and the levels of musical characteristic effects were significant.

Table 3 also shows results for the individual musical characteristic scales. All musical characteristics scales were significant ($p < .0001$). Except for the little or no embellishment—rich embellishment scale, all interaction effects with the between-subjects factor of musician/nonmusician were significant ($p < .05$).

To locate specific mean differences, levels within each musical characteristic scale were compared. All means across the three levels of each scale were significantly different ($p < .05$). Exceptions to this trend were found for mean comparisons between: (1) moderate and high in the levels of simple—complex texture and (2) low and high levels of little or no embellishment—rich embellishment. Means and standard deviations for preference (broken down by musical characteristic) and their levels are presented in Table 4.

Trends of preference means (see Figure 1) indicated that the entire sample ($N = 449$) preferred excerpts that were characterized as relatively fast, having many different pitches, tonal-centered, consonant, bright timbre, smooth, loud, complex or moderately complex in texture, and moderate in the richness of embellishment. The subjects in the sample tended to prefer less those excerpts that were relatively slow, moderately redundant in pitch, moderately tonal-centered, dissonant, of dull timbre, moderately percussive, soft, simple in texture, and with little or no embellishment or rich embellishment. Three

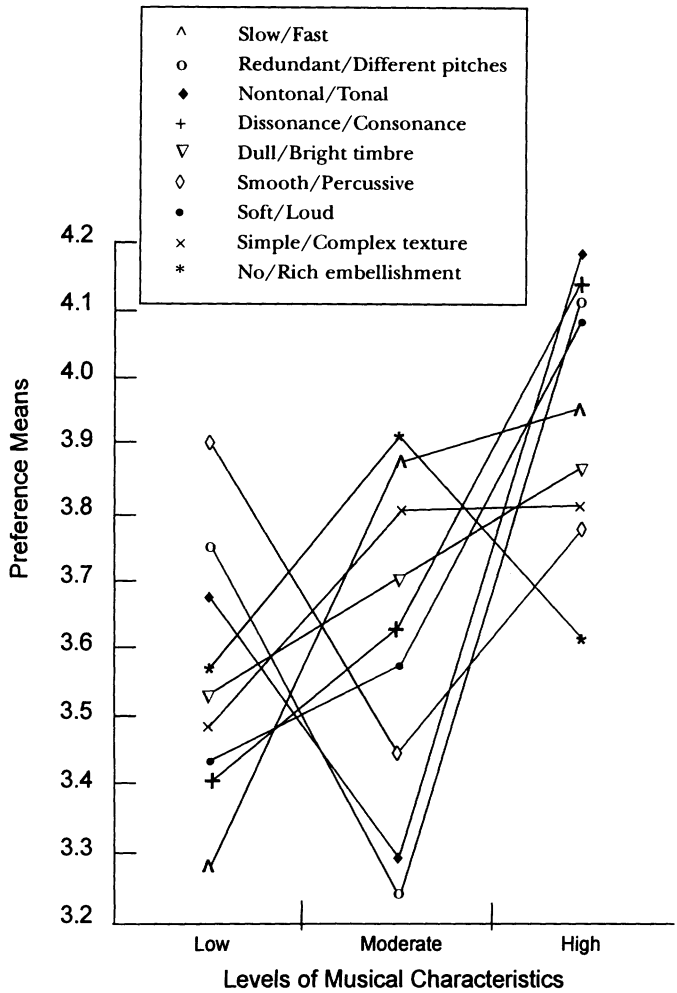

Figure 1. Preference means by levels of musical characteristics.

trends can be observed: (1) mean preferences increased significantly across the low to the high levels in slow/fast, dissonance/consonance, dull/bright timbre, soft/loud, and simple/complex texture scales; (2) a U-shaped relationship with preference (i.e., preference for the extremes) is found for redundant/different pitches, nontonal/tonal-centered, and smooth/percussive scales; and (3) an inverted-U relationship is found between preference and the little or no embellishment/rich embellishment scale (i.e., preference for the moderately embellished excerpts).

While Figure 1 shows the trends of the entire sample ($N = 449$), a different picture emerged when musician/nonmusician characteris-

tics were in interaction with the levels of eight musical characteristics. This was the case for all scales except for the little or no embellishment/rich embellishment scale. Table 4 also presents the preference means broken down according to musical characteristic and the musician/nonmusician subgroups.

Although both musicians and nonmusicians showed a trend of increasing preference means as the level of tempo became faster, the increase (particularly between low and moderate) for nonmusicians was greater than that for musicians. Significant interaction effects were identified in the low and moderate comparison ($p < .01$) and in the low and high comparison ($p < .05$). This indicated that difference in tempo was a more significant factor in nonmusicians' world music preference ratings than for musicians.

