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“Is Something Wrong With My Daughter’s Voice?” Parental Perceptions of the Female Adolescent Voice Change

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Abstract

Adolescent voice change is a developmentally uncertain time for singers when the vocal anatomy undergoes significant growth. Female singers experience a distinctive set of symptoms. Vocal tone that was previously clear and pure becomes breathy and, at times, thick, husky, and hoarse (Ingram & Rice, 1962; Siple, 1993; Vennard, 1967). Voice ranges that initially widen during puberty temporarily narrow at the height of Female Adolescent Voice Change (FAVC) (Cyrier, 1981; Gackle, 1987, 2000a, 2000b, 2011; Huff-Gackle, 1985; Phillips, 1985; Sweet, 2015). As singing predictability and discomfort vary from day to day, so does the singing experience, leaving adolescent female vocalists to question their abilities (Gackle, 2011; Sweet, 2015). Pubertal adolescents report vocal fatigue, breathiness, and dryness despite taking measures to care for their voices (Bowers & Daugherty, 2008; Daugherty et al., 2011). During this period of change, parental support is vital to singer confidence, perseverance, and positive vocal self-identity. The purpose of this study was to examine parental perceptions of the FAVC before and after watching a three-minute educational video on the topic. Participants were parents ($N = 54$) of middle and high school female singers in two Midwest treble community choruses who responded to an online questionnaire. Queries explored parental perceptions of the female adolescent singing voice and their understanding of the voice change phenomena. Findings indicated that while they were attentive to their daughters' singing, parents did not possess knowledge of typical FAVC characteristics or accompanying singing difficulties. After a brief educational video, participants described gaining an explanation of their daughter's current voice concerns and a new understanding of developmentally appropriate FAVC singing skills. Parents reported a sense of preparedness and empathy for their daughter's voice change experience.

Keywords: female adolescent voice change, singing, parent perceptions, female voice

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“Is Something Wrong With My Daughter’s Voice?”

Parental Perceptions of the Female Adolescent Voice Change

Puberty signals the beginning of adolescence, a transitional time between childhood and adulthood, as evidenced by rapid physical growth, endocrine surges, and profound cognitive and emotional changes (Kipke, 1999). Pubertal females experience menarche and reach reproductive capability (Herting & Sowell, 2017). While age and puberty are highly correlated, individual progression through puberty varies (Herting & Sowell, 2017). Presently, American female puberty begins between 8 to 10 years of age (Sataloff & Kost, 2020), and the onset of menarche averages at age 12.5 (Emmanuel & Bokor, 2019). In the face of such dramatic physical, intellectual, emotional, and social changes, adolescents also undergo fundamental alterations to the nature and quality of the singing voice (Welch, 2012).

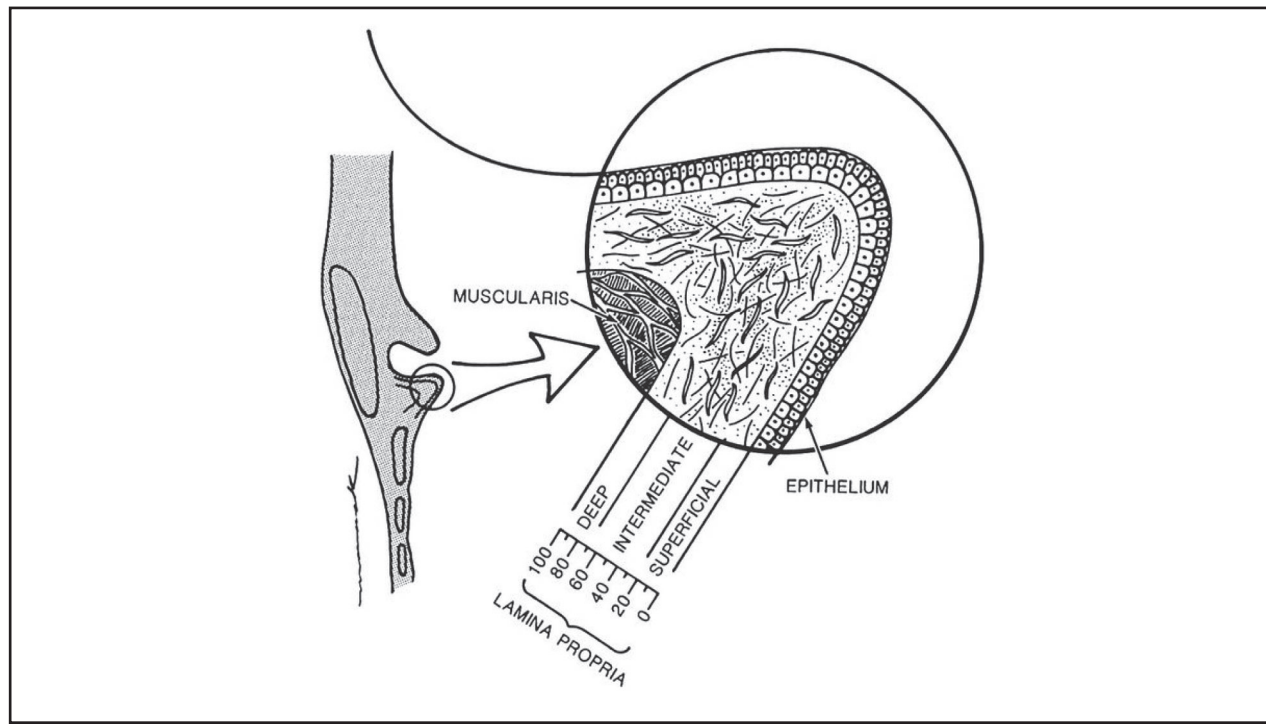
The path to successful singing can be steep for adolescents. Female singers experience a distinctive series of voice change symptoms, which remain widely undisclosed to them (Sweet, 2015). Sweet (2015) found that these singers encounter feelings of dismay, not realizing their voice change struggles are not only normal but temporary and beyond their control. Adolescent female singers are developmentally most sensitive to those with whom they spend the most time; thus, parental understanding and support are vital to the female singing experience during voice change (Davidson et al., 1996; Monks, 2003; Shillingford, 2021).

