
Chapter 12
The musical child prodigy (wunderkind) in music history: a historiometric analysis
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Abstract
This historiometric study on the musical child prodigy (wunderkind) is based on a sample of 213 European-wide reports in Allgemeine Musikalische Zeitung (the most important music journal in the first half of the nineteenth century) between 1798 and 1848. A quantitative analysis of biographical data revealed a mean age of 10.73 years at the first public performance (time of report). Over a period of 50 years no differences in the prodigies’ ages at the performance debut could be observed between groups of instruments (pianists, string players, singers). Data analysis revealed an increase in wunderkind reports, which reached a peak between 1821 and 1825—the historical beginning of the virtuosic era. Female prodigies performed on the piano or as singers (‘feminine’ instruments), while male prodigies played the flute, clarinet, and violin, the ‘masculine’ instruments. The association between gender and instrument choice in the nineteenth century was different compared with that today. Finally, it is argued that in every era people seem to be enthralled to the remarkable musical achievements of very young children. However, nowadays this public passion is fulfilled through viewing of television talent contests and video-sharing websites.

Throughout John Sloboda’s research, aspects of musical development and outstanding musical achievement were the focus of his work. Two shining illustrations are his investigation into the nature of a young savant’s musical memory (Sloboda, Hermelin, & O’Connor, 1985) and his analysis of expertise development in jazz using Louis Armstrong as an example (Sloboda, 1991). He was interested in ‘children who showed
exceptional precocity at various musical skills (Sloboda, 2005, p. 249) and was involved in a study to determine early predictors of outstanding musical achievement (Howe, Davidson, Moser, & Sloboda, 1995). My contribution to this volume is dedicated to John's work (for an overview see Sloboda, 2005) as it explores some historical prerequisites of the wunderkind (child prodigy) phenomenon.

Children with early signs of extraordinary achievement, so-called prodigies or 'wunderkinder', have always captivated the scientific community and the interest of the general public. Today, a prodigy is defined as a person who achieves great success when relatively young (Pearsall, 1999, p. 1653). In his dissertation on the history of musical child prodigies, Stevens (1982) gives an account of such prodigies from the ancient world (pp. 8–10). For example, the ancient Greek god Apollo was said to have felt longing for the sound of the lyre and kithara shortly after birth. The most well-known example of a musical child prodigy from the Middle Ages is Hildegard von Bingen (1098–1179). At the age of 8 years, she received tuition in psalm singing in a Benedictine monastery and later became one of the most famous female composers in music history. However, the reason for the rare number of reports on early outstanding achievement is due not only to a lack of documentation, but also to the historically late development of the concept of childhood.

Thus, to understand the fascination with early accomplishment, we have to consider a larger historical framework. An early framework was given by Aris (1962) in his comprehensive history of childhood: as the author reveals, there had been no consciousness in society with regard to an autonomous ‘childhood’ prior to the seventeenth century. But changes in attitude towards childhood and individual accomplishment made people take more notice of early achievement. Thus, anecdotal reports of child prodigies were replaced by systematic descriptions of young individuals. The next historical framework to consider is the development of individualistic concepts in humans, which emerged in the Western world between the fifteenth and sixteenth centuries. Based on examples from art, philosophy, and religion, Jansz (2004) argues that there was a shift from the collective to the individual from the fifteenth century onwards (p. 17). In the continuing historical process of the eighteenth century, group membership and birth status lost their determining power. Once demographic and economic background was no longer sufficient to explain an individual’s outstanding achievement, alternative explanations were needed. For example, theological differences (as given, for example, by disciplines such as phrenology) became of interest to explain mental differences among people. In other words, in the eighteenth and nineteenth centuries, the new ‘psychological perspective was the outcome of individualization’ (Jansz, 2004, p. 40). These two historical frameworks may explain the increasing public interest in musical child prodigies and a cumulative number of reports in contemporary sources.

