Gifted Young Musicians Poised for Advanced Training: Selection Measures

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Abstract

While Australia is without a national policy on gifted and talented education (ACARA, 2014) each state and territory education department offers strategies and guidelines for the education of gifted and talented students. A performance audition, primarily subjective, dominates entry to specialist music secondary schools for musically gifted youth despite policy recommendations towards a multivariate identification approach drawing on both objective and subjective strategies (DET, 2004). The purpose of this paper is to present the case for widening the selection gap for specialist music programs through a review of the entry test process. Reported here are the initial findings for Phases 2 and 3 with tests, Gordon's Advanced Measures of Music Audiation (*AMMA*, 1989) and Gordon's Iowa Test of Music Literacy Level 5 *(ITML 5*, 1970 rev. 1991), administered to musically gifted applicants (n=73) as part of the entry process to an Australian specialist music secondary school. Results indicated a significant relationship between music potential and achievement and confirmed the predictive value of an objective aptitude test as criteria for ongoing success. A posttest of Gordon's *ITML 6* was conducted with the successful cohort (n=25) on site, six months after entry, revealing high percentiles and significant relationships with *ITML 5*. It is surmised that the findings as reported in this paper, clarify an identification model that has the capacity to select highly able young musicians with broad-based potential based on diversity stage of development and skills mastery, in transition from general primary school to secondary specialist music school.

Keywords: Gifted education; music aptitude and achievement; objective measures.

Introduction

Australian government organisations and state education departments recognise the needs of gifted and talented students, most recently within the framework of "diversity of learners" (ACARA, 2014, p. 13). The emphasis has shifted to the non-homogeneous factors of variance of abilities and aptitudes, variance in levels of giftedness, variance in achievement and variance in characteristics and backgrounds (Haroutounian, 2002; Subotnik & Jarvin, 2005). The *New South Wales Department of Education and Training Gifted and Talented Policy and Strategy* (DET, 2004) is underpinned by Gagné's *Differentiated Model of Gifts and Talents* (DMGT, 2003) wherein the school plays a critical role in the development of potential and for the transition of gifts to talents (Gagné, 2013; ACARA, 2014).

Each Australian State and Territory recommends the identification of gifted students through a balance of subjective (nominations) and objective (standardised tests, individual and group IQ, school assessment, rating scales, creative tests, competitions) measures (DET, 2004; DECS, 2010; Andreasen, 2016). As McClain and Pfeiffer (2010) and others report that levels of IQ can establish academic potential; DET, 2004; Gagné, 2013), so Gordon (1991, 2008), Haroutounian (2000) and McPherson (1997) report a measure of music aptitude to indicate music potential. However, relevant to specialist music high school programming and selection is identification through "multiple criteria", "degrees of giftedness and talent" that are organised and "linked to differentiation" (DET, 2004 p. 7). Therefore, "grouping by ability or achievement" is based on diverse levels of gifts and of talents. (p. 10).

Definitions and models

Gagné (2013) posits dynamic integrated pathways wherein talent development begins with access through an identification process. Simonton's (2005) emergenic-epigenetic model refers to the dependence of polygenic and complex factors accounting for dissimilar types of giftedness that may

appear at different rates during stages of talent development (Persson, 2011). Subotnik, Olszewski-Kubilius and Worrell (2012) in referring to a "proposed talent development megamodel" caution the impact of variance in "start, peak and end points" in relation to the identification and selection of gifted youth (p. 181). Thus, identification, selection and ongoing success is conditional to a plethora of factors.

Measuring music ability.

Consensus as to what leads to musical success depends on a variety of definitions and meanings that might, according to Ericsson, Nandagopal and Roring (2005), include exceptional ability through deliberate practice and environment and intrapersonal catalysts (Sloboda, 2005; Gagné, 2013). Law and Zentner (2012) suggest that there is no agreement on how best to measure musical ability using objective tasks despite research-based standardised explicit forms of musicality tests with practical aims, such as selection of students for advanced training programs

Tests of music aptitude.