The Female Adolescent Voice Change (FAVC)

The transformation from child to adult voice takes place over many years, initially happening uniformly for male and female children (Monks, 2003). Young children generate high and low sounds before adolescence by raising and lowering the laryngeal apparatus for speech and singing (Trollinger, 2003, 2007). High in the neck at birth, the larynx makes a gradual descent in adolescence, lengthening the vocal tract (Sataloff, 2000). The child vocal folds undergo steady growth as the area between the epithelium and vocalis muscle of the vocal folds called the lamina propria develops from a monolayer of cells at birth to having signs of three layers around seven years. See Figure 1 on the next page. The lamina propria reaches adultlike thickness by age ten, but it is not until children approach thirteen that the formation of the vocal ligament, a structure necessary to prevent vocal injury under strenuous voice use, begins to develop (Boseley & Hartnick, 2006; Gray et al., 2000; Hartnick et al., 2005; Hirano, 1981; Titze, 1996; Trollinger, 2003, 2007). The most significant change to the female laryngeal structure occurs in the height of the thyroid cartilage (Howard, 1898; Kahane, 1982; Sataloff & Spiegel, 1989). Concurrently, the female vocal folds increase 34% in length from their pre-puberty measurements (Kahane, 1982), and a posterior lack of closure between the vocal folds, known as a mutational chink or gap, commonly emerges with the rapid growth of coordinating muscles (Vennard, 1967). With the increase in vocal fold length and mass, sexual dimorphism occurs in adolescent speaking voices. The female speaking voice gradually lowers from birth to adolescence so that by age 12, its average pitch

Figure 1

Schematic drawing of the superficial, intermediate, and deep layers of the lamina propria (Reprinted with permission (Gray et al., 2000).



is middle C (260 Hz), descending to around A3-G3 (200 Hz) in adulthood (May & Williams, 1989; Russell et al., 1995; Wilson 1978).

Voice Change Related Concerns

Rapid physical growth and puberty account for the distinctive characteristics of the FAVC singing voice. Upon menarche, pubertal adolescent females may experience cyclical voice quality variations like dry, pressed, laryngealized (creaky) phonation and vocal discomfort as lowered estrogen negatively affects vocal fold tissue and laryngeal function (Amir & Biron-Shental, 2004; Klatt & Klatt, 1990; Raj et al., 2010; Sataloff & Spiegel, 1989; Sherman & Korenman, 1975; Thurman & Klitzke, 1994). Such variations can make the FAVC singing experience unpredictable from day to day (Sweet, 2018). The mutational gap results in air leakage between the vocal folds and the familiar breathy singing tone of the developing female singing voice (Gackle, 2011). With the inadequate vocal fold closure, singers may feel an increased sense of laryngeal dryness or huskiness and as though they do not have enough air for sustained singing (Gackle, 2011). However, Vennard (1967) underscored that the singers should not force the developmental gap closed since growing musculature is being newly coordinated for efficient singing. Thus, a previously clear and pure vocal tone becomes breathy and, at times, thick and husky (Sipley, 1993). The need for recoordination of the growing laryngeal process can lead to voice cracking and intonation problems, while newly accessible singing ranges often narrow temporarily at the height of voice change

(Huff-Gackle, 1985; Ingram & Rice, 1962; Welch, 2012). As singer voices develop, vibrato may appear and should be allowed to develop naturally and without unnecessary muscular engagement (Trollinger, 2003, 2007). In such a formative time of voice development, adolescent female singers should not be classified or restricted to singing one voice part (Thurman, 1988; Thurman et al., 1997). Instead, they should be encouraged to use their entire range for vocal flexibility and sing parts in a comfortable tessitura (Siple, 1993).

Singers are conscious of voice change symptoms even when they do not understand the reasons behind them (Monks, 2003; Williams, 1990, 1996). In Sweet's (2015) phenomenological study of fourteen female adolescent choristers, participants expressed a wide range of emotions in response to voice change symptoms, describing fear, frustration, and embarrassment around the difficulties, especially when feeling alone in the experience. The findings of Sweet (2018) indicate that negative feelings and experiences of the FAVC manifest as vocal challenges into adulthood. Thus, those who discuss aspects of the voice change with adolescents must be informative, persistent, and, most importantly, sensitive (Cooksey, 1999; Friddle, 2005; Gackle, 2011; May & Williams, 1989; Monks, 2003; Phillips, 1985; Siple, 1993; Sweet, 2015; Sweet & Parker, 2019).