The first extensively documented (non-musical) prodigy baby was Christian Heiniken, born on 6 February 1721 in Lübeck, Germany (see Hemig, 1999). By the age of 14 months he could read and knew parts of the Old Testament by heart; a couple of weeks later he could also recite selections of the New Testament and was able to remember 200 church songs. He showed an extraordinary memory, could give extensive reports on historical facts, and gained fame after he was presented to the Danish court in 1724, where he was examined thoroughly. Christian Heiniken was the first child to be labelled as a ‘wunderkind’ (Stevens, 1982, p. 4). However, due to serious health problems, he died on 27 June 1725 at the very young age of 4 years. Although this early report on a child prodigy is of historical interest, when considering it from a modern scientific approach, we need to be careful about its reliability.

In the musical domain, early psychological reports on extraordinary achievements of young children began to appear at the start of the twentieth century. As Révéz (1916, p. 63) reported, around 1910 Erich Moritz von Hornbostel tested the musical hearing skills of the 13-year-old composer prodigy, Erich Wolfgang Korngold (1897–1957) in Vienna. Between 1910 and 1914 Révéz conducted a long-term case study on the young pianist and composer, Erwin Nyiregházi (1903–1967). Révéz was so enthusiastic about this child that he wrote, ‘he has the capability of the young Mozart’ (Révéz, 1916, p. 3, transl. R. Kopiez). However, after brief success as a pianist and film composer, this prodigy experienced one disaster after another, characterized by numerous divorces and social decline (see Bazana, 2007).

In the late twentieth and early twenty-first century, researchers have continued to be fascinated with young children with exceptional skills. For example, publications on this topic can be found with regard to musical prodigies in general (Fisher, 1975; Kennese, 1998), and also musical savants (Miller, 1989), gifted artistic and musical children (McPherson & Williamson, 2006; Winner, 1996), and disabled musicians (Occhelfoird, 2008). Howe et al. (1995) interviewed 257 parents of music students who differed in the extent of their mastery. However, only one early predictor could be found for the most successful musicians: success in an early age.

From the perspective of music psychology, the explanation of extraordinary musical achievement in children with reference to inexplicable and wondrous abilities is to be considered critically. First, there is no objective definition of achievement and age that could serve as a criterion for the classification of a wunderkind; second, based on expert theory, alternative explanations can be given for outstanding achievements. As reported by Sloboda (2005, p. 251), children classified as prodigies show a 'high degree of intrinsic motivation for engagement with a single activity sustained over many years'; they live in a supportive environment with access to instruments and training; and they spend a significant amount of time engaged with the materials relevant to skill acquisition. Controlled investigations under laboratory conditions showed a different picture, which disproved the common idea of innate talent. In a case study of the musical savant NP, Sloboda et al. (1985) demonstrated that the 'verbatim' metaphor for an extraordinary musical memory was erroneous. In addition, the role of extensive practice remains unreported in other publications of child prodigies (Sloboda, Davidson, Howe, & Moser, 1996). As an extreme example, the neuroscientist Lutz Jäncke claimed that even Mozart was a wunderkind, and his achievement could be explained by his early initiation into music and extensive, deliberate practice (see Wolff, 2006). Finally, musical prodigies can only be understood in their respective social and historical contexts. Stevens' (1982) comprehensive list of musical child prodigies in music history, although the first to be published, comprised a highly heterogeneous sample. The author did not indicate the use of an objective criterion for the inclusion of children in his list of child prodigies. He also used an a
posteriori approach from an historical perspective rather than an a priori and contemporaneous report such as the historiometric study published in the *Allgemeine Musikalische Zeitung* (AMZ). Thus Stevens’ list of persons considered as wunderkind may be biased. Our sample, based on the AMZ reports, is much more homogeneous and considers only those children who were designated as child prodigies in early childhood irrespective of their later careers. In contrast, Stevens considered only those children who continued successfully as musicians into adulthood. Although the diagnostic criteria for a wunderkind may be different from those that may be selected today, the AMZ sample is more objective and considers only those children who received a certain amount of public attention for their musical productions. It also adheres to a ‘romantic determinism’ of prodigies and their later careers.

