

Identifying Musical Talent in Students

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Abstract: From an early age, young children attending music lessons are labeled by their music teachers as either being musically talented or not. The following debates have been a long-lasting inquiry: What traits and patterns of behavior in students help teachers recognize musically talented students? Do musically talented students come to an instrument with already innate predispositions, or are they patiently crafted in their teachers' studios along with the strong support of the community? The *Identifying Musical Talent in Students* survey was, therefore, designed to help better understand traits and patterns of behavior which characterize musically talented students. Furthermore, the survey also examined whether teachers' characteristics such as length of the employment, experience, educational level, students' age group, and instrument(s) taught contribute to a more sophisticated understanding of traits and patterns of behavior that musically talented students have. Lastly, in order to understand the underlying constructs of musical talent and examine whether they would be supported, the survey inspected the intercorrelation among items. The *Identifying Musical Talent in Students* survey included two questionnaires: a *Musical Talent Questionnaire*, containing 15 items; and a *Demographic Questionnaire*, containing 7 items. The participants were 42 music teachers from four well-established music schools, all based in New York City. In the *Musical Talent Questionnaire*, the participants were asked to read each statement and rate it using a 5 - point liker scale. Fifteen questionnaire items focused on three distinctions, or modules: Instrumental and Musical Awareness (understanding); Instrumental and Musical Responsiveness (learning); and Instrumental and Musical Aptitude (recognition). The

Demographic Questionnaire asked participants to indicate: what instrument(s) they teach; how long they have been teaching; the highest educational degree that they hold; the age range of their students; and whether they are a part- or full-time teacher. After performing a factor analysis to determine the internal consistency of the items, it was suggested that a two-factor model was a better fit than the three-factor model used in a survey. Furthermore, ANOVAs revealed that the hypothesis suggested was not supported, and that teachers' characteristics do not influence how they view musical talent, creating a foundation for the recognition of musical talent to be a "constant" which is either present or not. Lastly, the five qualities of musical talent were established through answers-per-item comparison.

1. INTRODUCTION

1.1 Studies and Research in regards to Musical Talent

In regards to musical talent and its origin, there has been a long-lasting debate between teachers and parents. For many educators, musical intelligence has often been regarded as a talent derived from natural ability, or a gift that only certain people possess (*Gardner, 1993; Hinckley, 1998; Reimer, 1998; and Mills 2001*).

According to Seashore, talent was made of a hierarchy of talents, which operated independently from one another. Furthermore, he believed that the gift of music is inborn and concluded that musical talents naturally cluster themselves in groups, such as the tonal group, the rhythmic group, the motor group, the intellectual group, etc. (*Seashore, 1919*).

In 1835, Franz Joseph Gall suggested that the brain was divided into 27 separate "organs," and one of the 27 organs was only dedicated to "The sense of sounds; the gift of music" (*Gall, 1835; Norton, Winner, Cronin, Overy, Lee and Schlaug, 2005*).

In his book, *Frames of Mind: The Theory of Multiple Intelligences*, Richard Gardner identified two sides to musical ability: a) Figural mode or "know how" intuitive mode of the music, located in the right brain; and b) Formal mode or the linguistic/mathematical/problem-solving mode of musical competence, located more within the left-brain (*Gardner, 1993*).

To contrast Gardner, Mark Jude Tramo of the Harvard Medical School argued that the brain doesn't have a specific "music center," as others have suggested. As an example, he pointed to the left planum temporal, critical for the musical gift of perfect pitch as well as language processing (*Keenan, Halpern, Thangaraj, Chen, Edelman & Schlaug, 2001; Tramo, 2001*). Furthermore, he explained that there was no identifiable brain structure "that works solely during music cognition. However, distinctive patterns of neural activity within the auditory cortex and other areas of the brain may imbue specificity to the processing of music" (*Overy, Norton, Cronin, Winner & Schlaug, 2005; Tramo, 2001*).