Parental Support

Adolescents have vulnerability to misjudging their typical FAVC symptoms as indicative of poor or inadequate singing (Schumann, 2014; Sweet, 2018; Welch, 2012). Unfortunately, western cultures propagate a myth that only select vocalists have talent, whereas available research indicates that remediation of the human ability to sing is possible since it is a developmental process (Knight, 2013; Welch, 2001). However, acceptance of the talent myth by parents and valued advisors to adolescent singers can lead them to carry unrealistic expectations of themselves (Whidden, 2008). In this light, a misplaced remark by a parent or valued advisor could "have a life-long detrimental impact on singing behaviors and the realization of musical potential" (Welch, 2012, p. 2).

Some researchers have theorized that progress during vocal development may stall under inaccurate feedback or misunderstanding of the developmental limitations of the singing voice (Knight, 2013; Turøy, 2018; Welch, 2012). Conversely, positive vocal identities have followed when singers arise from family environments where music-making is designed to encourage, match, and extend singing expertise (Sloboda, 1990; Sweet & Parker, 2019; Welch, 2012). As Davidson et al. (1996) found, consistent and significant parental support leading into adolescence encouraged children to identify as high-achieving musicians. Through music activities, developing singers interacted with their culture, expressed themselves, and developed their identity (Knight, 2013). As Monks (2003, p. 243) wrote, the "link between voice and self-image is so fundamental it is often overlooked." Mitchell (2021) noted that recognition of music participation enhanced adolescent confidence and positively shifted their self-narratives. Indeed, adolescents viewed aspects of their music participation as a badge-like reflection of their identity (Gooding, 2010).

Adolescent singers have interest in and benefit from an understanding of their physiological development, and their singing experience is enhanced if they can engage with parents about feelings around the experience (Siple, 1993; Sweet, 2018). Siple (1993) insightfully wrote that FAVC “knowledge” induced more favorable attitudes about vocal development, explaining that “since she [the adolescent female singer] is beginning to use her powers of reason, she will respond in an adultlike manner when presented with information which respects her intellectual achievements, and which challenges her to apply her reasoning abilities” (p. 49). Consequently, singers benefit from vocal health and development assessments, especially since each experience is unique. Parent education about the results of such assessments and how to best mitigate vocal fatigue and phonotrauma in their children can also be critical to injury prevention for FAVC singers (Tepe et al., 2002; Trollinger, 2003, 2007).

In sum, female adolescents are subjected to an array of voice change symptoms, many of which are audible in their singing tone and beyond their control. Some can lead to discomfort and self-doubt, especially when the symptoms are unexplained or singers feel alone in the experience (Sweet & Parker, 2019). Parents significantly influence singer motivation, and indeed, the involvement of parents predicts singer participation in the performing arts (Barnett, 2008). While data regarding FAVC symptoms are consistent, and the phenomenon’s existence is well-recognized among researchers (Gebhardt, 2016; Kahane, 1982; Sataloff & Kost, 2020; Sweet, 2018), the phenomenon is still widely novel to the general population, and misconceptions about typical female adolescent singing could cause misunderstandings. Thus, advising parents about FAVC characteristics and inherent challenges could positively affect parental perceptions of the developing singing voices of daughters. Further, parents may be more likely to actively encourage and engage with singers about the FAVC process while advocating for healthy voice use.

The purpose of this study was to investigate parent perceptions of their adolescent daughter’s singing voice and to understand their knowledge of the female adolescent voice change. The following questions guided this inquiry: (a) What knowledge do parents of female adolescents have of the voice change phenomena? (b) How do parents perceive the singing voices of their adolescent daughters? (c) In what ways, if any, are parents influenced through education of the FAVC phenomenon?

Method

The Institutional Review Board at a large Midwestern university reviewed and approved the study. I sought input from adults whose daughters were active members of a structured choral program and who had daughters in the target age range of 9 to 19. To address the research questions, I chose a mixed-method approach to prime participant reflection on and query about FAVC knowledge and attitudes using open- and closed-ended inquiries mediated by a short educational video about FAVC.

Participants

I was professionally acquainted with the directors of two large Midwestern children's choir organizations from different states, having worked collaboratively with the leader of one group and as vocal coach to adolescent females ages 12-19 with the other. Both organizations enlisted singers from third to twelfth grade after cursory voice placement auditions. They each offered singing opportunities in various leveled choruses, including mixed choirs for unchanged voices and SATB, TTBB, and SSAA ensembles for changing voices. Taken together, the organizations permitted me to contact around 250 parents about the research. Thus, I made information available during rehearsals, announcements at choir meetings, and through choir newsletters. Parents also received personal email invitations to participate in the study.

