

Trends in young male puberty and the changing voice: new dilemmas for choir directors

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Introduction

The term “secular trend”, meaning a slow drift in measurement over time, is sometimes applied to the timing of voice change in young adolescent boys. Evidence that the age of onset of puberty is advancing, though not entirely conclusive, supports a belief amongst choir directors that voices are changing earlier than in the past. The phenomenon has been investigated by the present author through a meta-analysis of the literature¹, a study of English cathedral choirs² a clinical endocrinology study³ and detailed longitudinal studies of individual boy singers from 2005 to the present. The topic has assumed increasing importance since girls’ choirs have become common in English cathedrals.

Whilst much initial controversy attached to alleged differences in timbre^{4 5 6} the more enduring issue concerns the musical capability and cognitive maturity of the oldest children in a choir’s soprano or “treble” line. The author’s 2013 cathedral study showed that puberty is beginning for many boys during Grade 6 (UK Y7) and sufficiently advanced a year later (Grade 7 or UK Y8) to cause potentially serious issues for voice coaches and conductors. Grade 7 has traditionally been the “top year” for many English cathedral choirs. Recent experience has been of the oldest, most experienced girls singing reliably whilst the boys’ choirs have sometimes struggled with losses and even the prospect of catastrophic failure during a high-profile event⁷. In this review, which updates my 2013 paper, I am going to look at the relationship between biological puberty, the actual events of vocal metamorphosis as they impact upon choirs and the current implications for choir directors.

Puberty and voice “break”

The term voice “break” is still in common use in the UK, by the media and not infrequently by choir directors. The late John Cooksey objected strongly to this term and the many voice teachers who follow his work have been at pains to promote the alternative “change”. However, it was demonstrated in a much-cited medical study⁸ that Cooksey’s six stages are non-linear (see also Hollien⁹). There does come a time between Tanner stages G3 and G4¹⁰ when both speaking and singing fundamental frequencies drop at a significantly faster rate. For a good number of boys, G3 to G4 can happen quickly over only a few months or less. Cooksey’s attempt to insert an extra stage to smooth this out is compromised by the degree to which subjective judgement and human agency intervene during a period that, for individual boys can be as little as four months or as much as two years.

The 2013 study of 127 cathedral choristers confirmed that it is common to the point of normality for English boys to continue with voices perceived as “unbroken” during puberty stage 2. Onset of puberty was first detected in Grade 5 (UK Y6) where 26% showed evidence

of stage 1¹¹. By Grade 6, 42% of boys had begun puberty but this was all but impossible to detect in their singing voices. Indeed, the conductor of one prestigious cathedral choir described Grade 6 as the “golden year” when voices at their peak matched well-developed musical maturity and repertoire knowledge¹². By Grade 7, however, this situation had changed with surprising rapidity. Only 15% showed no signs of puberty whilst 48% had reached stage 3 and were likely to reach stage 4 or even 5 by the end of the year. It is on this issue that the English choral community remains sharply divided as to whether voices have “broken”.

A subsequent study of four senior choristers in Grades 7 or 8 (UK Y8 or 9) was published by the present author in 2018¹³. As far as their choirs were concerned, these boys had “unbroken” voices and continued to play a role as leading “trebles”, taking high profile solos such as the Stanford in *G Magnificat*. By most other criteria, the voices were “broken”, the boys speaking at baritone pitch and exhibiting other vocal parameters associated with stage 4 as well as rapid gains in height and weight. Full details, including electroglottogram plots, are given in the paper. This phenomenon, much associated with the “boy sopranos” of the era of 78 rpm recording, is well-known by researchers working in the field who have put forward explanations for it.^{14 15 16 17} The degree to which it is considered acceptable practice remains a matter of contention.