In 1988, Kingsbury suggested that understanding "human musicality – whether it be under the rubric of musical 'aptitude,' musical 'intelligence,' or talent – will surely be riddled with difficulties as long as the focus is on the individual rather than social interaction" (*Kingsbury, 1988*). His emphasis underscored Blumer's observations that "people act toward things on the basis of the meaning that these things have for them, not on the basis of the meaning that these things have for the outside scholar" (*Blumer, 1969*).

In a subsequent paper, Reynolds and Hyun reported a study in which they examined teachers' understandings of musical aptitude. Their focus was examining how teachers select, check, suspend, regroup, and transform their understanding when they estimate the musical aptitude of their students. Ten classroom teachers from South Korea and the United States wrote about their experiences throughout the study and, at the end, participated in an individual interview. The study concluded that, during their estimation processes, teachers formed their understandings of musical aptitude relative to students in their classroom setting. Furthermore, the teachers did not pay sufficient attention to individual children's musical potential, but were influenced rather by non-musical behaviors such as: students' gender, attitudes, participation, temperaments, attention spans, compliance, academic achievement, and language abilities, which all shaped their understanding of musical aptitude in their students (*Reynolds and Hyun, 2004*).

Two other studies have been reported which focused on understanding how musical talent is viewed and developed.

In 2006, David W. Chan conducted a study in Hong Kong which focused on examining different assessment and identification approaches that emphasize musical aptitude, musical expression and performance, and creativity in musical tasks. He suggested that the assessment of musical aptitude in terms of aural discrimination is a starting point, and should be followed by observation of students' creative interpretation in performance, improvisation, and composition. Other behavioral characteristics such as self-motivation and commitment are crucial to talent development and should also be taken into consideration in the identification process (*Chan, 2006*).

In 2009, a comparative study between music students in Sydney (Australia) and Seoul (Korea) was done on the emergence of talent, especially the interface between giftedness and talent. The purpose of the study was to investigate factors which can influence the emergence of high musical ability during the developmental process of musical talent achievement. A total of 137 students and 88 parents participated in this research, with students divided into two groups: young musicians aged 10 and below who show high musical achievements; and musically superior teenage students. All students and their parents completed a questionnaire. Three research instruments were employed based on Harnischmacher (1997). The Self-Concept Scale of Instrumental Abilities (SCI), Goal Orientation of Practice (GOP), and External Action Distraction (EAD). Data showed some significant differences in SCI between students from the two countries concerning musical abilities. Other differences emerged concerning the role of parents, expenditure on music lessons, time spent on practice, and environmental factors. However, there were no significant differences in GOP or EAD between students in Seoul and Sydney (*Jeongmin 2009*).

1.2 Identifying Musical Talent in Students

The first objective of this study was to examine whether the three (3) domain constructs/or modules are supported. The second objective was aimed at examining whether teachers' characteristics – such as length of the employment, experience, educational level, students' age group, as well as the instrument(s) they taught – contribute to a more sophisticated perception of patterns of behavior and talent attributes that musically talented students should have. The third objective was to determine traits

and patterns of behavior which characterize musically talented students.

This study implemented two questionnaires: *Musical Talent Questionnaire* and *Demographic Questionnaire*. (See Appendices I and II.)

In order to understand the underlying constructs, the correlation and exploratory factor analyses (EFA) were performed on the items in the *Musical Talent Questionnaire*. Internal consistency – Cronbach's alpha – was conducted to examine the reliability of the subscales. To better understand if there is any relationship between the five individual characteristics and the perception of musical talent, the ANOVA was also carried out. Lastly, in order to differentiate the traits that are commonly recognized in musically talented students, answers-per-item comparison was implemented and examined.

While this study was designed to make an inquiry into a clearer understanding of how musical talent is viewed by music teachers, based on previous literature, the author of the study hypothesized that musical talent includes three domains of behaviors in students. The three domains implemented in the study were: Module 1 - Instrumental and Musical Awareness (understanding); Module 2 - Instrumental and Musical Responsiveness (learning); and Module 3 - Instrumental and Musical Aptitude (recognition).