Volunteer participants accessed consent forms and study materials privately using PsyToolkit Version 2.5.1, a research tool for presenting interactive lessons within an anonymous online questionnaire (Stoet, 2010, 2017). Parent volunteers ($N = 54$) identified themselves as mothers ($n = 45$), fathers ($n = 8$), and a female guardian ($n = 1$) who collectively ranged in age from 33 to 62 years of age ($M = 46.56$, $SD = 6.02$). Most participants (61%) reported having some young-adulthood experience singing in choirs. A breakdown of parent choir experience is presented in Table 1. Parents recorded their perceptions of the individual voices of 64 female adolescent singers aged 9-11 ($n = 12$), 12-13 ($n = 16$), 14-15 ($n = 13$) and 16-17 ($n = 23$). Those with more than one daughter were given the educational information once but were to think and respond about their daughters individually. Eight participants had two daughters, and two had three daughters.

Table 1

Parent Demographic Data

Relationship to Daughter ($N = 54$)				
Mothers	Fathers	Female Guardian		
45 (83%)	8 (15%)	1 (2%)		
Daughters Per Participant ($N = 54$)				
One	Two	Three		
44 (81%)	8 (15%)	2 (4%)		
Participant Choir Experience ($N = 54$)				
No Experience	6-8th Grade Choir Only	9-12th Grade Choir Only	6-12th Grade Choir	6-12th Grade +
21 (39%)	15 (28%)	5 (9%)	9 (17%)	4 (7%)

Data Collection

I engaged two colleagues with expertise in qualitative research to review the questionnaire for accessibility and to assure it queried the topics of interest. The purpose of the first survey section was to prime participants to reflect on the qualities of what they hear in each of their daughter's singing voice quality whether their child voluntarily sings in front of them, whether she desires to be thought of as a good singer, and whether the parent believes she is a good singer using Likert-type questions. Participants related whether they were aware of the female voice change phenomena and considered whether they thought their daughters' singing voices exhibited common voice change characteristics. Section one concluded with open-ended questions asking for "good" and "not good" qualities of their daughter's singing and for parental advice for the singer.

Section two directed participants to view a researcher-created educational video explaining common female adolescent voice change characteristics and inherent singing challenges. I considered the following objectives when scripting and choosing images for the video: to define (a) the most typical characteristics of the adolescent female singing voice, (b) the anatomical and physiological reasons for those characteristics, (c) the singing abilities and limitations for female singers during adolescence, and to communicate that (d) the symptoms of changing voice are an unpredictable, yet normal and temporary, condition of adolescence for female singers. I asked several colleagues with expertise in the FAVC to review the content before converting the final product to video format and uploading it to a private YouTube link. The resultant educational video was 3-minutes in length. (See Appendix for the video script.)

In the final section of the questionnaire, parents rated whether or not the voice change characteristics discussed in the educational video were novel to them. Parental perception changes were explored through open-ended questions. To close the activity, the participants could opt to write additional thoughts.

Analysis

I analyzed quantifiable data through descriptive statistics, and I studied responses to open-ended questions qualitatively, first using descriptive coding to categorize the data's content followed by structural first cycle open coding to examine and identify data relationships and patterns (Saldaña, 2013). I created diagrams to aid in second cycle coding and to understand patterns, relationships, and meanings of the emergent themes (Creswell & Poth, 2018; Katagall et al., 2015; Miles et al., 2013).

Findings

Priming Questions

I first examined responses to the reflection prompts, which were intended to prime parental thought about each daughter's singing voice. Participants who had more than one daughter reflected separately about each daughter ($N = 64$). The majority of parent responses (98%) reported that *my daughter enjoys singing and that my daughter wants to be thought of as a good singer* (95%). Similarly, 95% of parents responded, "my daughter is a good singer." When asked, "Do you listen to your daughter's singing voice," 55% of responses were, *Yes, I listen all the time*, and 35% were, *Yes, when she lets me*. To the prompt, "My daughter sings voluntarily in front of me," 53% reported *all of the time*, 42% reported *sometimes*, and the remainder (5%) reported *never* (Table 2).

Table 2
Parent Observation of Daughter (N = 64) Singing

Prompt	Response	
My daughter enjoys singing.		
Yes	63	(98%)
No	0	-
Not Sure	1	(3%)
My daughter wants to be thought of as a good singer.		
Yes	61	(95%)
No	1	(2%)
Not Sure	2	(3%)
I think my daughter is a good singer.		
Yes	61	(95%)
No	2	(3%)
Not Sure	1	(2%)
Do you listen to your daughter(s)' singing voice?		
Yes, I listen all the time	35	(55%)
Yes, when she lets me	23	(35%)
Sometimes I listen	5	(8%)
I never listen	1	(2%)
My daughter sings voluntarily in front of me.		
Yes, all the time	34	(53%)
Sometimes	27	(42%)
Never	3	(5%)

Parental Knowledge of the FAVC Phenomena

I worked with singers at one of the choir organizations. Thus, I anticipated that before beginning the study, many parents in this population would understand that female adolescents experience a voice change. Indeed, 50 participants reported having prior exposure to FAVC knowledge, 69% from me, and 28% from other sources. Only four mothers had no previous understanding of the FAVC. See Table 3. Before the educational video, all eight fathers reported knowing of the FAVC and, after the video presentation, they reported having already known that female adolescents experience a pubertal voice change. However, after the video presentation, 22 mothers indicated that the statement, “Adolescent females experience a voice change as part of puberty,” was new information. Scoring of the ten post-learning video FAVC knowledge statements is presented in Table 4 on the next page. The possible occurrence of a vocal fold mutational gap was considered the most novel out of the ten statements, as 67.2% of parents ($n = 43$) reported it was new information. They were most aware prior to education that “adolescent females may experience voice ‘cracks’ or ‘breaks,’” as only 30% of participants ($n = 19$) marked it as novel information.