Claims about the age at which puberty and voice break occurred at times such as those of J.S. Bach or Henry Purcell need to be treated with considerable skepticism.¹⁸ However, the data agreed well with an important study by Pedersen,¹⁹ and the drop of the mean speaking voice pitch to $200 \pm 5\text{Hz}$ may be taken as an acceptable surrogate measure of pubertal onset. The *Speech Test* app was developed by the author and two colleagues as a non-intrusive means of identifying puberty stages.²⁰ Good correlation was found with Tanner G stages, but not P stages.

The regular monitoring of every boy for signs of voice change in a busy choir can be a time-consuming task unless practically manageable ways of doing it can be found. The cultivation of an alert ear is probably one of the simplest and most effective strategies. It is surprising the number of choir directors who appear simply to miss the tell-tale early sign of a slightly deepened speaking voice. Parents may not notice slow changes from one day to the next in their own sons. However, it is easier for a teacher or conductor with cultivated ear who may greet all the boys as they arrive for rehearsal to spot the one that is a bit deeper. A boy suspected of beginning to change may be taken aside and checked by the method of counting slowly backwards from twenty, either against the piano or, more accurately, by an app such as *Speech Test*. It greatly helps and is good practice if the boys themselves understand the process and change is viewed as a positive development. Time spent occasionally explaining to all the boys what might be expected is time well spent and may help to allay the fear that some boys have been known develop over impending “break” and loss of something that might be precious to them.

Once the slight deepening phase has been entered, the next sign to spot is falsetto tone. An important, landmark study in Copenhagen employed “unintentional falsetto notes and changes of the singing tone” as observed by the choir director as an indicator of voice break.

These researchers defined voice break as a “relatively sudden decrease in the fundamental frequency in speaking voice . . . a quite late event in male puberty, occurring between Tanner’s pubertal stages 3 and 4”.²¹ The median age of 463 Danish choirboys for this event was found to be 14 years and 0 months. However, a statistically significant downward trend between 1993 and 2004 was also found. This was expressed in terms of an increasing “risk of early voice break” relative to the established normative expectation. Height and weight measurements used in this study demonstrated the risk to be unevenly distributed with heavier boys having an increased risk relative to lighter boys. The reported overall trend of a 4 month earlier mean occurrence of “voice break” between cohorts recruited in 1997-1999 and 1990-1992 is not, therefore, a straightforward one. No obese boys and few overweight boys were found in the present author’s 2013 study, which may be related to better education and higher socio-economic status in the parents of English boys recruited as choristers.

In the author’s studies, the mean age of biological onset, detected by “slight deepening” was 13:01 months and the mean age for the middle of subjective judgements of voices “breaking” was 13:09, data which at least superficially cohere well with the Copenhagen study. However, the overall conclusion is that the subjective interpretation of events by boy, parents, singing teacher and choir director is of greater significance than any assessed pubertal stage. There is a period starting at perhaps age 10 or 11 and extending to ages 14, 15 or even 16 when the vocal parts and singing ranges prove to be more the product of human agency than biological determinism.

Conclusions

The trend to earlier puberty over the last quarter century is often exaggerated and sometimes confused with changes in social attitudes or children’s awareness. It is nevertheless real, quantifiable, and demonstrable. We do not know if or when it will end, or whether it has already bottomed out. Studies from around the world and different time periods tend to suggest that puberty timing both retards as well advances, though averaged over long periods, the age of just fourteen remains significant. There can also be periods during which puberty timing appears to have stabilized in one individual country, only for trends to re-emerge.

The causes are complicated and diverse. It is unhelpful to suggest simplistic explanations such as “hormones in meat”. It is more helpful to talk in terms of *risk*. There comes a time when a boy might continue as a soprano or alto, but the risk of his voice cracking or “breaking” continually increases. The acceptability or otherwise of such a risk is a matter of ethics that choir directors need to consider. Often overlooked in the debates is the impact of singing styles, training methods, vocal loading (or the frequency with which the singing voice is used) and the individual preferences and beliefs of boys, parents, teachers, conductors, and coaches. These are important matters over which we do have control, so all who work with young male voices need to have a thorough and up to date understanding of all the relevant factors, including methods of risk assessment.

