

The purpose of this study was to examine the effects of school enrollment, distance to audition site, sex of auditionees, and instrument type on the results of the 1992-97 South Dakota all-state band auditions. Results include the following: (1) total audition scores were better for students from larger schools and for those who traveled a shorter distance to the audition; (2) female students' scores were significantly better than those of male students, but there was no significant difference in the percentages of successful auditions between males and females; (3) scores differed significantly between instrument groups, with flutes and double reeds receiving the best scores, followed by saxophones, trumpets and French horns, low brass and string basses, and clarinets; and (4) the variables of distance to audition site, instrument group, and sex accounted for 11% of the variance in total audition scores.

Joelle L. Lien and Jere T. Humphreys
Arizona State University

Relationships among Selected Variables in the South Dakota All-State Band Auditions

Large numbers of American high school music students strive each year to attain the honor of membership in select all-state ensembles. The rigors of the audition process require that young musicians spend many hours in disciplined practice and preparation, that they receive adequate music instruction, and that they attain a certain level of performance presence. Such perseverance can lead to membership in an all-state ensemble, which is one of the highest honors high school music students can achieve. The rewards of all-state membership often include recruitment by college music departments, frequently with offers of music scholarships, making all-state membership a significant experience for many music students.

Because the atmosphere surrounding all-state auditions is often highly competitive, procedures are important. However, only a few

Joelle L. Lien is a doctoral candidate in music education and Jere T. Humphreys is a professor of music education in the School of Music, Arizona State University, Tempe, AZ 85287-0405. Their e-mail addresses are joelle.lien@asu.edu and jere.humphreys@asu.edu, respectively. Copyright © 2001 by MENC—The National Association for Music Education.

researchers have investigated all-state band audition procedures in recent years. Welker (1997) found that all 50 states select at least one all-state concert band, either at-large or with equal distributions by region. Twenty states use a multi-level audition procedure, whereas 30 select the band from one audition only. Most states use live auditions, but some use audition tapes in the selection process. Typically, all-state auditions require the performance of scales, prepared selections, and sight-reading material.

Elliot (1995a) reported that 29 of 46 states surveyed conduct seating auditions at the all-state rehearsal and performance site rather than at the all-state audition(s), and 12 states choose the all-state band with consideration for geographical representation, rather than "at large."

In an investigation of the 1994 Oklahoma all-state band auditions, Dugger (1997) determined the interjudge reliability of a panel of five judges who used an Olympic-style judging system. Saunders and Holahan (1997) investigated the suitability of criteria-specific rating scales in the 1994 Connecticut all-state band auditions. They determined that each of the five audition dimensions contributed substantially to the audition total score: tone, technique/articulation, rhythmic accuracy, interpretation, and sight-reading interpretation.

In addition to the scant literature dealing specifically with all-state band auditions, research has been done on the evaluation of music performance in various settings. Several researchers have developed rating scales for music performance evaluation (Abels, 1973; Azzara, 1993; Bergee, 1992; Cooksey, 1977; Mills, 1987; Rutkowski, 1990). Others have investigated the effects of various factors on judge reliability in the evaluation of music performances (Ekholm, 1997; Fiske, 1975, 1977).

DeCarbo, Fiese, and Boyle (1990) described the personal, educational, and musical backgrounds of Florida all-state band, orchestra, and jazz ensemble members. They found that a majority of students in the all-state ensembles studied privately, and 85% of all members came from large or small cities, rather than towns. A majority of the Florida all-state members were female, and a noticeable imbalance was reported between males and females depending upon instrument group.

Finally, several researchers have studied the effects of physical attributes on performance ratings. Elliott (1995b) investigated the effect of race and gender on judgments of identical student performances, and Lafferty (1997) evaluated the visual effects of embouchure variations on the evaluation of clarinet players. Wapnick, Darrow, Kovacs, and Dalrymple (1997) studied the effects of physical attractiveness on the evaluation of vocal performances, and Wapnick, Mazza, and Darrow (1998) investigated the effects of performer attractiveness, stage behavior, and dress on the evaluation of violin performances. Results indicated that performance evaluations were significantly related to student appearance.

The purpose of this study was to investigate the effects of school

enrollment, distance to audition site, sex, and instrument type on the results of South Dakota's all-state band auditions over a 6-year period (1992-97). Aspects of the audition examined include overall score, subtest scale scores, and success or lack of success in the audition. The authors also sought to determine which variables were most predictive of the overall results of the auditions.