Relative moderate correlations have been recorded between different tests and between tests and criteria possibly due to traditionally different approaches such as the atomistic tradition of Seashore (1919) and the omnibus approach of Wing (1968) as cited by Shuter-Dyson and Gabriel (1981). The revised version of Seashore's Measures of Musical Talents or *SMMT* (1919) consists of six measurements of musical ability including pitch, loudness, rhythm, time, tonal memory and timbre. Despite fragility as a psychometric measure (low correlations with actual music performance), the *SMMT* has directly influenced many subsequent music test batteries. Seashore (1919) described "auditory imagery" characteristic of the *SMMT*, as "perhaps the most outstanding mark of the musical mind" (p. 161).

Like the Seashore tradition, Gordon's Advanced Measure of Music Audiation or *AMMA* (1989, 2008) the selected instrument for Phase 2 of this study, is applicable, computerized, time efficient, age appropriate and contains predictive elements. It is suitable for the assessment of music aptitude (potential) among musically gifted primary school graduates. Gordon's Iowa Test of Music Literacy (*ITML*, 1970, rev. 1991) chosen to measure music achievement, complements the *AMMA* and thus, builds diagnostic student profiles.

The criterion-related validity coefficients ranging from .40 for subtests to .70 for total tests, indicate that the *ITML* scores can be used to objectively and efficiently diagnose students' specific and overall musical achievement (Young, 1973, p. 15)

The *AMMA* is an individual 30-item aural test for listeners to discriminate between pairs of melodic patterns, either identical or with changes, in their tonal and rhythmic properties. The longitudinal predictive validity study with Gordon (1990) using music majors' *AMMA* total scores and 3 judges' ratings of the students' recorded end-of-year performances provide statistics useful to frame the psychometric results for the student stakeholders in Phase 2 of this study. For the Gordon study, the highest AMMA scores ranged from 72 to 78 (percentile 88 and above on national norms) while the lowest scores ranged from 44 to 55 (percentile 40 and below on national norms). Intercorrelations with *AMMA* total scores and the end-of-year performance ratings of three judges, .80, .81 and .76, respectively (Gordon, 1990, p. 190) were significant. Schleuter (1993) in conducting a study wherein his subjects, drawn from a mix of undergraduate music majors, reported *AMMA* findings with "composite mean of 58.2" (p. 61). According to Gordon (1989) the composite percentile on the *AMMA* identifies musically gifted students such as "those with High music aptitude who have the potential to achieve high standards in music" (p. 34).

For this study, prediction is calculated in the context of the *AMMA* for music aptitude (potential) and the *ITML* for music literacy (music achievement).

The study

Placement for musically gifted primary school graduates at a "unique selective music school" (Pascoe e al., 2005) is conditional to successful auditions and diagnostic workshops (Macrae & Dunbar-Hall, 2004) and cognitive data from a Selective Schools Test (SST) or the Wechsler (2003) WISC-IV (Curry, 2012; Andreasen, 2016). It is a given that successful candidates are proficient in the repertoire and understanding of music in the western art tradition (Macrae & Dunbar-Hall, 2004).

Phase 1, questionnaires and interviews with adult stakeholders, was a mixed methods data collection strategy to provide an historical position for an evolving test process since the school's foundation in 1918. The aim of Phases 2 and 3 of the study as reported in this article, was to examine Gordon's *AMMA* and *ITML 5* student applicant scores, for the strength of relationships and predictive value. This led to the question*, to what extent have the Gordon aptitude and achievement tests been appropriate to the prediction of ongoing success for musically gifted youth?*

The purpose of the study was to review the entry test process with the use of objective aural test measures to differentiate musically gifted youth at the cusp of advanced music training and in transition from primary to year 7, the first year of secondary school in the NSW secondary education school system.

