One-Hit Wonders in Classical Music: Evidence and an Explanation for an Early Career Peak

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Abstract

Anecdotes suggest one-hit wonders peak early in their careers, but no quantitative investigation has focused on this issue in lifespan creativity. Here, recording count criteria were used to define samples of 89 one-hit and 89 "multi-hit" classical composers. One-hit composers peaked reliably earlier than their multi-hit counterparts, and this effect was stronger between more prototypical one-hit versus multi-hit composers. Lifespan, historical year, and age at expertise acquisition onset do not explain the effect. However, compared to multi-hit composers, one-hit composers favor easily elaborated, small-scale works like songs, which intrinsically peak earlier than other genres. The pattern of career landmarks across five musical genres, using a sample of 394 composers, supports this interpretation. Finally, one-hit composers' operas are more highlight-dominated than those of multi-hit composers. Overall, results suggest that chance factors play larger roles in the success of one-hit composers than multi-hit composers.

Keywords: lifespan development; expertise; creativity.

Introduction

A curious aspect of creativity is represented by so-called "one-hit wonders": individuals who, despite a lifetime of work, produce only one outstanding contribution, which dominates their reputation. Can similar mechanisms account for the creativity of one-hit wonders and their multi-hit counterparts? One intuitive explanation is that one-hit wonders are just lucky; that is, their success might largely be attributed to chance. While some degree of chance is an essential component of creativity (Simonton, 1997, 2003), a facile answer of "luck" is not really an explanation. For example, one might ask if chance plays an equally strong role in the creative productivity of one-hit versus multi-hit creators, just as domains differ in the degree to which they can be characterized by stochastic processes (Simonton, 2003). In particular, differences might be evident in how the best-known works of one-hit and multi-hit composers are distributed over the lifespan.

Much is known about lifespan creative productivity (Simonton, 1997). In general, creators typically start their careers some time in their twenties; productivity rapidly increases, peaks around age 40, and is followed by a shallower trailing off. Average trajectories differ across domains: those like theoretical physics, in which creators can generate and work out ideas more quickly, peak earlier than domains characterized by intrinsically slower ideation and elaboration rates, like history (Simonton, 1984). Moreover, Simonton's (1997, 2003) Darwinian model of creative productivity predicts that creators are most likely to achieve a hit when they are most productive overall. Since peak productivity in classical music occurs around age 40, composers' major works should on average be written around that age. Thus, on average one-hit wonders should also peak around age 40, or perhaps later, since they likely start their careers later (cf. Simonton, 1991a).

If one-hit wonders' average career peak differs from that of their multi-hit counterparts, this anomaly might serve as an inroad to understanding the nature of one-hit wonders' creativity. Indeed, a striking anecdotal observation is that one-hit wonders often make major contributions when relatively young (Galenson, 2001, 2004a, 2004b). Maya Lin, who is famous solely on the basis of the *Vietnam Veterans Memorial*, created at age 21, exemplifies this phenomenon (Galenson, 2004a).

Galenson (2004a) contrasted the careers of early-peaking "conceptual innovators" with later-peaking "experimental innovators" in several domains. By radically changing a domain's rules, conceptual innovators can make noteworthy contributions early in their careers, but because their contributions tend to strike out in fundamentally novel directions, the results are inherently rather hit-or-miss. In contrast, experimental innovators typically produce their best work late in life, and their outputs are *not* dominated by a single contribution. Experimentalists build incrementally on a foundation of skill and experience and seem able to maintain a more even quality across their major works.

Several predictions follow from Galenson's observations. First, there should be great variation in the extent to which creators' reputations are based on one versus many works. At one extreme of this continuum are "one-hit wonders," whose reputation is literally based on a single noteworthy contribution; at the other, creators whose reputation rests on an overall body of work of more consistent quality. Second, there should be an association between peak age and one-work dominance. Specifically, creators whose reputation is dominated by one work should be more likely to have created the work at a younger age, compared to multi-hit creators' age at best work.