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- ¹ Martin Ashley and Anne-Christine Mecke, "'Boys are apt to change their voice at about fourteene yeeres of age': An historical background to the debate about longevity in boy treble singers" *Research Reviews in Human Learning and Music* 1 (2013): 1 – 19.
- ² Martin Ashley, "The English choral tradition and the secular trend in boys' pubertal timing" *International Journal of Research in Choral Singing* 4, no. 2 (2013): 4 – 27.
- ³ Gary Butler, David Howard and Martin Ashley, "A novel iPhone app: "Speech Test©" is a non-invasive way to determine the onset of puberty in boys" (poster presentation, International Society of Paediatric Endocrinologists, July 17, 2017).
- ⁴ Graham Welch and David Howard, "Gendered Voice in the Cathedral Choir" *Psychology of Music* 30 (2002): 102 – 120.
- ⁵ Edward Wickham, "Girls on Top: how the male-dominated English church choir is changing" *Guardian Music* July 5, 2016.
- ⁶ Timothy Day, "Cultural History and a Singing Style: 'The English Cathedral Tradition'," in *The Oxford Handbook of Singing* (Oxford: Oxford University Press, 2019).
- ⁷ Jenevora Williams "Boiling Frogs and Tipping Points: which sung pitch range is best for boys during voice change?" *ABCD Choral Directions Research* 1 (2020): 33 - 40.
- ⁸ M.L.L. Harries, J.M. Walker, D.M. Williams, S. Hawkins and I.A. Hughes "Changes in the Male Voice at Puberty" *Archives of Disease in Childhood* 77 (2008): 445 – 447.
- ⁹ Harry Hollien, Rachel Green and Karen Massey "Longitudinal Research on Adolescent Voice Change in Males" *Journal of the Acoustic Society of America* 96, no. 5 (1994): 2646 – 2654.
- ¹⁰ J.M. Tanner (1920-2010) the British pediatric endocrinologist whose five stages of puberty have become a global standard.
- ¹¹ Puberty stages can be given as "G" (genital development) "P" (pubic hair growth) or "C" (Cooksey vocal parameters). G, P and C do not correlate well, so the discussion has reverted to a more generic "puberty phase" at this point. A full account of the differences is given elsewhere by the present author.
- ¹² Martin Ashley, *Contemporary Choral Work with Boys* (Abingdon, Oxford: Compton, 2014).
- ¹³ Martin Ashley, "Beautiful Swansongs of English Cathedral Music: adolescence and the boy treble voice" *NATS Journal of Singing* 75 no. 2 (2018): 141 – 153.,
- ¹⁴ Jenevora Williams, "The implications of intensive singing training on the vocal health and development of boy choristers in an English cathedral choir" (Ph.D. diss., University of London, 2010).
- ¹⁵ Colin Baldy *The student voice: an introduction to developing the singing voice* (Edinburgh: Dunedin, 2010).
- ¹⁶ Ron Morris (Speech Therapist, Audiologist and Counter-Tenor, University of Queensland, Australia), in discussion with the author, July 2011.
- ¹⁷ Stephen Beet, *The Better Land: in search of the lost boy sopranos*, (Waterford: Rectory Press, 2005).
- ¹⁸ Ann-Christine Mecke, "Mutantenstadt. Der Stimmwechsel und die deutsche Chorpraxis im 18. und 19. Jahrhundert [Mutants' House: Voice change and German choir practice in 18th and 19th century]." (Berlin: Wissenschaftlicher Verlag, 2007).
- ¹⁹ Mette Pedersen *Normal development of voice in children: Advances in evidence-based standards* (Heidelberg: Springer, 2008).
- ²⁰ The Speech Test app. Available from Apple Appstore.
- ²¹ Anders Juul, Steinunn Magnúsdóttir, Thomas Scheike, Sven Prytz and Niels E. Skakkebæk, "Age at voice break in Danish boys: effects of pre-pubertal body mass index and secular trend" *International Journal of Andrology* 30 (2007): 537 – 542.