AUDITION PROCEDURES

Like select bands in the majority of other states (Elliott, 1995a; Welker, 1997), the South Dakota All-State Band was chosen at-large via live auditions during the years under study (D. Hegg, personal communication, November 6, 1997). In the performance portion of the audition, each student performed a prepared solo; chromatic, major, and minor scales; and sight-reading material. Unlike most other states (Elliott, 1995a), only a single adjudicator and the contestant were present at the South Dakota auditions, and the contestant did not perform behind a screen.

Students in grades 9-12 auditioned for the all-state band at assigned audition sites. The sites, which numbered from six to eight depending on the year, were located throughout the state to balance the number of students auditioning at each site, not as a means of choosing the band based on geographical quotas. The same five judges traveled to all audition sites so that a single judge evaluated all auditions on a given instrument in a given year. In fact, for all 6 years included in this study, the five individuals judged at all audition sites for the same respective instrument sections (D. Hegg, personal communication, November 6, 1997). In addition to the performance portion of the audition, the auditions completed a written examination on key signatures and music terminology.

At least 165 students were chosen for the South Dakota All-State Band each year, which is more than the national average of 117 (Welker, 1997). In the event of ties on cutoff scores, more than 165 students were admitted to the band. Regardless, the intended instrumentation of the band was as follows: 18 flutes, 4 oboes, 4 bassoons, 40 B-flat clarinets, 6 alto clarinets, 6 bass clarinets, 2 contrabass clarinets, 6 alto saxophones, 4 tenor saxophones, 2 baritone saxophones, 16 trumpets, 12 French horns, 12 trombones, 10 baritone/euphoniums, 10 tubas, 10 percussion, and 3 string basses (South Dakota High School Activities Association, 1996).

Auditionees received a score for each of the 11 dimensions of their auditions: scale technique; solo interpretation; solo technique; solo articulation; overall tone quality; overall intonation; overall musicianship; sight-reading note accuracy; sight-reading rhythm accuracy; sight-reading articulation accuracy; and terminology test. A 10-point scale was used for each dimension, with a score of 1 representing the best possible mark and a score of 10 representing the lowest mark (South Dakota High School Activities Association, 1996). Scale technique, solo (technique, interpretation, and articulation), and gener-

al captions (tone quality, intonation, and musicality) were evaluated by the judges. Sight-reading scores were derived by counting the number of measures in which note, rhythm, or articulation errors occurred. One-half point was deducted for each measure in which at least one mistake was made. Students with no mistakes on the 50-question terminology test earned a perfect score for that portion of the audition; one-half point was deducted for each incorrect answer (South Dakota High School Activities Association, 1996).

METHOD

The authors examined audition data for the South Dakota All-State Band from 1992-97. The annual number of wind instrument auditionees ranged from 675 to 845, for a total of 4,639 over the six years. Percussion scores were excluded from the study because the scoring system for percussion was inconsistent between years.

To avoid interpretation problems associated with extremely large samples, and because some statisticians caution against applying inferential statistical tests to population data (Babbie, 1990), a stratified (by year) random sample of 5% of the population was selected for analysis ($N = 232$).

For this analysis, instruments were grouped as follows: flutes and double reeds [oboes, bassoons] ($n = 48$), clarinets [soprano, alto, bass, contrabass] ($n = 58$), saxophones [alto, tenor, baritone] ($n = 36$), trumpets and French horns ($n = 52$), and low brass [trombones, euphoniums, tubas] and string basses, ($n = 38$). The percentage of the total number sampled from each of the five instrument groups was virtually identical to the respective percentages in the original population ($\chi^2 = .10$, $df = 4$, $p < .99$).

The original data set included names of auditionees for only the first 3 of the 6 years. The sex of the auditionees was determined from the "given" names of the students as they appeared on the audition forms. When an auditionee's sex could not be determined from the name, band directors were asked to provide that information.

Distance to the audition site was determined by calculating city-to-city mileage from each school to that school's audition site (GeoSystems, 1996-1997). Mileage was calculated from each school's regularly assigned site, except in cases in which a student auditioned at an alternate site due to schedule conflict or illness. In these cases, mileage amounts were calculated to the actual site, rather than the students' regularly assigned audition site. Students whose schools were located in the city of an audition site were assigned a mileage figure of zero.