Quantitative research on larger samples has yielded results consistent with these observations. Zickar and Slaughter (1999) examined careerwise changes in quality among 73 film directors and found that directors whose first film was highly acclaimed showed a strong decline in subsequent works, an instance of regression to the mean of which one-hit wonders may be the most striking examples. Simonton (1994, pp. 244-245) illustrated the career

trajectories of samples of very eminent versus less eminent composers. The greatest composers wrote their most acclaimed work around age 42; lesser composers, around 38. While this difference was not statistically significant, sample sizes were small and the direction of the difference is consistent with Galenson's observations. Would a statistically significant peak age difference be found for larger, objectively-defined samples of one-hit versus multi-hit composers?

In sum, previous work suggests one-hit wonders may peak at a comparatively young age, but this proposition has not been directly and quantitatively investigated. This investigation is the first to examine it explicitly, and it has several goals: 1) to define samples of one-hit and multi-hit composers by objective, quantitative criteria; 2) to compare career landmarks in the two samples, especially age at most popular hit, to determine whether the hypothesized age effect holds; 3) if it does, to try to explain it.

Method

One-hit Composers

Since "one-hit wonder" status is determined largely by popularity, recording counts were used to select composers and define their top hits. Counts were made using an online comprehensive music catalog, http://www.arkivmusic.com. Several criteria were used to operationally define one-hit composers. First, they had to be represented on 20 or more CDs, a threshold based on the average number of CDs for the 30 "most popular composers" listed on the website for each letter of the alphabet.

An initial survey yielded 678 composers with at least 20 CDs, consistent with previous estimates of the size of the canon of classical composers (e.g., Murray, 2003). Composers were excluded if the age when they wrote their most popular work could not be ascertained or if they were still alive. Two more quantitative criteria were used to operationalize one-hit composers as those whose output is dominated by one work: 1) "1-to-all" ratio: each composer's most recorded work had to have a count of at least half of the total CDs containing that composer's music. That is, if a composer's total CD count was 100, their most recorded work needed at least 50 separate recordings to meet the criterion. (Recording counts for each work included recordings of the complete original work plus all excerpts and arrangements, as listed on the Arkiv website.) 2) "1-to-2" ratio: each composer's most recorded work had to have at least twice as many recordings as their second most recorded work. This eliminated composers who wrote several very popular works. (If a composer was literally represented by only one work, the "second most recorded work" received a score of .5 recordings for this calculation.)

The joint criteria yielded 89 composers whose outputs are dominated by one work. They span five centuries and 13 nationalities. While the output of each composer is dominated by one work, the extent of this varies considerably. This can be quantitatively assessed using the 1-to-all and 1-to-2 ratios. The 1-to-all ratio was essentially normal (skew = 0.2, kurtosis = 0.6). However, since the 1-to-2 ratio distribution substantially departed from normality (skew = 4.7, kurtosis = 28.7), it was *ln*-transformed; *z* scores for each distribution were then calculated, averaged, and used to sort composers by one-hit prototypicality. The selection criteria's validity can be gauged from the inclusion of numerous composers who are represented on a CD set entitled "One Hit Wonders" (various artists, 2003).

Multi-hit Composers

To form a comparison sample, selection of multi-hit composers began with composers with the most total recordings. Individuals already classified as one-hit composers were excluded from consideration, as were living composers and those whose most recorded work could not be accurately dated. Excluded composers were replaced with the next most recorded composer, until the total reached 89, the sample size of one-hit composers. The multi-hit composers span three centuries and 18 nationalities. For each composer, 1-to-all and 1-to-2 ratios were again calculated. Here both distributions deviated substantially from normality (1-to-all ratio: skew = 1.0, kurtosis = 0.7; 1-to-2 ratio: skew = 2.0, kurtosis = 4.7), so both ratios were *ln*-transformed; *z* scores for each distribution were again calculated, averaged, and used to sort composers by multi-hit prototypicality.