The rationale of the study was linked to entry test process review, due to the additional curriculum of a junior vocal stream (JVS) into the specialist music school environment. Such a change impacts on entry hitherto open only to junior instrumentalists. In addition, a general concern was to address the issue of gaps in equitable selection for gifted and talented NSW school placement (Scott, 2017; Ho & Bonner, 2018). In the context of broad-spectrum potential, it was intended that the addition of an objective aptitude test, would provide a stable measure of music ability outside skills acquisition.

Process

Following ethics approval and informed consent from all participants, Phase 2 of the study commenced during the regularly scheduled entry test process period.

Method

Creswell and Plano Clark (2007) refer to mixed method case study and quantitative and qualitative data collection techniques as was applied for the complete study. However, this paper is concerned with Phases 2 and 3, based on a quantitative approach (Creswell, 2003). Student stakeholders were musically gifted youth applying for entry to specialist music programs. Gordon's *AMMA* (1989, 2008) and *ITML 5* (rev. 1991) were administered during the scheduled entry test process. For Phase 3 of the study, Gordon's ITML 6 (rev. 1991) was administered to the successful entry cohort, six months after entry. Descriptive statistics including means and standard deviations were obtained for *AMMA* and *ITML 5* and *6*. A correlation matrix was computed for all scores using the R Core Team software package (R Core Team, 2010).

Phase 2 Participants

The participants were primary school student graduates (males = 32, females = 41; mean age = 11.6; *SD* = 1.06) from diverse musical backgrounds. They were domiciled at varying distances from the school's inner-city location and were applying for year 7 entry.

Phase 3 Participants

For Phase 3 of the study, the successful cohort (males = 10, females = 15) were administered post-tests after immersion into accelerated and enrichment music programs. The successful cohort encompassed the student stakeholders who had met entry test criteria and at the discretion of the selection panel had accepted placement.

Instruments, Phase 2a: Test for Music Aptitude, Gordon's AMMA (1989, 2008).

The *AMMA* software was installed on site, on each of 15 Mac Computers and student stakeholders (n = 73) were individually asked to aurally discriminate between same-different pairs of pitch (n = 30) and rhythm (n = 30). Recorded directions for all practice exercises and test items were provided and performed on a Moog Synthesiser.

Instruments, Phase 2b: Test for Music Achievement, Gordon's ITML 5 (1991)

The Iowa Test of music literacy Level 5 or *ITML 5* (1970, rev. 1991), a paper and pencil activity was administered in two sittings to the complete applicant cohort (n = 73). The student stakeholder cohort were asked to aurally discriminate between items on subtests of pitch (morning sitting) and rhythm (afternoon sitting) in modes of listening, reading and writing.

Instruments, Phase 3: Test for Music Achievement, Gordon's ITML 6 (1991)

To address the second research question, the successful cohort (n = 25) were post tested using Gordon's *ITML* Level 6 after entry, on site. Scoring for all three tests was calibrated to grade 8 appropriate to off-level, gifted and talented testing modes.

Results

Pearson Product Moment correlations were conducted, and significant relationships were reported for the *AMMA* and *ITML 5* (n = 73) and the *ITML 5* and *ITML 6* (n = 25). Table 1 reports composite percentile-rank equivalents and standard deviations:

Table 1: Phases 2 and 3: Student scores, percentile means.

Group Statistics	***AMMA***		***ITML 5***		***ITML 6***	
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***
Successful (n = 25)	87.84	9.43	97.88	4.11	*98.32	1.67
Unsuccessful (n = 48)	69.22	21.42	90.14	18.77		-
ALL (n = 73)	75.63	20.19	92.79	15.78		-

Note: *Successful cohort (n = 25) only, undertook ITML 6, 2014

Table 1 indicates "High" AMMA percentiles (*Mean* = 87.84; *SD* = 9.43) for the successful entry group and "Average" (*Mean* = 69.22; *SD* = 21.42) for the unsuccessful non-entry group. As indicated the successful cohort outperformed the non-successful cohort with higher rank norm percentile means in both AMMA and ITML 5. ITML 6 as indicated in Table 1, returned a high percentile mean for the successful cohort.