Furthermore, the hypothesis that there is a strong relationship between teachers' characteristics and the view of musical talent was formed. That is, teacher's characteristics – i.e., type of the employment, level of education, years of experience, instrument(s) taught, and student age range – are strongly related to their understanding and perception of musical talent.

Lastly, the hypothesis that musical talent has distinct qualities was pursued and the most recognizable traits of musically talented were determined.

2. METHOD

2.1 Participants

The participants were 42 music teachers from four well-established schools: two music schools, a special music school for gifted children, and a high school for the performing arts. All four schools had high criteria/requirements for employing faculty and

were based in New York City. The schools' curriculum focused on nurturing of musical talent in their students.

For the purposes of this study, "music teachers" were defined as having a minimum of a bachelor's degree in music; have been teaching part or full time in a music school setting; and are actively performing musicians.

The "student-teachers," or students who were pursuing degrees in music, and were "assistant teaching" at the schools were not included in this study.

2.2 Description of Study Sample

The majority of teachers who participated in the survey had a minimum of a master's degree (74%); and over 15 years' teaching experience (56%). The age range of students taught by the teacher sample was: 46% [less or above 15 y/o], and 37% [<15y/o].

The piano teachers were among the majority (39%), followed by the string teachers (15%) who taught either violin, cello, viola, or guitar; and 20% of the teachers taught [two or more instruments]. (See Appendix III.)

All teachers indicated that they were still working on their professional development by either participating in workshops and/or researching additional tips available on the internet and in magazines, books, etc.

When measuring their competitiveness with their colleagues, the majority of teachers (61%) responded that they were not competitive at all.

2.3 Recruitment

Approximately 150 teachers were recruited by their school directors. They were informed, through email, of the purpose of the study, the requirements, and that the survey was voluntary and anonymous. The teachers were given choice between the option of taking either a pencil-and-paper survey or an online one.

Out of the 150 eligible teachers from these four music schools, 42 teachers opted to participate in the survey.

2.4 Musical Talent Questionnaire

The *Musical Talent Questionnaire* was adapted from works by Gardner, Kingsbury, Blumer, and Seashore and consisted of 15 items. The author of the study developed the questionnaire's three modules based on, but not limited to: her 15 years of experience teaching musically gifted children; numerous interviews with colleagues and professional musicians; and research enquiries and experimentations.

Twelve questions/items being examined were grouped in the following three modules: Module 1 -Instrumental and Musical Awareness (understanding) - 4 Items; Module 2 - Instrumental and Musical Responsiveness (learning) – 6 Items; and Module 3 -Instrumental and Musical Aptitude (recognition) – 2 Items.

The additional three items were trial items and, therefore, were not included in the analyses performed in this research.

Music teachers were asked to rate each item on a 5 - point liker scale: 1) strongly disagree; 2) disagree; 3) undecided; 4) agree; and 5) strongly agree.

Module 1 - “Instrumental and Musical Awareness” - was defined as “having the ability to understand the relationships with the instrument and within the instrument, as well to understand the relationships with the music and within the music.” – who am I quoting in here. Items included were used in the following order in the survey:

- M1_6. Musically talented students have a great sense of spatial reference to the instrument.
- M1_8. Musically talented students have their own musical style preferences.
- M1_9. Musically talented students can come up with their own melody phrasing.
- M1_12. Musically talented students do not need lot of guidance.

*** Please Note: M1_6 reads (Module 1_Item #6)*

Module 2 - “Instrumental and Musical Responsiveness” was defined as “having an inclination to learn.” Items were used in the following order in the survey:

- M2_1. Musically talented students learn to play the instrument faster.
- M2_5. Musically talented students memorize the music easily.
- M2_10. Musically talented students are easy to coach/teach.

- M2_13. Musically talented students can concentrate/focus for a long period of time.
- M2_14. Musically talented students are competitive in nature.
- M2_15. Musically talented students take initiative to learn new music on their own.