Although both musicians and nonmusicians preferred world musical excerpts with greater differences in pitch, this was more the case for nonmusicians than for musicians. Interaction effects were significant in all comparisons for the redundant/different pitches scale. The interaction effect in the low and moderate comparison was significant at .01 level, the interaction effect in the moderate and high comparison was significant at .0001 level, and the interaction effect in the low and high comparison was significant at .05 level. In addition, the highest preference mean for nonmusicians (different pitches) was identical to the lowest preference mean for musicians (moderately redundant pitches).

The results for the nontonal/tonal centered scale presented a very similar case to that presented by the redundant/different pitches scale. Again, a U-shaped relationship was found for both groups; the degree of rise and fall in the curve for nonmusicians was greater than for musicians. The interaction effect in the low and moderate comparison was significant at .01 level, the interaction effect in the moderate and high comparison was significant at .0001 level, and the interaction effect in the low and high comparison was significant at .05 level. In addition, the highest preference mean for nonmusicians (tonal-centered) was very close to the lowest preference mean for musicians (moderately tonal-centered).

Concerning consonance, both musicians and nonmusicians showed higher preference means when the excerpts were more consonant. Significant interaction effects occurred only in the comparisons between the moderate and high levels ($p < .01$) and between the low and high levels ($p < .01$). In both cases, the nonmusician sample showed a larger increase in preference means as the excerpts were more consonant.

Preference means were higher for both musician/nonmusician groups as the timbre of the excerpts was brighter. As with the dissonant/consonant scale, significant interaction effects occurred only in the comparisons between the moderate and high levels ($p < .01$) and between the low and high levels ($p < .01$). In addition, nonmusicians also showed a significantly greater increase in preference means in both cases. As for the slow/fast variable, timbre apparently was a

Table 5
MANOVA Results of Composite Preferences by Musician/Nonmusician

Source	Wilks	*df*	*F*	*p*
Musician/nonmusician	.753	9, 439	16.036	< .001

Univariate *F*-tests with *df* (1, 447)

Source	SS (between)	SS (error)	*F*	*p*	r^2
Congo	69.342	610.005	50.813	< .001	.10
Malawi	115.408	702.022	73.484	< .001	.14
Nigeria	75.714	734.491	46.078	< .001	.09
China	72.906	631.362	51.617	< .001	.10
Japan	137.818	552.035	111.596	< .001	.20
Korea	79.511	502.166	70.776	< .001	.14
Cuba	68.804	674.563	45.593	< .001	.09
Mexico	1.381	845.457	.730	N.S.	
Peru	64.906	536.665	54.061	< .001	.11

greater factor in preference ratings of nonmusicians than those of musicians.

In the U-shaped trend of the smooth/percussive scale, results showed that nonmusicians preferred smooth excerpts over the percussive ones, while musicians preferred the extremes (smooth and percussive) at about the same level. Significant interaction effects only occurred between the low and moderate comparison ($p < .0001$) and the low and high comparison ($p < .05$). Again, the changes according to level for nonmusicians were greater than those for musicians.

Results also showed that both groups had a higher preference for louder excerpts. As a parallel to the other musical characteristics, the changes according to level in the nonmusician sample were significantly greater than those for the musician sample. Significant interaction effects were found in the comparisons between the moderate and high levels ($p < .0001$) and the low and high levels ($p < .0001$).

The simple/complex texture scale was unique in that a different trend was found for the two samples. Musicians showed a consistently rising trend from the simplest excerpts to the most complex excerpts. For nonmusicians, the increase of preference means from simple to moderate texture was greater than for musicians, and the preference means became slightly declined from the moderate to complex levels, while the musicians continued to increase their preference ratings. Interactions for musician/nonmusician and the low and moderate levels and the moderate and high levels were significant ($p < .01$).

To compare the preference ratings between the two subject groups (musicians and nonmusicians) by country category, a multivariate

analysis of variance (MANOVA) was computed. Table 5 shows the MANOVA results of composite preferences for excerpts from the nine countries. The multivariate and univariate results were significant at .001 level except for the composite preference for Mexican excerpts, which was nonsignificant. Musicians had consistently higher preference means than did nonmusicians across all musical styles. Again, all standard deviations were within a reasonably narrow range (SD = .96 to 1.39) (see Table 6). Table 6 also shows that both subject groups had the highest mean preference ratings for the Mexican excerpts and the lowest mean preference ratings for the Japanese and Korean excerpts. Where significant differences occurred, the variable of musician/nonmusician explained 9% (Nigerian and Cuban excerpts) to 20% (Japanese excerpts) of variance in preference.