Table 3

Parent Pre-Learning Video Knowledge of FAVC (N = 54)

	No. No previous knowledge.	Yes. Knowledge from Researcher.	Yes. Knowledge from Other Source.
Mothers and Female Guardian ($n = 46$)	4 (9%)	31 (67%)	11 (24%)
Fathers ($n = 8$)	0 -	6 (75%)	2 (25%)
Total ($N = 54$)	4 (7%)	37 (69%)	13 (24%)

Table 4*Post-Learning Video “New Knowledge” Ratings by Parents (N = 54)*

FAVC Knowledge Statement	Characteristics Considered “New Knowledge”
The vocal folds may not close properly for a period.	43 (67.2%)
The female larynx grows primarily in height during puberty.	41 (64.1%)
Adolescent females may complain of sore throat, dry throat, or “gunky” throat during voice change.	33 (51.6%)
The singing voice tends to have a “breathy” quality.	30 (46.9%)
Adolescent females may experience a husky or gravelly sound during voice change.	30 (46.9%)
The singing voice is unpredictable from day to day for adolescent females.	30 (46.9%)
Adolescent females experience voice change as part of puberty.	29 (45.3%)
Adolescent females may sing some notes out of tune or off-pitch during voice change.	25 (39.1%)
The range of notes adolescent females can comfortably sing may shift lower or higher during voice change.	24 (37.5%)
Adolescent females may experience voice “cracks” or “breaks” during voice change.	19 (29.7%)

Parental Perception of Daughters’ Singing Voices During FAVC

To analyze parent-perceptions of seven typical FAVC characteristics, I examined parent responses by arranging them into groups by daughters’ ages (9-11, 12-13, 14-15, and 16-17). Parents of the youngest singers (9-11) found their daughters’ voices most free of common FAVC singing qualities. With few exceptions, parents perceived singer voices in all age groups to be clear and pure, to have no intonation problems, or to not have a husky/gravelly or thick and effortful tone. Breathiness was perceived in the tone of 50% of singers in the 14-15 group, 25% of the 12-13 group, and 22% of the 16-17 group. Light, quiet singing quality was perceived among 33% of the 9-11 group, 37% of the 12-13 group, and 35% of the 16-17 group, but only 15% of the 14-15 group. See Table 5 on the next page.

Table 5
Parent Perceptions of Common FAVC Singing Voice Qualities (N = 64)

	Daughter Age Group											
	9 - 11 (n = 12)			12 - 13 (n = 16)			14 - 15 (n = 13)			16 - 17 (n = 23)		
My daughters' singing voice is:	Agree	Neither	Disagree	Agree	Neither	Disagree	Agree	Neither	Disagree	Agree	Neither	Disagree
clear and pure	8 (67%)	3 (25%)	1 (8%)	12 (75%)	3 (19%)	1 (6%)	10 (83%)	1 (8%)	2 (17%)	19 (83%)	4 (17%)	0 -
breathy	2 (16.5%)	2 (16.5%)	8 (67%)	4 (25%)	8 (50%)	4 (25%)	6 (50%)	2 (17%)	5 (38%)	5 (22%)	4 (17%)	14 (61%)
husky and/or gravelly	1 (8%)	2 (17%)	9 (75%)	1 (6%)	2 (13%)	13 (81%)	1 (8%)	-	12 (92%)	0 -	4 (17%)	19 (83%)
light and/or quiet	4 (33%)	2 (17%)	6 (50%)	6 (37%)	3 (19%)	7 (44%)	2 (15%)	3 (23%)	8 (62%)	8 (35%)	5 (22%)	10 (43%)
heavy and/or loud	1 (8%)	4 (33%)	7 (59%)	2 (12%)	3 (19%)	11 (69%)	1 (8%)	2 (17%)	10 (83%)	5 (22%)	2 (9%)	16 (69%)
thick and/or as if it takes a lot of effort to make sound	0 -	2 (17%)	10 (83%)	0 -	3 (19%)	13 (81%)	1 (8%)	2 (17%)	10 (83%)	0 -	3 (13%)	20 (87%)
out of tune	2 (17%)	1 (8%)	9 (75%)	0 -	1 (6%)	15 (94%)	0 -	3 (23%)	10 (83%)	0 -	3 (13%)	20 (87%)

Note. Numbers in bold represent the greatest quantity of answers by age group for each voice-quality descriptor.