To standardize enrollment figures that may have been confounded in districts with junior high schools and 3-year high schools, school enrollment figures were based on the mean enrollment per grade, calculated by dividing the total official school enrollment (South Dakota High School Activities Association, 1996) by the number of grade levels in the school. Success or lack of success in the

audition was defined as whether or not the student was chosen for the band.

RESULTS

In the sample of 232 auditionees, there were 83 females and 39 males. The sex of the remaining 110 subjects in the sample was undetermined because of incomplete data. Consequently, for all analyses involving the sex variable, the sample size was reduced to 122.

Forty-nine students were successful in their auditions and 183 were unsuccessful. The total scores ranged from 12 to 44 for successful auditionees and from 17 to 75 for unsuccessful auditionees, with low scores representing the better ratings.

We calculated percentages of successful auditions based on the variables of sex and instrument group. Chi-square analyses indicated that the difference in audition success between males and females was not significant ($\chi^2 = .09$, $df = 1$, $p < .77$).

An independent t-test revealed that students chosen for the band ($M = 23.14$, $SD = 30.86$) traveled a significantly shorter distance than those who were not chosen ($M = 36.32$, $SD = 36.65$) ($t = 2.31$, $df = 230$, $p < .02$). On the other hand, the difference in enrollment per grade between the successful group ($M = 228.41$, $SD = 177.22$) and the unsuccessful group ($M = 177.23$, $SD = 168.40$) was not significant ($t = 1.87$, $df = 230$, $p < .06$).

Correlations between enrollment, mileage, sex, and instrument group revealed a significant negative correlation between enrollment and mileage to audition site ($r = -.66$, $p < .05$). Other significant correlations ($p < .05$) were found between enrollment and total score ($r = -.15$), mileage and total score ($r = .22$), and sex and instrument group ($r = .57$).

Females scored significantly better than males ($t = 2.28$, $df = 120$, $p < .03$). Similarly, there were significant differences in the scores between instrument groups (ANOVA $F = 7.89$, $df = 4$, $p < .01$). The lowest (best) scores were those of the flutes and double reeds ($M = 30.67$, $SD = 11.64$), followed by the saxophones ($M = 37.88$, $SD = 15.77$), trumpets and French horns ($M = 38$, $SD = 13.30$), low brass and string basses ($M = 41.70$, $SD = 15.38$), and clarinets ($M = 44.84$, $SD = 11.84$). The only pairs of groups that did not differ significantly were the saxophones and trumpets/French horns (Fisher LSD post hoc, $p < .05$). A two-way chi-square analysis revealed significant differences in instrument family group total audition scores between males and females in favor of females ($\chi^2 = 43.02$, $df = 4$, $p < .01$).

To examine the effects of various factors on the all-state audition results, we used multiple regression analysis with the variables of mileage, instrument group, and sex as predictors of total score. The enrollment variable was not included because of its high intercorrelation with mileage ($r = -.66$, $p < .02$). This model accounts for approximately 11% of the variance in total audition scores (Table 1).

Table 1
Stepwise Multiple Regression for Prediction of Total Score from Mileage to Audition Site,
Instrument Group, and Sex ($N = 122$)

Step	Variable	R	R ²	R ² change	F
1	Mileage	.25	.06	—	8.68*
2	Instrument group	.31	.10	.04	6.37*
3	Sex	.33	.11	.01	4.82*

* $p < .05$

Correlations between all individual audition elements, including total score, revealed significant positive correlations except between solo technique and sight-reading articulation accuracy (Table 2). Interestingly, comparisons between enrollment and each of the 11 audition dimensions revealed the strongest significant correlations ($p < .05$) between enrollment and tone ($r = -.21$) and between enrollment and scale technique ($r = -.21$). Significant positive correlations were found between each of the audition elements and total score, with r values ranging from .61 (solo technique) to .82 (overall musicianship).

DISCUSSION

Because the South Dakota all-state band auditions are held in the state's largest cities, a high intercorrelation exists between school enrollment and mileage traveled to the all-state audition site. The correlations between both variables with both total score and success on the all-state band audition do not explain why students from large schools receive higher marks, but they suggest relationships that may warrant further attention.

