

The Relationship Between First Year Core Music Theory Courses and Combined Music GPA in

Undergraduate Degrees in Music at the University of Arkansas

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### **Introduction**

In preparation for application to any United States undergraduate program, a potential student is likely to take either the SAT or ACT, which are used as predictors of academic success along with the high school GPA (Ary, Jacobs, Sorensen, & Walker, 2014, p. 377). For potential music students, these purely academic scores are considered alongside the results of the student audition (an adjudicated performance of their major instrument) although they contain no music content (UARK Music Major Application, 2017). The result is incomplete data for the prediction of student success, since only a portion of collegiate music studies are focused on the development of skill in the major instrument (28% at the University of Arkansas). A more useful predictor of student success in a collegiate music program might include their grades in a high school music theory course, if such courses were offered consistently throughout the United States. Unfortunately, a music theory course is not necessarily a component of high school programs (Spieker, 2016). This lack not only denies us the possibility of more accurately predicting student success, but also denies students the chance to increase their overall success in their collegiate music program.

In 1966 Edwin Gordon developed the Musical Aptitude Profile or MAP in order to assess “the most basic factors of musical aptitude – aural perception, kinesthetic musical feeling, and musical expression” (Gordon, 1967, p. 52). Intended for use among elementary and secondary students, its intent was to encourage participation in musical activities among those who have shown some potential for musical achievement (Gordon, 1967, p. 52). In a later publication he discussed its possible uses with college and university music students, exploring its usefulness in

diagnosing the strengths and weaknesses of the students (Gordon, 1967, p. 32). In 1983, Stanley Schleuter administered an experimental college version of the Musical Aptitude Profile, finding that it does have “some predictive strength for sight-singing scores” in the first year, but that further study was necessary (Schleuter, 1983, p. 36). No further research was discovered concerning a collegiate musical aptitude test in the United States, although in 2014, Andreas Lehman did conduct a study in Germany that examined the entrance examination grades in music theory and aural skills as a predictive tool in the final exam grades. His results indicated that there is a moderate correlation for both: aural skills ( $r=0.69$ ) and music theory ( $r=0.45$ ) (Lehmann, 2014, p. 245). In light of these findings, it is easy to understand why the core curriculum for an undergraduate degree in music in the United States (either a Bachelor of Arts or a Bachelor of Music) generally begins with the paired courses: Music Theory I and Aural Skills I (National Association of Schools of Music [NASM], 2016, p. 100-120). It is also easy to understand why high school music educators feel strongly about offering a music theory course to their advanced music students (Spieker, 2016). Taking Lehman’s work in Germany, it is fairly simple to do an introductory study in order to determine if any such correlation exists between student achievement in these two courses (achievement measured as the final recorded grade on a four-point scale) and their overall collegiate music achievement (achievement being measured as the grade point average for combined music courses).

The purpose of this study is to examine a decade of grade records from the University of Arkansas to discover whether or not a relationship exists between student grades in these paired music courses - MUTH 1603 (Music Theory I) and MUTH 1621 (Aural Perception I) – and the final grade point average in all music courses. The null hypothesis in this research is that the Pearson product moment correlation coefficient ( $r$ ) will be zero between the MUTH 1603 grade

and the final combined music GPA, and will also be zero between the MUTH 1621 grade and the final combined music GPA. The alternative hypothesis is that there will be a positive correlation between the MUTH 1603 grade and the final combined music GPA, and as well as between the MUTH 1621 grade and the final combined music GPA.

### **Method**

For the purposes of this study, the population of University of Arkansas undergraduate music degree recipients (receiving either a Bachelor of Arts – Music Major or Bachelor of Music) was chosen, spanning from AY2006 (Academic Year 2006, which covers Fall 2005 through Summer 2006) through AY2016 (Fall 2015 through Summer 2016). No information concerning gender or ethnicity was pulled. The information was pulled by a University of Arkansas Global Campus data analyst on July 28, 2017 from university data warehouse tables (AHEIS - Arkansas Higher Education Information System). The analyst pulled “11<sup>th</sup> day” data (which takes into consideration drops and additions and is used in official reporting for the university) for course registration records, recoded the letter grades into numeric grades and stripped out the student identification number, instead assigning each student a random identifying number. The total music grade point average for each student was calculated on student performance in all courses with the following subject codes: MUAC (Applied Music Class), MUAP (Applied Music Private), MUEN (Music Ensemble), MUHS (Music History), MUPD (Music Pedagogy), MUSC (Music) and MUTH (Music Theory).