Figure 1 illuminates the data for *AMMA/ITML 5* visually. The scatter plot in Figure 1 show correlations for AMMA and ITML 5 (n = 73).

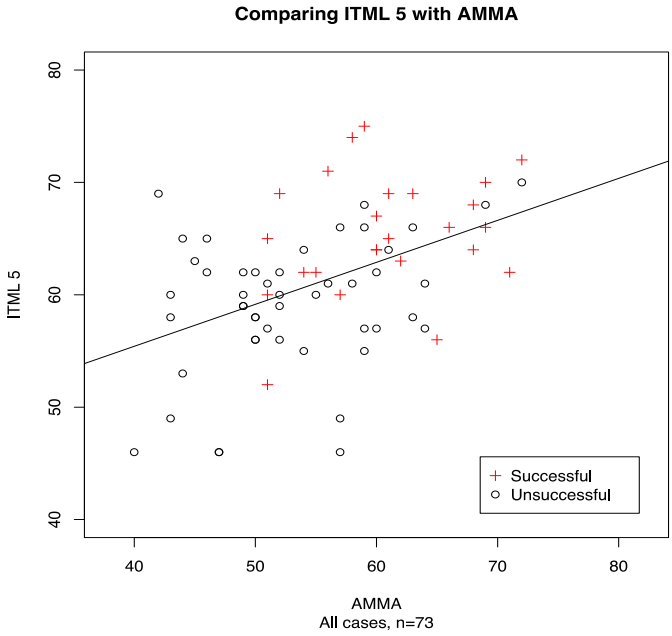

Figure 1: Phase 2: correlation ITML 5 and AMMA (n = 73).
Note: r = 0.460; $p < 0.001$; t = 4.31; $df = 7$.

Figure 1 indicates that *AMMA* Tonal and Rhythm scores and *ITML 5* Listening, Reading and Writing scores correlated at .46 and were significant at the .001 level of probability. Thus, the findings confirm the relationship and predictive value between music potential and achievement in the context of objective entry test criteria. While the range of standardised scores for the complete cohort is wide (40-75), the successful group demonstrates few off-trend scores, considerably less than the non-successful group.

Figure 2 is a scatter plot of correlations for *ITML 5* and *ITML 6* (n = 25).

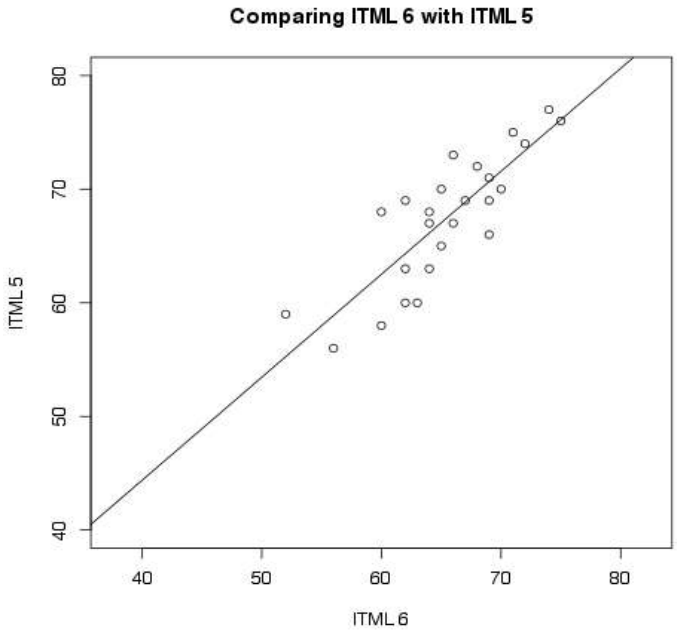

Figure 2: Phase 3: correlation ITML 5 and ITML 6 (n = 25). $r = 0.840$; $p < 0.001$; t = 7.37; $df = 23$.