Since no single work dominates the output of each multi-hit composer, one might wonder if top hits are representative of each composer's most popular works. Thus, each multi-hit composer's second-most recorded work was also tabulated and compared to their top hit.

Control variables: Lifespan and Hit Year

Examining each composer's lifespan and hit year is necessary to ensure comparability of the two samples and rule out potential confounds. A difference in average lifespan would create obvious comparison problems. Each composer's lifespan equaled death year minus birth year. Also, trans-historical trends may influence creators' age at top hit (Galenson, 2001; Simonton, 1991a). Thus, year of composition was noted for each hit.

Career Landmarks and Career Duration

Since peak age occurs in the context of a whole career, two other landmarks, each composer's first and last contributions, were estimated using earliest and latest datable composition listed on the Arkiv website were tabulated for each composer. Also noted was the difference between them, a measure of career duration.

Musical Genres

Different kinds of musical compositions may differ in intrinsic ideation and elaboration rates and explain any age effect. To examine this possibility, each hit was categorized in terms of the forces required for performance. Five genre categories were used: choral works, instrumental works

(including chamber and keyboard works), operas, orchestral works, and vocal works.

Results

Preliminary Analyses

The first preliminary analysis compared multi-hit composers' most recorded and second-most recorded works. Paired *t* tests compared composer age and composition year of multi-hit composers' number one and number two hits. These did not differ in age, t (88) = 0.43, *n.s.*, or year, t (88) = 0.27, *n.s.* For hit age, *M* (*SD*) = 40.1 (11.6) and 39.6 (10.4) for number one and number two hits, respectively. For hit year, *M* (*SD*) = 1884.6 (54.0) and 1884.3 (53.4) for number one and number two hits, respectively. Number one and number two hits were also categorized by musical genre. Genre frequencies did not significantly differ, χ^2 (4) = 2.3, *n.s,* Cramer's phi = .16. Thus, multi-hit composers' top hits are not atypical of their most popular works.

Next, one-hit and multi-hit composers were compared on two control variables, hit year and lifespan. Neither comparison was significant: for year, t (176) = -0.74, *n.s.*; for lifespan, t (176) = 0.43, *n.s*. For year, *M* (*SD*) = 1878.4 (58.0) and 1884.6 (54.0) for one-hit and multi-hit composers, respectively. For lifespan, *M* (*SD*) = 66.3 (15.8) and 65.3 (15.0) for one-hit and multi-hit composers, respectively. The 45 most prototypical composers in each group were also compared, with very similar results.

To statistically control for any impact of lifespan and hit year, these variables were first used to predict hit age prior to analyzing group differences in hit age. Across all 178 composers, the multiple regression was significant, F (2, 175) = 6.97, p = .001, R^2 = .07. Lifespan was significant, b = .16, *SE*(b) = .05, t = 3.03, p = .003; hit year was not, b = .02, *SE*(b) = .02, t = 1.15, *n.s*. Throughout, analyses controlling for lifespan and hit year invariably yielded comparable results to those that did not. To clarify the meaning of the results, descriptive statistics for each analysis are reported as raw age scores; reported inferential results emply statistical control for potential confounds.

Peak Age Effect

The most fundamental analysis compares the ages at which one-hit versus multi-hit composers wrote their most popular works. The 89 composers in each group were first compared. Results show that one-hit composers were significantly younger than their multi-hit counterparts when they wrote their most popular work, t (176) = -2.43, p = .02, effect size eta^2 = .03, *M* (*SD*) = 36.5 (9.2) and 40.1 (11.6) years for one-hit and multi-hit composers, respectively. This result supports the hypothesized age difference between one-hit and multi-hit composers. However, as noted above, the initial selection criteria were somewhat arbitrary, and composers in each group vary in one-hit or multi-hit prototypicality. Thus, the 45 most prototypical composers in each group were also compared. The analysis again showed a significant effect, t (88) = -2.57, p = .01, eta^2 = .06, *M* (*SD*) = 36.0 (8.7) and 42.4 (12.3) years for one-hit and multi-hit composers, respectively. This is an age difference of some seven years, a medium effect size.