Pearson product-moment correlations between world music preference and familiarity were computed. Based on the ratings of four excerpts within each country category, composite preference and familiarity ratings were used. The last column in Table 6 shows the correlation coefficients between preference and familiarity. All correlations were significant at .01 level. The coefficients were, from the lowest to the highest, .38 (Korea), .41 (Mexico), .44 (Japan), .45 (Congo and Peru), .46 (China), .47 (Cuba), .48 (Malawi), and .49 (Nigeria). With the composite of all categories (36 excerpts), the correlation between preference and familiarity was .47. Thus, there was a significant correlation between preference and familiarity ratings for all world music categories, and approximately 14% to 24% of the variance in preference was explained by familiarity. The familiarity variable for Asian excerpts tended to explain less variance in preference, while familiarity for African excerpts tended to explain relatively more variance in preference.

DISCUSSION

Results showed that musical characteristics, musical training (musicians versus nonmusicians), and familiarity were significant factors in world music preferences. Results also showed that, for each musical characteristic, mean differences among low, moderate, and high levels were significantly different except for that between moderately complex and complex texture and between little or no embellishment and rich embellishment. Therefore, musical characteristics were important in predicting preference across the musical excerpts. The profile of musical characteristics that the entire sample preferred most included fast tempo, loud, tonal-centered, many different pitches, consonant, moderately embellished, smooth sounding, moderate or complex texture, and bright timbre.

As a parallel to the results of literature concerning both Western music preference (e.g., LeBlanc, 1981) and world music preferences (e.g., Fung, 1992), both musicians and nonmusicians preferred faster excerpts in the present study. However, there was a greater increase in preference means between the slow and the moderate excerpts than

Table 6
Descriptive Statistics for Preference by Country and Regional Categories

Combined categories	Number of items	Musicians (n = 180)			Nonmusicians (n = 269)			Combined (N = 449)			
		Mean (*SD*)	Skew.	Kurt.	Mean (*SD*)	Skew.	Kurt.	Mean (*SD*)	Skew.	Kurt.	r*
Congo	4	4.29 (1.25)	-.04	-.40	3.49 (1.11)	.10	-.57	3.81 (1.23)	.14	-.43	.45
Malawi	4	4.10 (1.38)	.04	-.47	3.06 (1.16)	.38	-.18	3.48 (1.35)	.35	-.34	.48
Nigeria	4	4.48 (1.36)	-.21	-.39	3.64 (1.23)	.21	-.53	3.97 (1.35)	.10	-.59	.49
China	4	4.20 (1.25)	.01	.33	3.37 (1.15)	.16	-.55	3.70 (1.25)	.16	-.42	.46
Japan	4	3.65 (1.25)	.39	-.13	2.52 (1.01)	.55	-.44	2.97 (1.24)	.61	.03	.44
Korea	4	3.52 (1.19)	.22	-.13	2.66 (0.96)	.65	.65	3.01 (1.14)	.56	.06	.38
Cuba	4	4.13 (1.34)	-.13	-.52	3.34 (1.15)	.29	-.35	3.66 (1.29)	.20	-.52	.47
Mexico	4	4.68 (1.36)	-.29	-.71	4.57 (1.39)	-.37	-.45	4.61 (1.38)	-.34	-.54	.41
Peru	4	4.56 (1.06)	-.09	-.21	3.78 (1.12)	-.12	-.71	4.09 (1.16)	-.13	-.44	.45
Africa	12	4.29 (1.26)	-.08	-.33	3.40 (1.07)	.17	-.42	3.76 (1.23)	.21	-.35	.50
Asia	12	3.79 (1.09)	.31	.08	2.85 (0.89)	.29	-.17	3.23 (1.08)	.47	.21	.45
Latin America	12	4.46 (0.98)	-.21	.11	3.90 (0.97)	-.22	-.55	4.12 (1.01)	-.17	-.25	.47
World	36	4.18 (1.01)	-.03	.07	3.38 (0.86)	-.08	-.56	3.70 (1.00)	.13	-.09	.47

* Pearson product-moment correlations between preference and familiarity ratings. All coefficients $p < .01$.

between the moderate and fast excerpts. This indicated that there may be an optimal level of tempo increase in relation to preference ratings.

Loudness level was another significant musical characteristic. Subjects liked louder excerpts. This seems to contrast with results for pure tone preferences (Hedden, 1974; Martindale & Moore, 1990) in which softer tones were preferred. Listeners may not prefer louder dynamic levels in relatively simpler musical stimuli. In contrast, for music with new, unfamiliar, and perhaps greater amounts of information (world musics), listeners may prefer louder dynamics.