**Rationale of the study**

Based on an explorative historiometric approach, this study intended to contribute to a better understanding of the historical changes in the phenomenon of musical prodigy in the first half of the nineteenth century. The historiometric approach was introduced by Simonton (1990) to apply ‘quantitative analyses on data concerning historical individuals’ (p. 5) or multiple cases. Recently, this promising approach has been used to provide an explanation of the musical development of famous musicians (Lehmann, 2006) and the lifespan development of Clara Schumann (Kopiez, Lehmann, & Klasson, 2009). Here I will try to answer three questions: First, how has the frequency of reports on musical prodigies changed over decades? Second, what are the preferred instruments played by prodigies? Third, what was the average age at the moment of the reported first public performance?

**Method**

The data used for this study was collected from all 50 volumes of the German music journal AMZ, published in Leipzig (Germany) from 1796 to 1848. The AMZ was the authoritative music journal of its time (Krause, 1996, p. 1064) and received reports on musical events from its foreign correspondents all over Europe. Thus, it is fair to assume that this data collection is representative of the majority of wunderkind reports in the first half of the nineteenth century. The extracted reports were compiled by Fuchs (2003) and resulted in an extensive list of 213 musical child prodigies. However, although the author gave the relevant data she did not provide any analysis. The data comprised the name of the prodigy (e.g. Franz Liszt), the location of the first performance (e.g. Vienna), the instrument (e.g. violin), the age at the time of first performance and the year of performance. As a test of the sample’s validity, the names of the reported children were compared with Stevens’ extensive data collection on musical prodigies (1982). Only 24 of the 213 names in Fuchs’ collection were congruent with Stevens’ list.

**Results**

**Changes in frequencies of reported public performances**

The distribution of the number of reports on wunderkind (see Figure 12.1) in the AMZ shows a clear deviation from equal distribution ($\chi^2(47, N = 213) = 76.57, p = 0.0001$) with an expected mean number of 4.44 concerts per year. This can best be described as a bimodal distribution: starting in 1798, the frequency of reports increased over a period of about 25 years, reaching its maximum between 1821 and 1833. After a first decline between 1829 and 1833, a second peak was reached between 1839 and 1842. This bimodal distribution of reports can be interpreted in terms of two cohorts, separated by a time distance of about 20 years.

**Distribution of instruments**

The distribution of preferred instruments for performing (see Table 12.1) reveals a clear picture: the list is dominated by four instruments, piano, violin, voice, and flute, which account for 87.9% of all reported performances. One child played an exotic instrument, the cökan (a so-calledduct flute in the shape of a walking stick), which was popular in Austria between 1807 and 1840. Although I cannot exclude that in some cases (e.g. Franz Liszt) the programme performed also contained creative contributions such as improvisations, most of the performances were characterized by reproductive activities (for examples of reprinted concert programmes see Boduch, Biba, & Fuchs, 2003) and the performance of standard repertoire. However, the list also has a minority of child composers (Erasmus Kesler, 14 years old, Vienna, 1821; Renau de Vieubach, 13 years old, Paris, 1844; Geiger [no first name indicated], 9 years old, Vienna, 1844).