Hits in the Contexts of Composers' Careers

How can the age effect be explained? To test the possibility that one-hit composers peak early because they begin expertise acquisition early, one-hit and multi-hit composers were compared on age at first hit, age at last hit, and career duration, according to recorded works listed on the Arkiv website. *M* (*SD*) for one-hit and multi-hit composers, respectively, were 27.2 (8.5) and 17.8 (5.2) for first hit, 50.0 (16.2) and 63.0 (14.1) for last hit, and 23.8 (19.8) and 46.1 (13.6) for career duration. Each group comparison was significant: for first hit, t (176) = 8.92, p < .001, eta^2 = .31; for last hit, t (176) = -7.71, p < .001, eta^2 = .25; and for career duration, t (176) = -10.42, p < .001, eta^2 = .38. Thus, the productive careers of one-hit composers are far shorter than those of multi-hit composers, with a later start and earlier finish (cf. Simonton, 1991a). Of particular interest is the difference in first hit: differences in age at expertise acquisition onset do not explain the peak age differences; rather, they only exaggerate the difference found above.

Other Explanations for the Peak Age Effect

A more promising explanation may be that the two groups wrote different *kinds* of music. For instance, one-hit composers might favor musical forms like songs with intrinsically faster ideation or elaboration rates, which would likely have a naturally earlier peak. A significant association between genre and group might thus help explain the age effect. This possibility can be tested by checking the frequency of one-hit and multi-hit composers' hits in each of the five genres defined earlier (choral, instrumental, opera, orchestral, and vocal works) and then examining age trends across genres.

Top hit frequencies in the five musical genres among one-hit and multi-hit composers were first compared. The data are shown in Table 1. A 2 (group) x 5 (genre) χ^2 test of association was performed and was significant, χ^2 (4) = 15.4, p < .001, Cramer's phi = .29. This was followed by intra-genre comparisons of one-hit versus multi-hit composers, shown at the bottom of Table 1. As can be seen, one-hit and multi-hit composers significantly differ in the frequency of vocal and instrumental hits, but do not differ in the other genres.

Table 1: Frequencies of top hits in five musical genres.

	Choral	Instrumental	Opera	Orchestral	Vocal
One-hit	5	12	29	20	23
Multi-hit	7	24	18	31	9
χ^2 (1)	0.3	4.0*	2.6	2.4	6.1*
Cramer's phi	.04	.15	.12	.12	.19

*p < .05

To see if genres show intrinsic peak age effects, a 2 (group) x 5 (genre) factorial ANOVA was performed. Group was significant, F (1, 168) = 3.84, p = .05, eta^2 = .02, replicating the earlier effect. Genre was significant, F (4, 168) = 4.00, p = .004, eta^2 = .09, indicating inter-genre peak age differences. There was no interaction, $F < 1$. Overall M (*SD*) peak age for choral, instrumental, opera, orchestral, and vocal works, respectively, were: 46.5, 34.4, 38.5, 41.4, and 34.7 (15.2, 11.7, 8.5, 10.2, and 7.6). Tukey-Kramer post hoc comparisons (alpha = .05) revealed that choral works' late peak significantly differed from the rather early peaks for instrumental and vocal works, consistent with likely differences in ideation and elaboration rates: on average, more complex genres have later peaks. Operas and orchestral works did not reliably differ from other genres.

Within each genre, one-hit and multi-hit composers' peak ages were also compared, but largely due to decreased power, intra-genre comparisons between one-hit and multi-hit composers generally did not yield significant differences: for choral works, t (10) = .020; for instrumental works, t (34) = 0.70; for operas, t (45) = 0.56; for vocal works, t (30) = 1.34, all *n.s*. The comparison on orchestral works was statistically significant, t (49) = 2.12, p = .04, eta^2 = .08.

