



Self-Reported Student Vocal Use at a High School Summer Choral Camp

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Abstract

The purpose of this study was to investigate self-reported vocal health of high school choral students electing to participate in a summer choral camp. Choral participants (N=141) were surveyed prior to beginning camp activities, and then surveyed at the end of the rather intense week of choral singing, to gauge any changes they might perceive in their voices. Amount of sleep was observed, with little change during camp week. Vocal problems, however, were reported significantly more after the intense week of singing than at the beginning. Twelve vocal health items were surveyed and six significantly increased after one week of intense singing: hoarseness, tiredness, dryness, throat pain when singing, straining to sing, and more effort needed to sing or talk. There were no significant differences between reported ability to sing loud/soft, high/low, throat clearing mannerisms, or taking appropriate care of the voice. Results indicated students lack knowledge of the voice and its necessary care, since vocally the self-reports suggested students were significantly less healthy, but also believed they were taking good care of their voices.

Summer music camps offer an array of concentrated learning opportunities not typically possible during a regular academic year. Choral music camps, in particular, may include daily singing in large choruses, elective participation in small vocal ensembles, classes in such areas as music theory and sight-singing, private voice lessons, and a host of recreational and social events. The potential impact of a music camp

experience on the vocal health of adolescent student singers, however, remains largely unexamined.

A growing body of research has focused on occupational voice health and voice use problems among teachers (e.g., Askren, 2001; Bernstorff & Burk, 1996; Gotaas & Starr, 1993; Hendry, 2001; Kramer, 1994; Mattiske, et al., 1998; Morton & Watson, 1998; Rantala & Vilkmann, 1999; Roy, et al., 2004; Russell, et al., 1998; Sapir, et al., 1993; Schwartz, 2006; Simberg, et al., 2005; Smith, et al., 1997; Sodersten, et al., 2002; Thomas, et al., 2007; Thibeault, et al., 2004; Yiu, 2002). Overall, such investigations have found that teachers in general, and some groups of music teachers in particular, may experience an array of voice problems, ranging from voice fatigue to dysphonia, associated with day in, day out voice use in classroom teaching.

Roy, et al. (2004), for example, reported teachers were more likely than other professionals to contemplate career change because of voice problems. Simberg, et al. (2005), found an apparent increase in the prevalence of vocal symptoms among teachers surveyed across a twelve-year period.

With respect to music teachers, Bernsdorf & Burk (1996) found that elementary music instructors participating in their study typically encountered voice problems primarily because of job expectations and teaching environments contributing to misuse or overuse of their voices. In an investigation of burnout and self-reported vocal health among music teachers and other educators (N=53), Hendry (2001) found a significant majority of vocal music teacher participants and almost half of instrumental

music teacher participants reported voice problems. However, the highest frequency of self-reported voice problems occurred among non-music teachers participating in the study.

Schwartz (2006) examined the vocal health of selected middle-school and high school choral music teachers ($N=51$). Overall findings indicated reduction in the phonation capacities of these choral teachers, particularly in terms of measurements of frequency and intensity, when compared to results of similar studies conducted with participants from the general population. Schwartz, moreover, found that choral directors participating in her study did not realize they had vocal problems.

Other studies have looked at groups of university students, including pre-service music teachers and choral singers, with respect to voice health and particular self-reported symptoms of potential voice problems (e.g., Hackworth, 2006; Sapir, 1996; Schwartz, 2005; Simberg, et al., 2000; Simberg, et al., 2004). Sapir (1996), for example, found among 159 university students surveyed that singers were more likely than non-singers to report symptoms of potential voice problems. Hackworth (2006) surveyed 140 undergraduate music education majors from 5 universities about their perceptions of personal voice use and vocal hygiene once they graduated and began fulltime teaching. Among respondents, 91% believed that a voice disorder either would or might affect their careers.

One study (Scrimgeour & Meyer, 2002) examined the effectiveness of a hearing conservation and vocal hygiene program for kindergarten students ($N=66$). Results indicated significant increase in knowledge that potentially could prevent acquisition of inefficient voice habits in the future.

Although adolescence has been well documented as a time of demonstrable voice change and growth associated with the onset of puberty (e.g., Barressi & Bless, 1984; Cooksey, 2000; Cooksey, Beckett, & Wiseman, 1984; Gackle, 2000; Groom, 1984; Kahane, 1978), only one study to date has looked primarily at potential voice health problems among persons 25 years of age and younger, including adolescent choristers, who regularly sing in choirs. Deutsch, et al. (2002) surveyed singers ($N=129$) participating in youth choirs in the Wilmington, Delaware area with respect to self-reported vocal health, including particular voice habits and behaviors. Participants in this study reported voice problems at the time of the

survey, which included, in order of decreasing incidence, hoarseness (42.6%), fatigue (24.0%), change in voice range (19.4%), tickling or choking sensation (17%), volume disturbance (16.3%), and breathiness (15.5%).