Another interesting aspect of Table 12.1 is the difference in instrument frequencies between the sexes. The piano was performed in equal measure by boys and girls ($\chi^2(1, N = 106) = 0.36, p = 0.54$). However, 65.7% of the girl prodigies were pianists.
Table 12.1 Distribution of choice of instruments of all 213 musical child prodigies reported in the Allgemeine Musikalische Zeitung between 1798 and 1848. Percentages are indicated in parentheses.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Number (%)</th>
<th>Boys</th>
<th>Girls</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piano</td>
<td>52 (39.7)</td>
<td>46 (65.7)</td>
<td>16 (51.5)</td>
<td></td>
</tr>
<tr>
<td>Violin</td>
<td>43 (32.8)</td>
<td>5 (7.1)</td>
<td>51 (34.8)</td>
<td></td>
</tr>
<tr>
<td>Singing</td>
<td>2 (1.5)</td>
<td>1 (15.7)</td>
<td>13 (6.3)</td>
<td></td>
</tr>
<tr>
<td>Flute</td>
<td>11 (8.4)</td>
<td>4 (5.7)</td>
<td>4 (1.9)</td>
<td></td>
</tr>
<tr>
<td>Violoncello</td>
<td>5 (3.8)</td>
<td>1 (1.4)</td>
<td>6 (2.9)</td>
<td></td>
</tr>
<tr>
<td>Guitar</td>
<td>3 (2.3)</td>
<td>1 (1.4)</td>
<td>4 (1.9)</td>
<td></td>
</tr>
<tr>
<td>Harp</td>
<td>3 (2.3)</td>
<td>-</td>
<td>3 (1.5)</td>
<td></td>
</tr>
<tr>
<td>Clarinet</td>
<td>3 (2.3)</td>
<td>-</td>
<td>3 (1.5)</td>
<td></td>
</tr>
<tr>
<td>French horn</td>
<td>3 (2.3)</td>
<td>-</td>
<td>3 (1.5)</td>
<td></td>
</tr>
<tr>
<td>Composition</td>
<td>2 (1.5)</td>
<td>-</td>
<td>3 (1.5)</td>
<td></td>
</tr>
<tr>
<td>Organ</td>
<td>1 (0.8)</td>
<td>-</td>
<td>1 (0.5)</td>
<td></td>
</tr>
<tr>
<td>Cuckol (duct flute)</td>
<td>1 (0.8)</td>
<td>-</td>
<td>1 (0.5)</td>
<td></td>
</tr>
<tr>
<td>Violad</td>
<td>126</td>
<td>68</td>
<td>206</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>70</td>
<td>213</td>
<td></td>
</tr>
</tbody>
</table>

Note: Differences between the frequencies for the two years and the sums of frequencies is because of some missing first names. In seven cases no instrument was indicated.

*χ² test on equal distribution of sex of performer in the respective instrument, significant at the p < 0.01 level; in case of frequencies of n ≤ 5, statistics could not be computed.

compared with 39.7% of the boys. For the violin the picture was different: 43 (32.8%) boys but only 5 (7.1%) girls played it (χ²(1, N = 41) = 30.08, p = 0.001). While singing prodigies were predominately girls (15.7% χ²(1, N = 13) = 6.23, p = 0.011), flute players tended to be boys (8.4%). Against a background of current studies on gender associations with musical instruments (for an overview see McPherson & Davidson, 2006, p. 334), there are noticeable differences between the nineteenth century and today. For example, the flute and the clarinet have undergone a change of their 'masculine' character and are nowadays associated with 'feminine' qualities and preferably played by female instrumental beginners.

Age at the time of performance

The distribution of the children's ages at the time of their first public performance as reported in the AMZ is shown in Figure 12.2. Prodigies performed at a mean age of 10.73 years (SD 2.47 years). The youngest person (performing the violin and the harp) were only 4 years old; the oldest children (performing the piano and the violin) were 16 years old. There were no statistically significant differences in the age of performance between the sexes (F(1, 161) = 0.11, p > 0.67), instrument groups recorded into the three major groups of pianists, string players, and singers (F(2, 161) = 0.88, p > 0.41), or for the relation between gender and instrument group (F(2, 161) = 0.07, p > 0.93). In other words, regardless of the instruments played by the prodigies, there is no evidence for differences in the average age levels at the first performance with regard to sex or instrument. The finding of an approximately constant age at first performance over a reported period of 50 years was confirmed by a correlation analysis between age of first performance and the year of publication in the AMZ (r(207) = 0.025, p = 0.72). However, we have to bear in mind that the reported age is not always identical with the biological age, and prodigies were sometimes reported as being one to two years younger than they were (e.g., in the case of Franz Liszt, his age was sometimes reduced by 1 year, see Walker, Eckart, & Mueller, 2008).