Themes

The coding of responses to open-ended questions revealed two main themes. The first theme, “connection to singing,” describes a mutual connection between parents and daughters as the participants described the value of their daughter’s singing. The second, “daughter’s vocal technique,” reflects parent observations, both positive and negative, of their daughter’s singing voice and parent advice on managing vocal technique.

Connection to Singing

Parents observed that their daughters enjoyed a special connection to singing, leading them to spend personal time engaging in the activity. One father remarked that singing was an integral part of his daughter’s independent play. Thus, participants were supportive of the daughter’s singing efforts, suggesting that they seek guidance from qualified voice professionals and significant people (siblings and family members with singing experience) and

to listen “when they give suggestions on how to sing and not hurt your voice.” Eventually, singing for enjoyment led to formal study for many daughters as they began singing with choirs (community, church, and school), enrolling in private lessons, and honing music theory skills. Parents advised voice care and regular practice.

Participants described moments with their daughter’s singing in which they felt an emotional response while expressing an affinity for their daughter’s singing. Parents perceived their daughter’s voices as “lovely,” “beautiful,” and “sweet.” Parents took note when some of their daughters produced adultlike singing qualities, “She has a mature voice for her age... [and has] had natural vibrato since she was about 9-years-old.” Some participants disclosed their perception of wide or very high or low singing ranges in their daughters’ voices as admirable, and there was a tendency to attach voice classifications to the children. For example, a parent of an eleven-year-old wrote, “She already has a good singing range — Alto to Alto+.” Receiving compliments about their daughter’s singing held value, as one parent reflected, “People are continually astonished by and rave about her voice, often using the words, ‘goose bumps.’”

Participants desired their daughters to share their voices with others more willingly, sometimes remarking that their daughter’s quiet singing reflected poor confidence. Indeed, advice about singing projection was frequently paired with a perceived lack of confidence or shyness in the singer, as in the declaration, “Sing out; raise your volume a bit. You have a beautiful voice. Believe in yourself.” While praising their daughter’s voices, some parents reflected negativity on their own singing capabilities, as one wrote, “I personally do not have a good singing voice,” and others felt unqualified to offer comments on singing.

Daughter’s Vocal Technique

As participants reflected on perceived positive aspects of their daughter’s singing, they commended the development of “good” tone, which they described as having “clarity” and “*not* breathy.” They credited daughters for developing efficient, healthy singing habits like avoiding vocal “strain” and singing “freely.” Parents described wide or exceptionally high or low ranges, which they at times identified by voice classification (low alto or high soprano). They noted characteristics of maturity in the voice (e.g., vibrato, singing smoothly across registers) as favorable singing qualities.

Parents listed their perceptions of breathy and nasal vocal tone as “not good” qualities of their daughters singing while also being aware of their daughters not singing “on pitch” or “maintaining tonal center.” They expressed concerns with limited vocal range and inconsistent pitch accessibility. Some participants perceived inappropriate vocal techniques as “goofing off” or not taking singing “seriously” enough. They stated concerns over “forced vibrato” and the imitation of others’ voices. Some parents worried that the singers needed improved voice care habits such as not “pushing” or singing with tension. There were mentions of not straining, singing freely, drinking plenty of water, resting the voice as needed, and using good posture. Participants advised daughters to “warm-up” before singing, and

they asserted a need for stronger practice skills.

In sum, parents were aware of efficient singing qualities, encouraging singers to maintain healthy habits. They expressed concern about the vocal technique of their daughters, predominantly advocating to improve breath management and to share the voice through vocal “projection.” Many suggested focused singing practice for improved technique. While parents expressed many concerns about vocal production, no one commented on their daughter’s vocal characteristics as problematic relative to their age or stage of development.

Parent Perceptions After FAVC Education

Forty-five percent ($n = 29$) of all respondents answered, “Yes,” that previously held perceptions about their daughter’s singing had altered after viewing the educational material. Participants reflected on their increased awareness and understanding of the power of the voice change. One father stated, “(I)...better understand how her body changes can impact her voice and that some of the symptoms she would complain about were [sic]...just part of the change process.” Among the participants reporting a perception change of their daughter’s singing voice, some expressed a sense of reassurance about FAVC characteristics noticed in their daughter’s singing. “I didn’t understand why both of my daughters had breathy singing. Wow! It’s just part of the process of change?”

A poignant outcome of the data analysis was that a few daughters appeared at risk of being labeled non-singers at the time of this investigation. In section one of the procedure, three participants ($n = 3$) responded “No” or “Not Sure” to the question, “Do you consider your daughter to be a singer?” Follow-up questions revealed that these adolescents suffered from intonation problems, and for one, a “weird style of singing.” However, these three participants all reported a change in perception of their daughter’s singing following the female adolescent voice change educational video. In a final comment a mother shared, “Maybe her singing voice will even out with time and growth.”

Some participants ($n = 18$) shared thoughts about the FAVC education, expressing appreciation for guidance concerning FAVC and the “future voice” of the daughters. Some found the timing of the learning to be beneficial, writing, “I am really glad to have learned new information about female voice change. I did not even realize it happened. It has also been helpful to relay to my daughter, as she has been noticing her voice cracking recently.”