There may be several factors involved in the score differences between students from small schools versus those from large schools. For example, there are often more opportunities for private study in larger communities (DeCarbo, Fiese, & Boyle, 1990), and students in large schools may be more likely to specialize in music and, therefore, to devote more time to private practice in preparation for an all-state audition.

In addition, students who have the opportunity to perform in their own schools may simply feel more comfortable at their auditions than those who must perform at an unfamiliar site. In other words, the "home court advantage" may be a factor that deserves more

Table 2
Pearson Correlation Matrix of Student Audition Scores (N = 232); S-R = Sight-Reading

Performance dimension	1	2	3	4	5	6	7
1. Scale technique	—						
2. Solo interpretation	.71	—					
3. Solo technique	.67	.76	—				
4. Solo articulation	.64	.84	.76	—			
5. Overall tone quality	.72	.70	.68	.69	—		
6. Overall intonation	.58	.69	.72	.72	.69	—	
7. Overall musicianship	.65	.82	.70	.78	.63	.77	—
8. S-R note accuracy	.52	.43	.40	.43	.46	.49	.52
9. S-R rhythm accuracy	.41	.30	.22	.29	.28	.37	.44
10. S-R articulation accuracy	.25	.23	.11	.27	.14	.36	.36
11. Terminology test	.45	.43	.34	.35	.42	.35	.38
Total score	.78	.77	.68	.75	.71	.76	.82
Performance dimension	8	9	10	11			
8. S-R note accuracy	—						
9. S-R rhythm accuracy	.67	.64	—				
11. Terminology test	.40	.30	.24	—			
Total score	.78	.71	.61	.62			

Note. All coefficients are significant at $p < .05$ or lower except for solo technique/S-R articulation accuracy.

attention. Another possible explanation is that large districts may be more likely than small districts to hire experienced band directors who are better able to prepare students for the audition process than are directors with less experience.

Large schools may also have larger pools of talented students. To test this hypothesis, we divided the number of students who auditioned from each school in a given year by the enrollment per grade. The correlation between this variable and enrollment per grade ($r = -.46, p < .05$) reveals that a significantly larger percentage of the student population from small schools participated in the all-state auditions than that from large schools. Assuming that the "talent pool" consists of a similar percentage of the school population no matter what the enrollment, smaller schools should have a larger percentage of unsuccessful auditions than large schools. This phenomenon may provide one explanation for the significant correlation between the scores and enrollment in this study.

Female students received better scores on their auditions than did male students, but females were no more successful in being chosen for the all-state band than males. Similarly, results from a descriptive study of all-state instrumentalists in Florida revealed that females and males were equally represented in four of five all-state concert bands (DeCarbo, Fiese, & Boyle, 1990).

Because each instrument section had different "cutoff scores" for membership, female-dominated sections may have been held to a higher standard than male-dominated sections in the South Dakota band. For example, in 1997, a score of 19 was not good enough to earn a chair in the flute section, but a tuba player who scored 34.5 was chosen for the band. This phenomenon explains why, although the mean scores for females were better than scores for males, both sexes were equally successful (and unsuccessful) in the audition.

Another factor that must be considered when making comparisons between instrument groups is the size of each section in the band. There were approximately 40 B-flat clarinets but only 18 flutes chosen for South Dakota's all-state band each year (South Dakota High School Activities Association, 1996). Therefore, in 1993, a clarinetist who scored 44 earned a chair in the clarinet section, yet a flute player with a score of 19 was not successful. Because of the inconsistency in score requirements for band membership between sections, it may be argued that only total score should be examined.

However, it is the ultimate success or lack of success in the audition process that determines who is chosen for the band and who receives the rewards that can result from all-state band membership. Finally, because the South Dakota auditions are not screened, the possibility that visual effects may play a role in the judging process should not be overlooked (Elliot, 1995b; Lafferty, 1997; Wapnick, Darrow, Kovacs, & Dalrymple, 1997; Wapnick, Mazza, & Darrow, 1998). It is possible that judges are influenced by appearance related factors such as student attractiveness, embouchure, or stage presence.

Because membership in an all-state band can play such an important role in the musical experiences of high school students, the audition process deserves more attention. Further study is recommended to examine the effect of instrument group, school enrollment, and distance to audition site on all-state band audition out-