Thus, the overall peak age effect is not strongly localizable to strong effects within particular genres. Instead, the peak age effect stems from an overall relation between the frequencies with which one-hit versus multi-hit composers wrote hits in various genres and those genres' natural age trajectories. For instance, one-hit composers were likelier than multi-hit composers to have a top hit that was a vocal work, which on average peak earlier than most other genres. Also contributing to the overall age effect was a tendency for multi-hit composers' hits to be orchestral works and for them to have written their orchestral hits somewhat later than did one-hit composers. While multi-hit composers were more likely to have an instrumental top hit, a smaller inter-group peak difference and greater age variability among instrumental hits reduces their impact. Choral works and operas did not influence the age effect.

Generalizing Career Landmarks Across Genres

The argument that the peak age effect is partly explainable by musical genres' natural age trajectories would be strengthened if age trends in a larger sample of composers were found to be consistent with the preceding results. To explore this possibility, three career landmarks (first, best, and last hit) were estimated for all five genres (choral, instrumental, opera, orchestral, and vocal) separately, using recordings on the Arkiv website.

The 678 composers with more than 20 CDs represented the initial population. From this group, composers were selected whose most recorded work in each genre could be accurately dated. Composers were excluded if their most recorded work in a genre was undatable, if they had less than two datable works in a genre, or if several works with different dates were tied for the most recorded work in a genre. In all, 394 composers contributed. A total of 825 genre-composer combinations were analyzed.

Descriptive results are shown in Table 2. Within each landmark, peak ages vary by genre, and the variability generally increases from first to last hit. Within each landmark, variability is fairly consistent across genres, and within each landmark-genre combination, the range is large.

Table 2: Career landmarks in five musical genres.

First Hit	*M*	*SD*	Range
Choral	28.2	9.7	9-51
Instrumental	23.6	9.0	5-68
Opera	31.4	9.0	11-66
Orchestral	26.8	8.2	9-57
Vocal	24.7	9.2	6-54
Overall	26.5	9.3	5-68
Best Hit	*M*	*SD*	Range
Choral	42.8	12.6	19-72
Instrumental	41.1	14.2	18-86
Opera	41.8	10.3	18-76
Orchestral	40.1	11.9	12-76
Vocal	36.0	12.0	12-71
Overall	40.3	12.6	12-86
Last Hit	*M*	*SD*	Range
Choral	60.1	16.4	23-96
Instrumental	60.5	14.7	25-90
Opera	53.9	13.0	25-85
Orchestral	57.9	14.7	21-87
Vocal	52.9	14.2	25-86
Overall	57.5	14.8	21-96

For each landmark, a one-way ANOVA was performed, using genre as the between-subjects variable and residual age as the dependent measure, after controlling for hit year and lifespan. All three ANOVAs were significant: for first, best, and last hit, F (4, 820) = 20.68, 5.73, and 9.41, all $p <$ .001, eta^2 = .09, .03, and .04, respectively. Tukey-Kramer post-hoc comparisons (alpha = .05) showed varied patterns across the landmarks. For first hit, instrumental and vocal hits appear significantly earlier than choral works; orchestral works appear significantly later than instrumental works; operas appear significantly later than any other genre. For best hit, vocal works peak significantly earlier than all other genres, which show no significant differences among themselves. For last hit, there were fewer differences. Vocal works end before choral, instrumental, and orchestral works; instrumental works end after operas and vocal works. Other comparisons were not significant.