This population of respondents consistently advised their daughters to practice singing before and after the educational video. Written comments tended to shift from focusing on improved vocal technique before education to offering guidance about the normalcy of FAVC developmental changes after education. One parent wrote: “...the change is normal. We all experience this, and it is a part of growing up. Continue to practice and strengthen your confidence with singing.” Participants reminded singers to continue enjoying music during the FAVC while exercising healthy singing practices. As they anticipated the future, parents urged singers to honor the voice transformation process by being patient and not being discouraged. One mother wrote, “I look forward to her moving through this process and regaining her pure, clear, though more mature voice on the other side.”

In sum, participants wrote that they gained an understanding of developmentally appropriate singing skills and an explanation of their daughter's current voice concerns. Some indicated that the new knowledge created a sense of preparedness for the future development of their daughters' voices. Others found the possibility of applying the educational video information in discussions with their daughters to be transformative.

Discussion

The purpose of this study was to add to the collective knowledge about the female adolescent voice change experience by exploring parental awareness and perceptions of the phenomena. Findings suggest that parents do notice the FAVC singing voice characteristics in their daughters even when they may not understand them to be products of normal vocal development. After a brief educational experience, participants described gaining an explanation of their daughter's current voice concerns and a new understanding of developmentally appropriate FAVC singing skills. Participants expressed empathy for the singing difficulties of FAVC, and some described a sense of being prepared for the symptoms their daughters might experience. Proactive FAVC education is recommended for parents to engage with their daughters about the voice change experience and to help contextualize voice-associated frustrations as a normal part of their singing development.

The data gathered in this study yielded a great deal of information, yet some limitations deserve attention. I designed the study as a brief online, self-paced, and anonymous experience with the convenience of the participants in mind. However, the approach made it impossible to clarify or delve into the deeper meanings of responses by following up with participants. Consequently, exploration of the parent responses generated many questions of interest for future investigations. In this section, I will discuss particular insights drawn from the participant responses and additional directions for future inquiry.

The volunteer recruitment method resulted in some noteworthy participant characteristics that raised possible questions for future research. For example, female parent participants considerably outnumbered males. A possible reason for the gender disparity is that mothers were often the most visible parent at weekly choir rehearsals and meetings and, therefore, had more opportunities for contact with the study invitations. Nonetheless, the responses by the eight father participants were insightful and detailed. Future researchers might differentiate parental perceptions of FAVC by father and mother responses. One could explore parent voice change recollections and how those experiences influence interactions with their children. For example, one father noted that his understanding of his voice change occurred after seeing an episode of the '70's sitcom, "The Brady Bunch," referencing a storyline in which an adolescent male character experiences voice change (Schwartz et al., 1972). The parent comment suggests that voice change, broached through pop culture, could be memorable for children seeking explanations about their development. However, as Sweet (2019, p. 123) pointed out, the sitcom episode capitalizes "...on the frustrations of voice change, keeping negativity as the core of the experience." Pop cul-

ture references could serve as a powerful educational medium for adolescents and parents, though educators should guide and reframe the content into a positive message.

Ten participants in the study had multiple daughters and thus described FAVC perceptions about two or three children. Understanding this was a possibility, I designed the research questionnaire so that parent responses were primed separately for each child, and it appeared that most respondents successfully compartmentalized their answers based on the daughter in mind. Future researchers might seek out families with multiple singing children to explore the dynamics in families where adolescents are at different points in their development.

Some participants disclosed their perception of wide or very high or low singing ranges in their daughters' voices as admirable, and there was a tendency to attach voice classifications to the children. Rather than encouraging adolescent females to self-label as altos or sopranos during voice change, it is advisable to help them think of their part assignments as temporary placements until the voice is mature (Thurman et al., 1997). Indeed, singing multiple voice parts during FAVC benefits a singer's capability to part-sing while encouraging muscular balance and flexibility throughout the voice range. The educational video made for this investigation did not address voice classification, yet it appears this information could be helpful for parents.

Whether developmentally appropriate or not, some children manage to produce adultlike singing qualities. Parents naturally value when their children demonstrate singing expertise. However, researchers and vocal health experts advise that a child's voice is at risk for harm when engaging in habits beyond developmentally appropriate ones. Understanding the types of voice qualities adults value in young singers and how such ideals develop are matters for future research. Another question to be addressed is what motivates children to sing in ways likely to manifest in vocal fatigue and possible injury. Further, it would be beneficial for teachers and voice care experts to understand how FAVC education might influence adult perceptions of children who sing in ways that are risky to vocal health.

I understood that the parent population in this study might already possess a unique sense of FAVC through interaction with me, with other staff members, or with their daughters, and thus, the group had likely entered the study with an understanding of FAVC that other populations may not have. Characteristics of the participants also suggested that the activity of singing held value to them. For example, over 60% of parents reported having taken part in choral singing as a youth. The participants are known to have committed considerable time, energy, and financial resources to enable their child's participation in the involved community choruses. Their responses indicated interest and enjoyment in listening to the daughters' singing. When describing the daughter's voices, it was evident that many participants noticed FAVC symptoms like breathy voice quality, voice cracks, and range changes prior to the educational presentation. Afterward, parents encouraged daughters to be patient with themselves as they move through voice change while encouraging them to continue enjoying music. The sensitivity and interest demonstrated by this population after FAVC education may relate to how they intrinsically value singing. Future research might explore how diverse populations respond to FAVC education. Researchers might investigate

the experience of FAVC educated parents and daughters throughout the duration of voice change.