Module 3 - “Instrumental and Musical Aptitude” - was defined as “having the ability to recognize the pitch and rhythm.” Items were used in the following order in the survey:

- M3_3. Musically talented students have a great sense of rhythm
- M3_4. Musically talented students can recognize when a musical note is off-key

2.5 Demographic Questionnaire

The *Demographic Questionnaire* consisted of five items, which examined the following five characteristics: 1) employment; 2) experience; 3) education; 4) instrument(s) taught; and 5) students’ age range.

An additional two items were asked to get a general understanding of teachers’ interests and inclinations: 6) further development; and 7) peer competitiveness.

2.6 Procedure

The participants were given an option to take either a pencil-and-paper survey, which was left in faculty mail boxes, or an online survey through surveymonkey.com. Each school had its own link for accessing the online survey, to differentiate the samples by school.

Before starting the survey, the participants were informed that: the Office of Regulatory Research Compliance (IRB) at the State University of New York at Albany (SUNY) had approved the survey; and, if they had any questions or concerns, they could either contact the investigator of the study (Biana Kovic) or the IRB office via email or by calling the listed numbers. The participants were also told that the survey was anonymous, voluntary, and would take approximately 10 minutes to complete; and that there is no penalty for choosing not to complete it.

The *Identifying Musical Talent in Students* survey, consisting of both the *Musical*

Talent Questionnaire and Demographic Questionnaire, was then administered.

3. RESULTS

The first objective of this study was to examine whether the three (3) domain constructs/or modules are supported. For this purpose, the item correlation and exploratory factor analyses was conducted.

The second objective was aimed at examining whether teachers' characteristics – such as length of the employment, experience, educational level, students' age group, as well as the instrument(s) they taught – contribute to a more sophisticated perception of patterns of behavior and talent attributes that musically talented students should have. For this purpose, ANOVA was conducted to examine group differences.

The third objective was to determine traits and patterns of behavior which characterize musically talented students. For this purpose, answers-per-item comparison was implemented and examined.

3.1. Item Analyses

Item correlations were inspected first, with specific attention paid to how the items within each module related as well as any correlation across modules. The results are shown in Table 1.

Table 1: Correlations among survey questions

	M1_6	M1_8	M1_9	M1_12	M2_1	M2_5	M2_10	M2_13	M2_14	M2_15	M3_3
M1_6	-										
M1_8	.41**	-									
M1_9	.27	.20	-								
M1_12	-.02	-.12	.10	-							
M2_1	.21	-.07	.23	.01	-						
M2_5	.51***	.31*	.29	-.01	.26	-					
M2_10	.10	.28	.11	.26	.10	.22	-				
M2_13	.16**	.24	.16	.004	.30*	.32*	.29	-			
M2_14	.38*	.63***	.10	.02	-.06	.46**	.22	.49***	-		
M2_15	.24	.43**	-.07	-.01	.22	.23	.38*	.56***	.65***	-	
M3_3	.47**	-.02	.36*	.11	.25	.60***	.24	.18	.16	.10	-
M3_4	.66***	.30	.22	-.03	.14	.47**	.19	.26	.41**	.27	.57

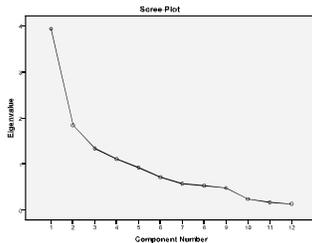
Note. M1= Module 1 questions; M2=Module 2 questions; M3=Module 3 questions

In inspecting intercorrelation among Module 1 items (#6, #8, #9, and #12), we found that item #12 was not related to its other three items. With Module 2 (#1, #5, #10, #13, #14, and #15), we found that item #1 was less related to the other five items. With Module 3 (#3 and #4), we found that the two items were highly correlated and that both were also related to Module 1.

To further understand whether a smaller number of constructs could be found, we conducted EFA. We began by testing the 3 -factor model using the unweighted least-square method with Promax rotation, which allows factors to be correlated.

