

Teaching singing and voice to children and adolescents

Vocal physiology and function

Growth and development

Physiological abilities / limitations

Sociological constructs

Teaching implications

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Infant Voice 1

- **Small lungs** – $\frac{1}{4}$ to $\frac{1}{2}$ adult proportions
(e.g. newborn – 87 breaths a minute, adult 16 – 20)
- **Ribs** – horizontal circles, no rib movement
- **Breathing** – diaphragmatic



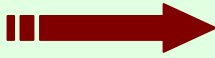


Short, strong bursts of sound

Infant voice 2

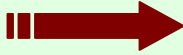
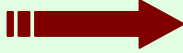
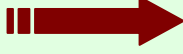

- High (C3)
- Epiglottis/ soft palate coupling for breathing/ suckling
- Cartilages softer, less movement
- Small pitch range
- Vocal fold structure simpler
- Fewer colours/ qualities
- Relatively small

Child voice - similarities with adult voice

- By 4-7 yrs vocal mechanism adapted for speech

- Breathing action - thoracic and diaphragmatic movement  sustained vocalisations
- Larynx height dropped from C3 to C5/6  variety of vowel colours
- Laryngeal cartilage mobility  range of pitch

Child voice - differences to adult voice

- Lung volume  Shorter phrases
- Larynx size  Smaller pitch and volume range
- Larynx height C5/6 (adult C7)  Range of vowel differentiation/vocal colours is less
- Vocal fold structure - still no defined vocal ligament, softer laryngeal cartilages  Fewer voice qualities and less vocal stamina
Different pitch range of vocal registers

Child voice – pedagogical implications?

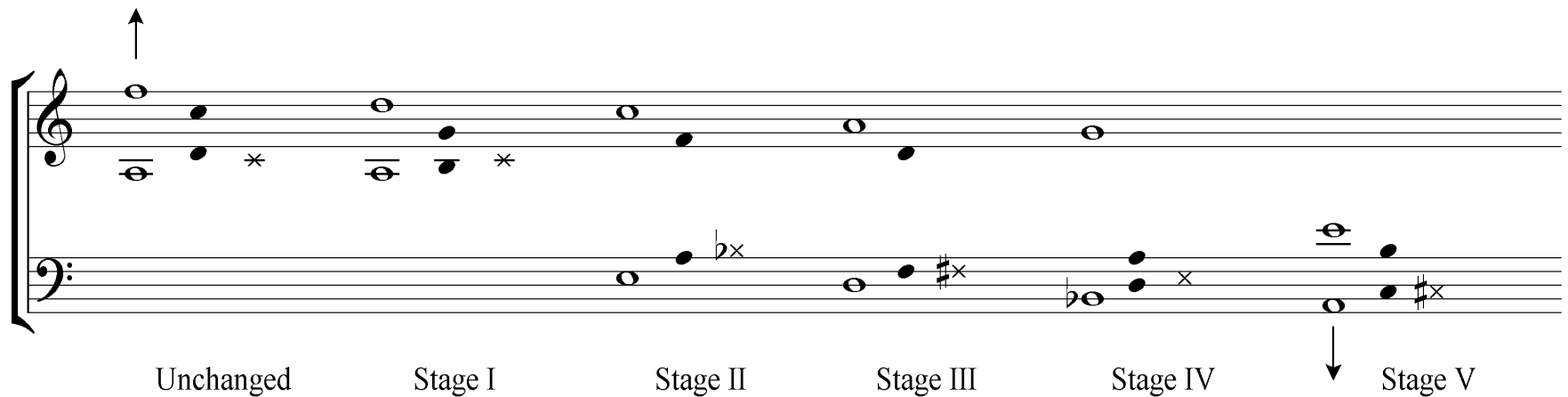
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Adolescent voice

- growth patterns

- Physical growth is in 'growth spurts' or stages
- Growth of larynx mirrors overall growth
- Caused by hormone levels
- Height of larynx C6 pubertal onset, C7 by 20yrs
- Adult lung capacity by 18-20yrs
- Adult laryngeal structure by 22-25yrs

Five developmental stages of adolescent male voice



Extended singing range (unfilled note)

Comfortable modal singing range (filled note)

Speech fundamental frequency (cross) (Cooksey 2000)

Voice problems – prevalence, diagnosis and treatment

- What is normal voice for a child?
 - Acute respiratory tract infections
 - Periodic hoarseness
- At any time, 30 - 40% of boys have dysphonia, 1/4 of these have nodules
- Functional vocal disorders in children often resolve without treatment due to change of habit and growth

Male adolescent

– to sing or not to sing?

- Late 19c

Manuel Garcia (italian singing teacher) – rest

Sir Morell McKenzie (English laryngologist) – exercise

- 1930s

Dr Cyril Winn (Inspector of Music for Public Schools)

music publishers should produce music for changing voice

- 1933

LCC - statement opposing traditional practice of voice rest

To sing → damage or bad habits?

Three statements / opinions

- Pathological damage caused by singing is rarely long-term in children or adolescents (growth → changing patterns of usage)
- If a boy 'rests' his voice, he will quickly lose interest in singing
- Bad vocal habits of ex-choristers are more likely to be from voice use in adolescence not childhood

Bad vocal habits – voice use in adolescence not childhood? A story...

- John is a strong and reliable chorister
- John remains singing as a treble for as long as he can manage without cracking – he achieves this mainly with use of falsetto
- He moves down to Alto, reinforcing the muscular habits of falsetto singing
- John cannot manage this any longer and moves to Tenor where his musicianship and reliability are very valuable
- He manages to singing high notes by employing the middle pharyngeal constrictor to give the thyroid cartilage a 'lift' at the back
- This eventually becomes too uncomfortable and he moves to Bass but continues to use these muscular habits
- High larynx and pharyngeal constriction
- A familiar voice quality?

Developmental stages of adolescent female growth

- Sequence of developmental stages not predictable
- Voice change tends to be most noticeable with onset of menses

Symptoms of change in adolescent female voice

- Increased breathiness
- Husky or hoarse quality - both singing and speech
- Occasional voice cracking in speech
- Slight lowering of the fundamental speaking pitch
- Increased pitch inaccuracy during singing
- A temporary decrease in overall pitch range
- Increased incidence of abrupt register transitions in singing

And eventually:





- The upper passaggio occurring at a higher pitch
- An increase in overall pitch range

(Huff-Gackle, 1985)

Changing voice

- comparisons with adult voice

Child voice

- Lung volume  Shorter phrases
- Larynx size  Pitch and volume
- Larynx height C5/6 (adult C7)  Vowel differentiation and vocal colours
- Vocal fold structure - still no defined vocal ligament, softer laryngeal cartilages  Voice qualities, vocal stamina

Adolescent voice

Reduced pitch range (in some cases extreme)

Possible vulnerability of rapidly growing tissues (this subject has not been researched)

Conclusion

- The rules of 'healthy' voice use apply to all ages
- Children can sing in any style or range that is possible within this
- All voices have limitations of pitch, loudness, breath sustain and voice quality