Over a third of these singers (43%) felt they had to strain their voices when singing, while 31% reported a sensation of "over-singing" in choral rehearsals. Disaggregation of data indicated no significant differences in reported voice problems between those singers who had private voice lessons and participants who had never taken private voice lessons. Pubertal adolescents responding to this survey, moreover, reported a greater incidence of voice problems than pre-pubertal singers.

Our search of the literature revealed no investigation to date that focused upon potential issues of voice health among adolescent choristers participating in daily, intensive periods of rehearsing, singing instruction, and social activities such as may occur in week-long summer music camp experiences. That is, while potential voice health issues associated with teaching in general and choral music teaching in particular have been documented, potential voice health matters among adolescent singers with whom such teachers work appears to have been less examined, especially in educational contexts where there may be expectations for prolonged, intensive voice use by adolescent singers.

The purpose of this study was to examine student perceptions of their vocal health before and after an intense, though highly reinforcing, week of choral music rehearsals in a traditional choral summer camp.

To that end, the following research questions were designed for this investigation:

1. What are students' perceptions of their vocal health prior to and at the conclusion of a one week choral camp?
2. What might ex post facto analysis of camp rehearsal schedule suggest about the findings of student self reported vocal health?

METHOD

Participants

Participants for this study were students attending a long established summer choral camp at a major southeastern university for a one-week residential experience ($N=141$) among high school singers of similar commitment and

dedication. Recommended ages for participants included boys rising into the ninth grade and girls rising into the tenth grade, through grade 12, though several students attending were outside these parameters. Campers were residents of 12 states, though the majority resided within the home state and a neighboring state.

Survey

Students electing a summer choral camp were viewed as students strongly interested in singing, though to varying degrees, with expectations that some students would be highly interested, perhaps planning to major in music and pursue some form of musical career. Thus, the survey solicited information about current vocal health before and after the event, for comparison. Survey questions were drawn from reports of vocal study in the literature, such as Deutsch, et al. (2002). Students provided demographic information and then responded to questions using a 7-point Likert-type scale, indicating agreement or disagreement with each statement.

Procedure

Surveys were completed immediately after registration, during the camp orientation period. Student schedules for the following five days included a rather challenging daily schedule: vocal warm up (20 minutes), men's choir (50 minutes), women's choir (50 minutes), mixed choir (150 minutes), sight reading class (50 minutes), movement class (50 minutes), small ensembles (50 minutes), with optional electives in barbershop singing (60 minutes) and handbells (60 minutes). During the week, though not daily, were other vocal opportunities and responsibilities: one evening sectional rehearsal (90 minutes), one staging rehearsal of the choreographed finale (90 minutes), and for those 24 students selected by audition to work with the voice faculty, there were 30 additional minutes of coachings and an evening recital performance.

Posttest surveys were completed on Friday, before the two final concerts. Students completed a pretest survey on Sunday at orientation ($n=125$) and followed with a posttest survey completed on Friday, prior to the final Saturday morning final concert ($n=134$).

For the pretest, there were 84 girls and 41 boys responding ($n=125$) and for the posttest, 89 girls and 45 boys completed surveys ($n=134$). Both surveys were completed by 118 participants, with the remaining participants providing one response, but not both. Ordinal data were compared using the Mann-Whitney U Test and Chi Square was used for nominal data.

RESULTS

Camp participants were asked about adequate rest on the pre/post survey to determine if student camp schedule, combined with student self discipline levels might create differences in physical/vocal health due to lack of sleep. However, mean sleep hours for each previous night were pretest = 6.68 (prior to camp activities) and the posttest = 7.06 (after the more strenuous days but prior to concerts). Score ranges included pretest = 3 to 11 hours, and posttest = 3-9 hours per night.

Campers were also asked to respond YES/NO regarding any vocal difficulty at the beginning of camp, with free response opportunity to inform camp staff of any problems requiring special accommodation. The posttest survey also solicited this same information, and a pre/post comparison indicated a significant difference between those reporting vocal difficulty upon arrival and those who departed experiencing vocal difficulty [$\chi^2 (1, N=118) = 5.71, p, <.0169$].