Female voice change education may deter errant messages of singing incapability. Such identification as a non-singer can impede a child's singing progress and frequently leads to a lifelong perception of lack of ability (Welch, 2012). One female parent reflected about singing during voice change, "[I] deemed myself a non-singer for life," while another wrote, "I wish I had known [about FAVC] ...when I was an adolescent." Not only may parents with insight about FAVC encourage their daughters to sing through voice change difficulties, but self-identified non-singing adults may also find renewed interest in voice study for themselves. An exploration is merited to determine whether this is the case and if voice change education could positively impact children and adults identifying as non-singers.

With the understanding that parent engagement is known to encourage adolescent involvement in the fine arts, parental awareness of FAVC could have substantial implications for researchers and educators. Teachers could benefit from instructional material enabling them to facilitate FAVC learning for singers and their parents. Future exploration is recommended to determine when to discuss FAVC with families, how best to disseminate information, and the most beneficial specifics about the phenomena.

In sum, while many questions about the FAVC experience remain to be answered, and continued research in the area is warranted, music educators and singers would benefit from well-considered educational materials to facilitate learning and understanding of the phenomena. Most importantly, adolescent female singers would benefit from a more comprehensive understanding and disclosure of their voice change experience.

Conclusion

Evidence is mounting that the phenomenon of FAVC holds significant repercussions for female singers who experience insecurity of pitch, noticeable register breaks, increased huskiness in the voice, decreased and inconsistent range capabilities, voice cracking, hoarseness, and general singing discomfort (Duffy, 1970; Gackle, 2000a, 2000b, 2011). Researchers are increasingly advocating for adolescent female singers to be aware of temporary developmental limitations as a normal part of vocal development (Sweet & Parker, 2019). Teachers have been encouraged to help female adolescent singers understand the physiological process of voice change (Siple, 1993). Indeed, singers are receptive to voice change education and express interest in the changes taking place during their adolescent development (Siple, 1993). Such information reassures them that their voice change symptoms are normal and necessary to their singing development (Fridle, 2005; May & Williams, 1989; Sweet, 2015, 2018). The outcomes of this study suggest that parents of female adolescents are not only interested in their daughters' vocal development, but they also feel moved to engage with their daughters when they understand the developmental experience. As one parent stated, "I can reassure her this is normal and not to let it concern her, but to keep enjoying singing!"

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Appendix

FAVC LEARNING VIDEO SCRIPT

SLIDE 1

Title

SLIDE 2

As children enter puberty, their bodies undergo rapid changes.

SLIDE 3

They grow in height & weight, their limbs grow longer, and their internal organs grow in weight and size. They develop reproductive capability, and experience profound cognitive and emotional changes.

SLIDE 4

Even the voice anatomy undergoes rapid growth.

SLIDE 5

Intricate cartilages, muscles, and tissues of the larynx (or voice box) increase in size and weight. The male larynx grows dramatically in circumference (bigger around) whereas the female larynx grows most significantly in height.

SLIDE 6

Vocal folds which reside inside the larynx and vibrate to make sound grow in length and thickness.

SLIDE 7

This rapid growth causes a child's voice to begin to change. The child must learn new muscle coordination for speaking and singing. The male voice change is a well-known phenomenon. Let's look more closely at the female adolescent voice change.

SLIDE 8

At adolescence, the female speaking voice lowers slightly in pitch, and it may sound husky or hoarse. Occasionally it will even "crack."

SLIDE 9

The singing voice changes as well. Initially, the voice range becomes larger. Girls find they can sing a little higher and a little lower than in childhood. But, around the time of the first menstruation, adolescent females temporarily lose access to some previously comfortable singing notes either in the high OR the low end of the voice. These range fluctuations are unpredictable, and the daily variation can be frustrating to a singer whose voices often feel dry, gravelly, “gunky,” and sore.

SLIDE 10

A very noticeable quality of the female adolescent singing voice is a “breathiness” of tone.

SLIDE 11

Breathy tone occurs when vocal folds do not close normally, leaving a developmental gap that cannot vibrate. This gap leaks air causing a hissing or “sh” sound during singing. This opening is a result of rapid laryngeal growth and the subsequent breathy tone is a normal and temporary quality of the adolescent voice change.

SLIDE 12

Females cannot sing very loudly or with much endurance during voice change, and they often feel unable to hold long tones. They may not sing pitches accurately because the voice is variable from day to day. Unlike the phenomenon of male changing voice, there is little scientific data about female changing voice.

SLIDE 14

Researchers have defined developmental stages of female adolescent voice change, but the stages are not sequentially predictable. The duration of voice change extends across multiple years and the symptoms differ for every singer.

SLIDE 15

Voice change symptoms are a normal part of development, and they are temporary. Adolescents are encouraged to maintain healthy singing practices and to keep singing.

SLIDE 16

Thank you for watching. Please return to survey.