Individual grades were also reported for the first-year, paired music theory courses, MUTH 1603 (Music Theory I) and MUTH 1621 (Aural Perception I). Due to the fact that several students took one or both of these courses more than once, the data was organized into two datasets – one labeled “first attempt” (the first attempt at the course for all students) and the

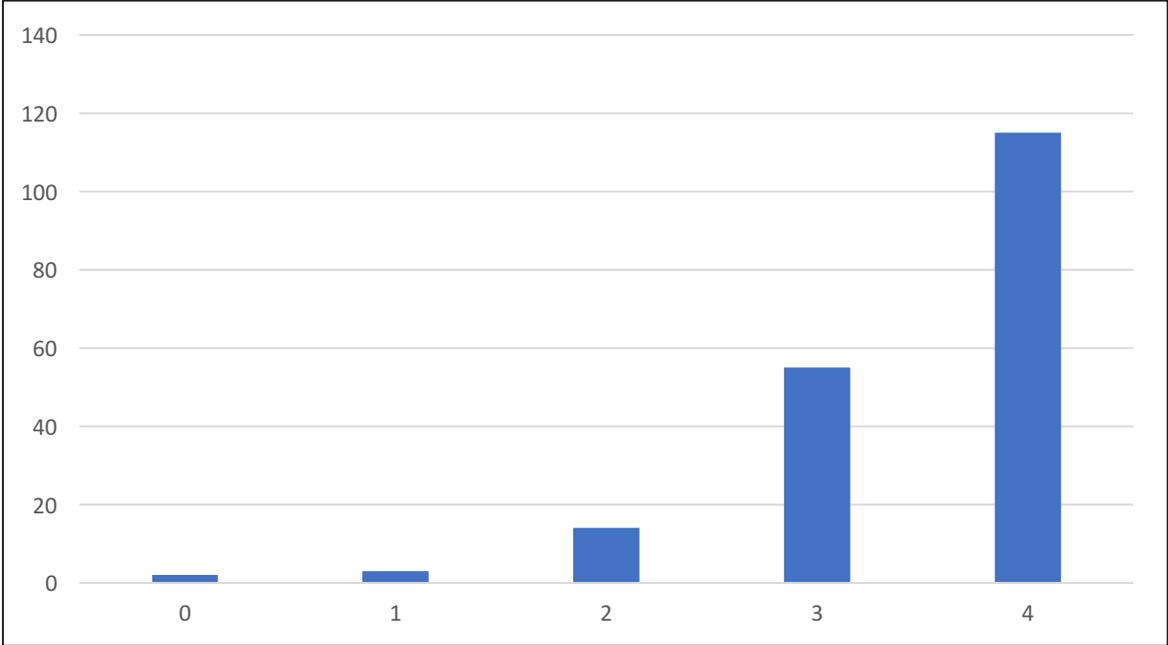
second labeled “final attempt” (the final grade received for the course, regardless of number of attempts).

The final 189 subjects were selected based on whether or not they completed a bachelor’s degree in music and also completed both MUTH 1603 and MUTH 1621. This study does not include students who either tested out of either course or students who transferred in from another school. The final music grade point average does include the grades of both MUTH 1603 and 1621, including any first or second attempts of these courses that may have been a failing or lower grade.

**Results**

Because the population is extremely homogenous, the results for each set of grades are negatively skewed. Take for instance, the histogram of the grade for the first attempt of MUTH 1603.

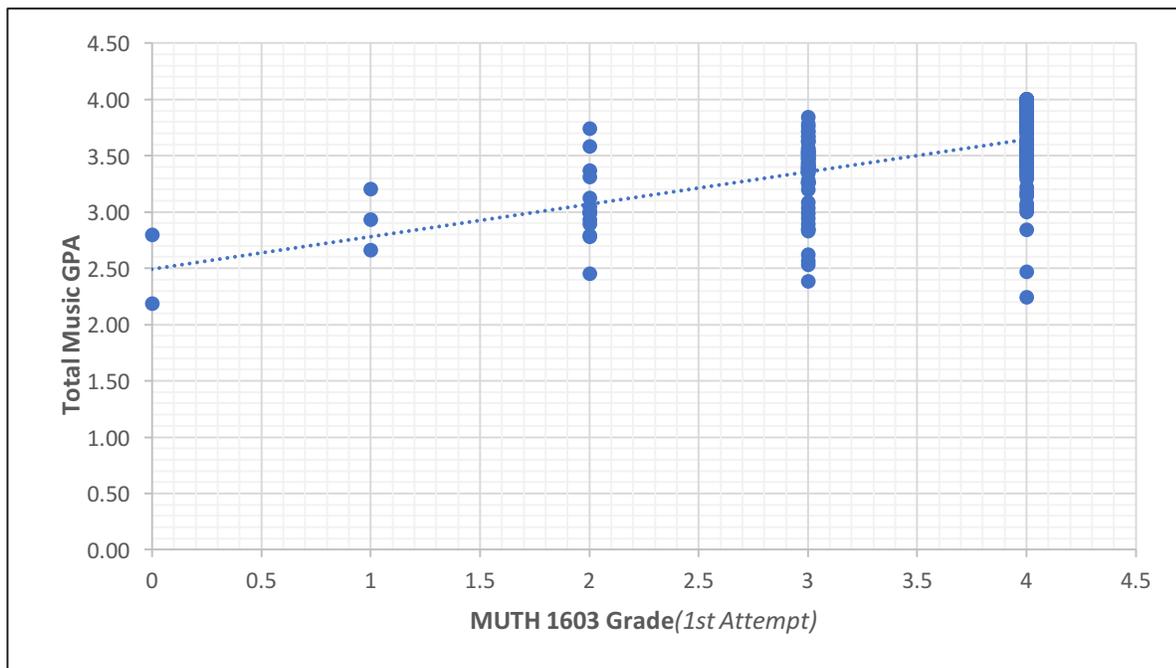
Figure 1  
*Frequency of Grade Distribution in 1<sup>st</sup> Attempt of MUTH 1603*