Table 1 provides comparisons between responses to the 12 vocal health questions asked prior to camp rehearsal and again after camp concluded (except for two final concerts). Responses to six questions did not change across the week: those that asked about use of voice in high and low ranges, dynamic control, excessive throat clearing, and, self assessment of how well each had taken care of the voice throughout the week. The six topics that showed significant change included: *hoarseness*, $U (125, 134) = 8084.5, p <.0001$; *vocal tiredness*, $U (125, 134) = 11418.5, p <.0001$; *dryness*, $U (125, 134) = 10497.5, p <.0004$; *throat pain*, $U (125, 134) = 11157.5, p <.0001$; *straining to sing*, $U (125, 134) = 11288.0, p <.0001$; and, *effort to sing/breathiness*, $U (125, 134) = 10981.0, p <.0001$. Interestingly, camp participants reported significantly more vocal distress across the week, but indicated no difference in how they cared for their voices.

Table 1

Pre/Post Comparisons of Students' Self Reported Vocal Health

<i>Topic</i>	<i>Mean Rank Scores</i>		<i>z score</i>	<i>p</i>
	<i>Pre</i>	<i>Post</i>		
Today, I can comfortably sing the higher notes of my voice range (Q1)	132.3	124.5	0.48	.6312
Today, I can comfortably sing the lower notes of my voice range (Q2)	130.9	129.2	0.18	.8572
Today, I can sing softly without any difficulty (Q3)	138.4	122.2	1.74	.0819
Today, I can sing loudly without any difficulty (Q4)	136.3	124.1	1.31	.1902
Today, my voice is hoarse (Q5)	105.7	152.7	-5.05	.0001*
Today, my voice feels tired (Q6)	91.5	166.0	-8.0	.0001*
Today, my voice sounds creaky and dry (Q7)	113.0	145.8	-3.52	.0004*
Today, my throat hurts when I sing (Q8)	107.7	150.8	-4.62	.0001*
Today, I feel like I'm straining when I sing (Q9)	106.7	151.7	-4.83	.0001*
I have taken good care of my voice this past week (Q10)	130.0	130.0	0	1.0
Today, I find myself clearing my throat a lot today (Q11)	124.6	135.0	-1.11	.2670
Today, my voice is breathy and much effort for me to sing/talk (Q12)	109.3	149.3	-4.3	.0001*

DISCUSSION

Though one summer music camp is in no way a sample reflecting all high school students in other large group choral settings, the results do raise some very important questions that may well need to be asked of high school students in general. As noted by Deutsch (2002), adolescent singers reported hoarseness and fatigue as the most prevalent vocal problems after extensive vocal use, and our study found significant self-reported changes in hoarseness and fatigue as well. These findings speak to teacher responsibility, as often they control the environment in which adolescents sing, and can therefore monitor the vocal tasks and responsibilities required of students.

Without additional study of vocal use of adolescent singers, there can be no real confirmation that vocal abuse occurs during extended choral events. These studies need to be done.

All state choirs, for example, abound, and though outstanding experiences for young singers, there is also opportunity for vocal overuse and misuse by these young singers. Vocal expectations during such events as festivals and summer camps must also be examined in more detail. Within individual school settings, teachers face decisions about vocal use in music theater productions, jazz ensembles, and a cappella groups, to name a few. Undoubtedly, no teacher wants to contribute to vocal harm of students in his or her care. Only with straight-forward, objective

analyses, however, will teachers and event organizers know what boundaries should be respected for singers of this age. Research is long overdue in providing these guidelines.

Student perceptions of vocal health and vocal responsibility, as well as accurate knowledge of the voice, should be of concern to teachers. Students seem to lack the knowledge and perhaps the self-discipline required to protect their own voices. When the enjoyment factor is considered, and it is huge at such things as all-state events and camps, then it is not too surprising that students choose to "sing until they drop." It was astonishing to see six significant variables related to voice overuse, and yet have students report they had done well at protecting the voice throughout the week. Perhaps the first item to address is student knowledge of the voice, with detailed information about what SHOULD occur during intense vocal use. One can only speculate, but perhaps students view drinking water constantly (most voluntarily did so) as sufficient vocal care. Students surely will benefit from becoming more independent in knowing what is vocally healthy and what is not.

Two themes were apparent throughout this study: teacher responsibility and student vulnerability. Teachers spend limitless time providing amazing music experiences for their students. It would be valuable in choral settings if guidelines based on empirical evidence could be provided to help factor vocal health into this process. Likewise, many students seem to have limited knowledge of how their voices work, what

is required to protect the voice, and what should be done when voice overuse or abuse actually occurs. In other words, data from this study suggest students lack sufficient knowledge and independence to care for their voices. More research is needed to guide the journey toward

accurate understandings of potential student vulnerability and the parameters of teacher responsibility in contexts of intense, prolonged choral singing experiences, such as those provided by summer choral music camps.

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