These results provide a thumbnail sketch of the genres' contrasting trajectories. Vocal works are the domain of younger composers, showing an early onset, peak, and conclusion. Operas are more concentrated around the middle of composers' careers, with the latest first hit age and a rather early last hit age. Choral and orchestral works begin and end later than most other genres. Instrumental works have the longest overall span, on average showing the

earliest first hit and the latest last hit. The results are consistent with intuitive expectations about different genres' ideation and elaboration rates and their consequent impact on career landmarks. The results support the idea that intrinsic differences in genres' natural age trajectories provide a reasonable explanation for one-hit composers' early career peak. Particularly relevant is the finding that vocal works peak earlier than any other genre and that this is a general characteristic of classical music composition.

Opera Highlights

Inter-genre differences in ideation and elaboration rates and inter-group differences in hit genre frequency seem to represent the most likely and parsimonious explanation for the overall age effect. One-hit composers' hits are often in small-scale genres like vocal works, which have naturally earlier peaks. However, it is curious that one-hit composers' most frequent hit genre was opera (see Table 1), a particularly complex and challenging form of musical composition. Are there any differences in the hit operas of the two groups? Although they do not differ in hit age, the operas of one-hit and multi-hit composers might differ in other respects. For instance, many operas are structured as a series of reasonably independent numbers, which can achieve fame in their own right. Thus, a one-hit composer who is famous for an opera might in practice be famous for an aria or other set-piece, a more modest achievement than writing an opera that is great from beginning to end. Such an effect would be consistent with one-hit composers' bias toward smaller-scale hits like songs.

Do one-hit and multi-hit composers differ in the extent to which their hit operas are highlight-dominated? To examine this question, the 47 operas among one-hit and multi-hit composers' top hits were examined. Using the Arkiv website, the number of separate recordings of the most recorded excerpt from each opera was tabulated and divided by the number of complete recordings of each opera. The resulting highlight ratios ranged from 0.79 to 33.5. Higher numbers indicate a stronger dominance of the most popular highlight over the complete opera. Overall, *M* (*SD*) highlight ratio = 8.07 (8.0). Since the distribution was non-normal (skew = 2.0, kurtosis = 3.6), ratios were transformed by the natural logarithm, new *M* (*SD*) = 1.71 (0.88). In addition, hit year was first partialled out of *ln*-transformed highlight ratio, r (45) = .36, p = .01. Comparing the groups on residual highlight ratio revealed that one-hit composers' hit operas were significantly more highlight-dominated than multi-hit composers' hit operas, t (45) = 2.16, p = .04, eta^2 = .09, *M* (*SD*) = 1.94 (0.8) and 1.33 (0.9) for one-hit and multi-hit composers, respectively, a medium to large effect size. Thus, while the hit operas of one-hit and multi-hit composers are written around the same age, the operas themselves differ in the nature of their popularity. The fame of one-hit composers' operas seems largely driven by popular highlights that outshine the opera as a whole; this is much less true for multi-hit composers.

Discussion

This investigation quantitatively examined lifespan creativity in a sample of quantitatively defined one-hit wonders in classical music. Consistent with anecdotal reports, on average one-hit composers wrote their most popular works at earlier ages than multi-hit composers. The observed age effect did not result from differences in lifespan, broader historical trends, or differences in age at career onset. Indeed, one-hit composers' significantly later start, coupled with their earlier peak, only exaggerates the basic peak age effect. Thus, the small to medium effect sizes found for many inter-group comparisons on chronological age represent a lower limit on the magnitude of the differences. Overall, the career landmarks of the present sample of one-hit composers' resembles those of a sample of less eminent composers illustrated by Simonton (1994, p. 244). While low eminence and one-hit status are not necessarily synonymous, the parallel suggests that the present documentation of one-hit composers is adequate for meaningful comparisons with the multi-hit sample.