Distribution of places of performance

The distribution of the cities where the performance occurred in the reports showed an interesting pattern. First, in about 45% of all reports, a concentration of wunderkind activities in five major European cities was observed (Vienna: n = 34, Berlin: n = 25, Prague: n = 16, Frankfurt/M.: n = 11, Paris: n = 13). Second, several children (17.3%) performed in only one city. In the case of Vienna, this concentration of activities is consistent with the city's significance as one of the major music hubs of the first half of the nineteenth century. During the early years of the nineteenth century, Vienna had an "international standing as a centre of musical culture" (Antonick, Beales, Botstein, Klein, & Goertz, 2005) that benefited from the activities of Haydn and Beethoven. Moreover, there was a growing population of music-loving people living in the city, for example, by the 'Gesellschaft für Musikfreunde,' which was founded as
a civic concert organizer in 1814, or by the Vienna Philharmonic, founded in 1842. The same was true for Berlin: ‘From the early 19th century Berlin has been visited by almost every notable virtuoso and important soloist’ (Becker, Green, Camming, Fabian, & Roeder, 2009), such as Pagannini in 1829, Clara Schumann in 1835, or Liszt in 1841. The importance of Vienna as Europe’s main ‘music city’ is also reflected in Clara Schumann’s concert activities, 16.0% of which occurred in Vienna between 1828 and 1840 (see Kopietz et al., 2009).

**Discussion**

The quantitative analysis of first public wunderkind concerts considered 213 reports from the AMG over a period of 50 years, as listed by Fuchs (2003). Based on these data, on average about four performances of prodigies were reported per year. The number of reports differed significantly between the years with a maximum of 11 reports per year between 1821 and 1825. Although the AMG was the most important music journal of its time, it is unrealistic to assume that every wunderkind concert was visited and reported by the journal’s correspondents. Thus, it is likely that the true number of wunderkind performances might be underestimated and will remain unknown.

Concerning the distribution of instruments, the piano was identified as the main instrument in wunderkind concerts, followed by the violin, voice, and the flute. However, a clear gender effect on instrumental preference was observed: the piano and voice were considered ‘feminine’ instruments, while the violin and the flute were more ‘masculine’ instruments. Although there are no data on historical changes in preferences for musical instruments as a function of gender, the results can be interpreted against the background of the current discussion about ‘music and gender’ (see O’Neill, 1997). Although we cannot be sure that instrumental choices in the nineteenth century were made by the children’s’ parents, we find a different picture of ‘masculine’ and ‘feminine’ stereotypes in parents’ instrumental choices today. When asked to select a musical instrument for their child, today’s parents usually choose the clarinet, flute, or violin for a girl, and drums, trombone, and trumpet for a boy.

However, this gender stereotyping seems to be acquired as it was not found in the instrument choices for young children (O’Neill, 1997). These gender-stereotyped preferences seem to change only very slowly over time. Based on data from 165 boys and 338 girls (age range 12–17 years), Scheuer (1988, p. 88) found the following ranking of ‘masculine’ instruments played by boys: guitar (32%), piano (18%), and recorder (14%). The ‘feminine’ instruments played by girls were recorder (33%), guitar (32%), and piano (20%). In two additional preference tests (sounding questionnaire and visual preference test), girls showed a clear preference for smooth sounds and ‘middle-class’ instruments (e.g. piano and violin), while boys preferred powerful sounds and electrified instruments (e.g. brass instruments, organ, guitar, see Scheuer, 1988, p. 121). Data from the 1990s provide evidence for a slight tendency towards a limited increase ‘in the proportion of girls playing masculine instruments’ (O’Neill, 1997, p. 56).