Whether the excerpts were tonal or nontonal also played an important role in subjects' preference ratings. Although the trend was U-shaped in relation to preference ratings, the tonal excerpts received the highest preference mean among all musical characteristics at any level. The moderately tonal excerpts received the lowest preference mean. The preference mean for excerpts categorized as nontonal was in between the two other levels (moderately tonal and tonal). The moderately tonal excerpts seemed to have ambiguous pitch information. In cases where the excerpts were nontonal, non–pitch-related music such as untuned drumming was usually featured. The results suggest that subjects may prefer excerpts with clear tonal patterns. A previous study (Fung, 1992) indicated a significant linear correlation between nontonal/tonal and world music preferences of graduate music students, with 18% of the variance in preference explained by the tonal characteristic. This discrepancy (U-shaped versus linear relationships) may be due to the use of different samples of musics and/or different samples of subjects (graduate students versus undergraduate students).

Similar to the tonal/nontonal characteristics, the relationship between pitch redundancy and preference was U-shaped. Listeners preferred excerpts that had many different pitches, followed by excerpts that were highly redundant in pitch, and the moderate level of pitch redundancy was the least preferred. This result was in contrast to McMullen's (1974) study with objectively defined melodic redundancy. McMullen found that low or intermediate levels of redundancy were preferred over a high redundancy level and that pentatonic and diatonic melodies were preferred over chromatic melodies. The discrepancy in results may be due to one or more of the following reasons: (1) a difference between McMullen's objective definition of redundancy and the present study's use of perceptual judgments of redundancy, (2) the age difference in the samples (4th- to 12th-graders versus college students), and (3) a difference in the sample of musical styles (McMullen's original melodies versus commercial recordings of world musics in this study).

Consonance was another important musical characteristic in that there was a linear relationship between consonance and preference. These results paralleled those of Gibson (1987) and Fung (1992), but were in contrast to those of Martindale and Moore (1990). Although Gibson's (1987) and Martindale and Moore's (1990) studies used electronic tones, subjects in Gibson's study did not provide a rating for

consonance, whereas subjects in Martindale and Moore's study provided ratings for both preference and consonance. The present results also parallel those of Fung (1992), in which world music styles were used and a significant linear correlation between preference and consonance was found. It seems that more consonant excerpts may be preferred over the more dissonant ones regardless of electronic tones versus world musics.

Level of embellishment was the only musical characteristic that had an inverted-U relationship with preference in this study. Subjects liked excerpts with moderate levels of embellishment the most. Excerpts with little or no embellishment and excerpts with rich embellishment were least preferred, and the preference means were not significantly different at the two extreme levels of embellishment. The results for degree of embellishment may be related to Walker's (1981) theory of psychological complexity and preference. This may be in line with the results for complexity in Steck and Machotka's (1975) study in which complexity level was defined as the inverse of duration of tones: more complex excerpts had shorter tone durations. When complexity is defined in relation to embellishment, results for excerpts in this study reflect a complete inverted-U relationship with preference.

With a few exceptions, the magnitude of all significant effects of musical characteristics was generally greater for nonmusicians than for musicians. This suggests that musicians may perceive world musics as one large category of music. Individual musical characteristics have somewhat less influence in the preferences of musicians than in the preferences of nonmusicians. Madsen and Geringer (1990) found that, while listening to Western orchestral music, musicians were significantly more attentive to "everything" (combining rhythm, dynamics, timbre, and melody) than were nonmusicians. In addition, musicians significantly focused more on rhythm and melody, while nonmusicians significantly focused more on dynamics and timbre. This difference in the focus of attention between musicians and nonmusicians may have affected the differences in preference responses between the two groups in the present study.

When musicians and nonmusicians were compared, there were significant differences in preference ratings and responses to different levels of musical characteristics. Musicians had significantly higher preference ratings than did nonmusicians. Even for musicians, mean preference ratings indicated only moderate levels of preference.

When the musical styles were examined at the level of country, both musicians and nonmusicians had identical rank orders of preferences for the first seven of nine country styles. The rank order of preference means for the first seven country styles were as follows: Mexico, Peru, Nigeria, Congo, China, Cuba, and Malawi. The order of the last two were reversed among musicians and nonmusicians: Japan followed by Korea for musicians, and Korea followed by Japan for nonmusicians. Results corroborated previous work in world music preferences (Fung, 1992, 1994) in that Korean musical excerpts were preferred least. Korean music might require a longer period of listening or exposure

in order to gain higher preference ratings. When examining Korean excerpts in relation to the musical characteristic ratings, these excerpts were generally slow, redundant in pitch, nontonal to moderately tonal, moderately consonant, moderately dull in timbre, moderately percussive, soft, simple in texture, and had little or no embellishment. In contrast, the most preferred excerpts were Mexican excerpts, which tended to be characterized as moderate to fast in tempo, having many different pitches, highly tonal, very consonant, bright in timbre, smooth-sounding, loud, and moderately complex in texture.