The most likely explanation for the peak age effect involves a relation between the frequencies with which one-hit versus multi-hit composers wrote hits in various musical genres and the natural age trajectories of these genres. In the one-hit and multi-hit groups and the more comprehensive sample of composers, the pattern of career landmarks was consistent with intuitive expectations about inter-genre differences in ideation and elaboration rates (Simonton, 1984). While the overall age effect was robust, intra-genre, inter-group peak age comparisons were usually not statistically significant. This suggests that the trajectories of each genre unfold in comparable ways for the two groups, and that group differences in genre hit frequency largely drive the overall effect. In particular, compared to the hits of multi-hit composers, those of one-hit composers are more likely to be vocal works. Also, multi-hit composers had somewhat more orchestral hits than one-hit composers and showed a mildly later peak for such works. Multi-hit composers were twice as likely as one-hit composers to have an instrumental work as their top hit, but a smaller inter-group peak difference and far greater age variability among instrumental hits reduces their impact. Finally, while choral works and operas did not influence the observed peak age effect, one-hit composers' hit operas were significantly more highlight-dominated that those of their multi-hit counterparts. This effect is also consistent with the ideation-elaboration argument, as it suggests that one-hit composers' operas are largely famous for individual set-pieces that are more easily elaborated than a whole opera.

This ideation-elaboration argument is also informed by Simonton's (1980) finding that "as the thematic richness of a work increases, the fame of any single theme within the work becomes less dependent on the intrinsic properties of melodic originality and becomes more dependent on associations with other themes via the formal structure of the piece" (p. 979). In other words, the acclaim of small-scale musical works seems especially subject to chance

factors; they largely rise or fall based on the hit-or-miss quality of the melodic idea itself. This seems less true of large-scale musical works; here, the process of working out a more complex musical structure can compensate for intrinsically weaker ideas, at least to some extent. Thus, not only does it take longer to compose a work like a symphony, but a symphony's success may depend less on the quality of its basic ideas than on how they are put together, in contrast to small-scale works. Generally speaking, if a composer has the elaborative skill to put together an integrated large-scale work, its later success may be less dependent on capricious chance factors than with small-scale works.

Along these lines, one-hit and multi-hit composers differ not only in career trajectories but in the variety of their outputs. Many one-hit composers are strongly associated with one type of music. Among the more prototypical one-hit composers, only a handful wrote substantial amounts of music in multiple genres. This pattern reflects Simonton's (2000) emphasis on "cross-training" as assisting the development of creative expertise. This observation also suggests some basic constraints on the nature of one-hit composers' major works: it is highly unlikely that a composer's *only* renowned work would be a massive, structurally complex and thematically integrated composition akin to a Brahms symphony or a Wagner music drama. Indeed, operas aside, few of the most prototypical one-hit composers ever even seem to have *attempted* large-scale works, such as oratorios or sonata form works like symphonies, concerti, or string quartets. In contrast, 87 of the 89 multi-hit composers composed such works. The fact that one-hit composers tend not to write in such forms, or that when they do (as in opera), the works are often heavily excerpted, reinforces this important distinction.

One limit of this work. For instance, the present approach could be refined by using analyses besides means comparisons (such as growth models of longitudinal change) and more complete data from each composer, rather than one estimate of peak age or three estimates for first, best, and last hits (for each composer or composer-genre combination). However, many one-hit composers are simply not adequately documented for such analyses. Alternative analyses might also employ different dependent measures, such as citation in music reference books or the number of CDs sold, rather than the number available, to examine the robustness of the present findings. Another potential objection is that measures of career duration may not be reducible to the span between first hit and last hit, since there may be periods in a creator's career which are totally obscure but are still productive. However, defining creativity in terms of recognition of merit by others in the field theoretically resolves this issue.

In sum, this study presented a methodology whereby the careers and major works of objectively defined samples of one-hit and multi-hit creators can be quantitatively compared. In principle, this approach could be applied to other domains, though these might be more difficult to quantify than classical music. In particular, it would be informative to compare the present results to those from other domains that show more homogenous creative products and presumably less variability in ideation and elaboration rates. Would such domains show a peak age effect analogous to that found here? Future research could address these issues by examining if one-hit creators in other domains also peak early and by investigating the nature and role of genre-wise or individual differences in ideation and elaboration rates.

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