This negative skew combined with the university method of grading individual courses in whole numbers versus calculating overall GPA to the 2<sup>nd</sup> decimal point also results in an unusual scatterplots when preparing to calculate the Pearson product moment correlation coefficient for each set of grades (Figure 2)

Figure 2

*Scatterplot of MUTH 1603 1<sup>st</sup> Attempt Grades with Total Music GPA*



Knowing that further attempts to create a scatterplot from the data would result in similar results, it was decided to progress directly to computing the Pearson product moment correlation coefficient ( $r$ ) for both courses, including the first and final attempt (see Table 1). It was discovered that while there is indeed a moderate correlation between the grade in Music Theory I and the final overall music GPA ( $r=0.58$  for the first attempt and  $r=0.52$  for the final attempt), there is less of a clear relationship between the grades awarded in Aural Perceptions I and the final overall music GPA ( $r=0.42$  for the first attempt and  $r=0.38$  for the final attempt).

Table 1

*Pearson product moment correlation coefficient (r) between overall music grade point average and individual first-year core music theory courses.*

	1603 - 1st attempt	1603 - final attempt	1621 - 1st attempt	1621 - final attempt
Overall Music GPA	0.58	0.52	0.42	0.38

After calculating Pearson r for each course separately, it was calculated for the combined grades of both courses, again separating the results into first and final attempts. This resulted in stronger correlations for both ( $r=0.61$  for first attempts and  $r=0.58$  for final attempts).

Table 2

*Pearson product moment correlation coefficient (r) between overall music grade point average and paired first-year core music theory courses.*

	Combined 1st attempt scores	Combined final attempt scores
Overall Music GPA	0.61	0.58

In this limited study, there was no distinction made between Bachelor of Arts or Bachelor of Music recipients, nor were results separated by student instruments or concentrations. Additionally there was no possibility to calculate for statistical significance, as there was no available record of the population mean.

**Discussions/Conclusions**

Considering the nature of a “first attempt” of any course (i.e. that the student received a low or failing grade that he/she wishes to replace), it is important to establish which set of data represents a more accurate picture of predictability for the music major. The stronger correlation

in the first attempts seems to indicate that it is these first scores that must be considered the stronger predictive factor in overall student achievement in music courses. Additionally, there is a stronger correlation between these combined courses and the overall GPA (again look at the first attempts), placing even more emphasis on the importance of student work in these two courses. The question is in the practical application of these results.

First, the clear negative skew in the results must be accounted for. They are expected in such a homogenous study, and emphasize that any results cannot be applied to the population at large, but must be restricted to music majors in accredited colleges or universities. That being said, there is certainly enough evidence for further research across universities in the United States to verify the moderate correlation. Additionally, any such research should get “into the weeds,” looking at the difference between student concentrations, major instruments and the overall question of Bachelor of Arts versus Bachelor of Music. With a larger pool of students, results will be more accurate and allow a clearer picture to be drawn. Additionally, data should be analyzed concerning the consequences of failing one or both of these music theory courses. Do students become frustrated and change their majors due to poor performance or are there other factors? In such instances student surveys would be valuable.

If the moderate correlation between these first-year, paired music theory courses and overall music GPA is proved stronger in further research, with a strong statistical significance, there may be enough evidence to suggest making high school music theory courses more available or even required of any school with a choral or band program. It is important to take what may be viewed as a predictive tool only and turn it around in order to give students a higher chance of success in a collegiate music program. Colleges such as the University of Arkansas already offer a Basic Musicianship course which can help students achieve higher results in

Music Theory I ("Degree requirements," 2016), but perhaps solutions at the high school level need to be pursued. In the meantime it seems clear that students planning on entering a collegiate music program should seek out high school music theory and aural skill courses or the equivalent in preparation for college and to give them the best possible chance for overall achievement in their chosen music program.

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