When country categories were combined within a region, the rank order of preference means was Latin America, Africa, and Asia. This order of preference was identical for both the musician and nonmusician samples. Due to the cultural and musical influences of the Western world, Latin American musical excerpts received the highest ratings for familiarity and preference. These excerpts tended to emphasize some characteristics that are common to Western music (e.g., tonal, consonant, and having many different pitches). African music, however, possessed some rhythmic characteristics that have influenced Western music. These characteristics include syncopation, complex rhythmic overlay, and percussive sound. Indigenous Asian music has had relatively little influence on Western music, and there are relatively few common characteristics between Asian music and Western music. It is also speculated that this rank order (Latin American, African, and Asian) reflects students' preferences for musical styles from closer geographic regions. Considering the United States as the center, a series of concentric circles may be seen expanding from the center to include further geographic regions. A world music curriculum might begin with the identification of the learner's culture by the student, and then expand to include other cultures and eventually include music from many cultures around the globe. This is rather different from some researchers who have suggested the inclusion of a palette of musical cultures through musical aesthetics, comprehensive musicianship, and creativity approaches (Campbell, 1991; Elliot, 1989, 1990; Standifer, 1990). The question of whether the music itself (e.g., rhythm, tonality) or the cultural origin of the music (e.g., African, Asian) plays a more important role in music preference, perception, and learning is unanswered in this study.

Nevertheless, some practical implications could be drawn for music educators. Music educators could apply results of this study to the presentation of short world music excerpts for listening in music classrooms. When identifying pieces for listening, music teachers would be well-advised to consider musical characteristics present in the pieces they select for college students (both music majors and nonmusic majors). Musical characteristics that were most related to higher preferences included fast, loud, tonal-centered, having many different pitches, consonant, moderately embellished, smooth sounding, moderate or complex in texture, and bright timbre. At least for early listening experiences in world musical styles for college listeners, teach-

ers might select pieces that have these musical characteristics. When college teachers select a musical style among all world music styles for the beginning portion of a curriculum, teachers might select the styles with which their students (mostly European/White) feel closest culturally, such as Latin American styles rather than Asian styles. Teachers may also need to take into account the geographic regions of the music classrooms. It may also be speculated that many Latin American styles reflect some of the most preferred musical characteristics (e.g., tonal, having many different pitches, consonant, and relatively fast).

Familiarity has consistently been a significant factor across studies of music preference representing a range of musical styles. With this in mind, teachers can expand and increase students' preferences by instruction, exposure, or other means that allow students to become more familiar with the musics. The familiarity issue complements the issue of concentric circles. Using the concentric-circle idea described earlier, teachers who are introducing world musics might start with the musical styles with which students are most familiar, and then gradually introduce musical styles from more distant geographic and cultural sources.

Another important practical implication of this study is that teachers need to be aware of the background characteristics of students, particularly their musical training. Teachers who teach world music classes for nonmusicians might choose pieces with careful consideration of musical characteristics, because levels of changes in musical characteristics seem to play a greater role in nonmusicians' preferences. Furthermore, for musicians, world music pieces with higher levels of textural complexity can be presented.

Several directions for further research can be identified. First, future research should expand the sample of world musics. Only instrumental excerpts were used in this study, and these came from only nine countries. Vocal excerpts and excerpts beyond the nine countries should be considered. Other populations such as children and students at different levels should also be included in future research. Second, since this study found that musics from various cultures had different preference ratings, it would be helpful to determine the extent to which cultural sources of musics affect preference. Third, cross-cultural studies are warranted. Campbell (1993) conducted a case study with Indochinese students. However, to date, there has not been a comprehensive study to examine responses of listeners of various cultures. Cultural differences of listeners may interact with the cultural sources of music, and the interaction may vary by cultural group. Fourth, further research is necessary to determine whether results of preference studies are generalizable for longer excerpts, including complete pieces.

The inclusion of world musics in the classroom is imperative. In recent years, some music educators have made a special effort to establish curricular foundations in this area. There is a strong desire to involve a broad range of individuals in the process, including music education researchers and practitioners, ethnomusicologists, and psy-

chologists. Research in world musics and their application to classroom settings will continue to have important implications for music educators. In our increasingly culturally diverse American society, such research results will ultimately enrich education from social, musical, and global perspectives.

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