Figure 2 shows that *ITML 5* and *ITML 6* Listening, Reading and Writing scores, correlated at .84, were significant at the .001 level of probability. Thus, the findings confirm the predictive value of the *ITML 5* and *ITML 6* (achievement) in the context of objective entry test data and ongoing success. The successful entry cohort was represented mainly by percentile ranks at 99 with evidence of individual progress. As expected, learning capacity was maintained, six months after entry following an enriched, accelerated and differentiated music program.

Discussion

It is not within the scope of this paper to report on the complete study, suffice to say, Phase 1 AS interview data pointed to conventional dimensions of psycho-social traits such as engagement, motivation and resilience, indicative especially of the successful applicant cohort entering on partial criteria (AS transcription). The mastery gap between the two types of successful entrants narrowed with rapid progress after entry (AS transcription). Thus, the Phase 1 data was supported by evidence of the significant statistical relationships reported for the *AMMA* and *ITML*.

In response to the research question, while Phase 2 and 3 findings confirmed the predictive value of the objective Gordon aptitude tests, Phase 1 AS data suggests that in the context of entry test criteria and for ongoing success of musically gifted youth, other dynamic factors need to be considered. Specific to the successful entry cohort (n = 25) was a High *AMMA* mean, while an Average *AMMA* mean was reported for the non-successful applicant cohort (n = 48) reflecting the validity of using and objective aptitude measure within the entry test battery. However, some outlier percentiles as shown in Figures 1 and 2 above were reported for individuals within the complete applicant cohort (n = 73). Thus, there was some indication of aptitude variance across the applicant cohort.

In addition, the return of some off-trend successful entrant *AMMA* scores provided a diagnostic value to the findings (see Figures 1 and 2) and implied skill level variance and mastery gaps. Gordon (1989, 1990) maintained that students "with High music aptitude have the potential to achieve high standards in music" (p. 34) and that while "music aptitude and music achievement are different they are not mutually exclusive" (p. 8). High ITML 6 results (PR mean = 99), suggest stability of achievement levels linked to high potential.

Conclusion

Objective strategies such as audition, standardized testing and nominations, recommended to assist in the selection of gifted students poised for specialist programs (ACARA, 2014; Mönks & Pflüger, 2005; Shuter-Dyson & Gabriel, 1981; McPherson, 1997) will continue to play a major role in music education research and debate. This study implies that more clarification is needed in the area of the subjective strategies that provide the balance in identification of musically gifted youth.

It was significant that individual entrants were reported as successful in a display of both high and average aptitude percentiles. Thus successful entrants could be framed as achieving full or partial criteria. Therefore findings suggest the use of an aptitude test not only for its predictive value but also as a measure of broad-spectrum music potential in the context of developmental stage, performance acquisition, media of expression and skills mastery (Andreasen, 2016). The findings confirm the capacity of Gordon's *AMMA* and *ITML* to demonstrate positive, objective criteria beyond the limitations of exemplary performances for musically gifted youth at the gateway of specialist music programs.

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Felicity Andreasen, a doctoral student at the University of Sydney, Sydney Conservatorium of Music, Australia continues to pursue the reality of teaching high school music in research contexts. She has been a teacher of both Music and English in local and international high schools and universities. Most current has been her teacher/researcher role at the Conservatorium High School, Sydney. Her publication with Dr. John Geake (SCU), entitled "musically gifted students in the first year of secondary school: identification and curriculum differentiation" (1988, NSW AGT) led her into the then controversial field of gifted and talented education research which underpins her re-examination of gifted music identification strategies and program implementation. Her current interest is selection of musically able youth in the context of diversity and difference.

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