Although the average age of a wunderkind in this study (10.73 years) at his or her first public performance is just pre-puberal (which is characterized by maximizing skills while still presenting a childish appearance), it is much harder to determine the performance level of the children. Of course, performance criteria for the designation of a child as a wunderkind in the past might have been different from the criteria of today. This uncertainty could only be resolved by considering the performed repertoire of each reported case. However, two factors give evidence for the assumption of a lower level of performance skills compared with the technical capabilities of young performers today. First, we have to bear in mind that a wunderkind recital was a heterogeneous mixture of pieces comprising different collaborators, and the wunderkind played in only part of the concert. For example, at Clara Wieck’s first public concert on 8 November 1830 (at the age of 11), the first part of the concert started with an orchestra overture by Weber, followed by variations performed by a singer. In this first part, Clara presented the more demanding Variations Brillantes, op. 23, for a piano solo by Herz. In the second part of the concert, Clara Wieck started with the less demanding, but audience-captivating, Quatuor Concrivant by Cerny (for four pianos and orchestra), followed by her own (less demanding) Romance for phynphonica and piano. The concert ended with a song by Rossini (performed by an invited singer) and variations for piano solo composed by Clara herself (for details see Kopietz, 1997).

In other words, the audience was supposed to be attracted more by a wide range of pleasing pieces than only by Clara’s overwhelming technical superiority.

The assumption of a lower level of early mastery in the nineteenth century is supported by quantitative analyses of the historical development of expert performance (Lehmann & Ericsson, 1998). Briefly, the authors showed that ‘more recent prodigies have been more advanced in their performance skills than prodigies from earlier times’ in performing more difficult works at an earlier date (p. 85, see also Lehmann, 2006).

Finally, the question remains whether the musical wunderkind is a phenomenon of historical interest only. On the contrary, it seems that every time period has its own perspective on musical child prodigies. Since the late twentieth century mass media has played a crucial role in the generation of publicity for high achievement in young children, and public fascination for it seems to be undiminished. However, the wunderkind concerts in Vienna and Berlin of the past have been partially replaced today by the opportunities afforded by television and the internet (e.g. YouTube). Some current examples include the classical pianists Marc Yu and George Li (10 and 13 years old at the time of writing), Connie Talbot (6 years old, singer and finalist of the 2007 television contest Britain’s Got Talent), Bianca Ryan (11 years old, singer and winner of the 2006 television contest America’s Got Talent), and, of course, Michael Jackson. Even at the age of about 8 years he had showed extraordinary talent in his dance moves and singing ability and started his solo career at the age of 13 in 1971 with the solo hit ‘Got to Be There’, after years of extensive skill acquisition and optimization in the band The Jackson 5. The extraordinary public interest in musical prodigies is also reflected by the degree of media distribution: the video of Bianca Ryan’s live performance of the very demanding song ‘And I am Telling You’ was viewed over 2000 000 times on the video-sharing website YouTube and Metacafe between January 2007 and 2008. These examples not only give support for the ‘acceleration hypothesis of musical expert performance’ (Lehmann & Ericsson, 1998), but they also show that the wunderkind phenomenon has also gained ground in popular music.
Summary and conclusions

I have tried to add a new perspective to the phenomenon of musical child prodigies by considering its historical development. Based on historiometric analysis I have shown that the rising interest in outstanding achievement at a very young age began in the first half of the nineteenth century. This increasing interest in early achievements was accompanied by an increasing general interest in childhood as an autonomous period of life. Although in some cases a public performance was reported at the very early age of 4 years, the majority of musical child prodigies usually appeared on stage at 8 years and older. If we compare our findings with the development of outstanding skills in other artistic domains, there is evidence that instrument performance seems to have a special position. For example, there are almost no reports on outstanding accomplishments in painting before the age of 8: Picasso finished his first painting (Le Picador) in 1890 at the age of 9. I suggest that the domain of music performance benefits from the early development of the sensorimotor system, whereas other domains may depend more on cognitive maturation as a prerequisite for development of creative processes. Finally, one can assume that the allure of musical child prodigies will continue to flourish and will also offer us insight into the very early stages of human development.

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References