Contrary to our expectations, EFA did not find the 3 - factor model meaningful. Furthermore, the Scree plot suggested that a 1- or 2 - factor model might be a better fit for the data. (See below chart.)

Chart 1. Scree Plot



Therefore, 1 - and 2 - factor models were tested with the following results: The 2 - factor model yielded meaningful two factors, with one factor more related to musical behaviors and the other to musical proficiency. The factor more related to musical behavior was named *Students' Receptiveness*. This factor included items from Module 1 (#8) and Module 2 (#10, #13, #14 and #15). The factor more related to musical proficiency was named *Instrumental and Musical Competence* and included items from Module 1 (#6 and #9), Module 2 (#1 and #5), and Module 3 (#3 and #4).

The *Students' Receptiveness* factor explained 36% of total variance; and the *Instrumental and Musical Competence* factor explained an additional 17% of total variance. Both of these factors were shown to be related ($r = .42, p = .006$ **), but not highly related. This suggests that both factors measured different constructs. Table 2 illustrates factor loading from the two-factor model. Only factor loading greater than .40

is reported in the table.

Table 2: Factor Loading from the Exploratory Factor Analyses (2-factor model)

	Factor 1	Factor 2
M1_6. Musically talented students have a great sense of spatial reference to the instrument	.530	.775
M1_8. Musically talented students have their own musical style preferences	.715	
M1_9. Musically talented students can come up with their own melody phrasing.		.529
M2_1. Musically talented students learn to play the instrument faster.		.457
M2_5. Musically talented students memorize the music easily	.429	.750
M2_10. Musically talented students are easy to coach/teach	.444	
M2_13. Musically talented students can concentrate/focus for a long period of time	.663	
M2_14. Musically talented students are competitive in nature	.857	
M2_15. Musically talented students take initiative to learn new music on their own	.816	
M3_3. Musically talented students have a great sense of rhythm		.822
M3_4. Musically talented students can recognize when a musical note is off-key	.528	.758

Note. Bolded numbers are the items included in each factor.

*** Correlation is significant at the 0.01 level (two –tailed)*

Although support for the one-factor model was found from the EFA, the percent of variance explained by the factor was low (36% of variance, with internal consistency for one-factor =.80). We decided, therefore, to use the two-factor model results over the one-factor model results. (See Table 3.)

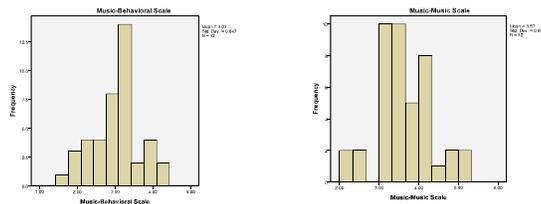
Table 3: Component Matrix

	Comp...
	1
M1_6. Musically talented students have a great sense of spatial reference to the instrument	.779
M1_8. Musically talented students have their own musical style preferences	.543
M1_9. Musically talented students can come up with their own melody phrasing.	.315
M2_1. Musically talented students learn to play the instrument faster.	.346
M2_5. Musically talented students memorize the music easily	.702
M2_10. Musically talented students are easy to coach/teach	.398
M2_13. Musically talented students can concentrate/focus for a long period of time	.663
M2_14. Musically talented students are competitive in nature	.700
M2_15. Musically talented students take initiative to learn new music on their own	.609
M3_3. Musically talented students have a great sense of rhythm	.556
M3_4. Musically talented students can recognize when a musical note is off-key	.768

Note. Extraction Method: Principal Component Analysis

Next, by computing mean scores, the two subscales for the two factors were created. Internal consistency of the two subscales were adequate, with an internal consistency Cronbach's alpha for factor 1 and 2 of .77 & .78, respectively. Descriptive analyses also showed both scales had good variability and were normal distributed. Mean and standard deviations were: *Music – Behavior Scale* (M = 3.03, SD = .647); and *Music – Music Scale* (M = 3.57, SD = .675). (See two charts below.)

Chart 2. Histograms



The above results from factor analysis suggested that the two-subscale solution provides a more parsimonious fit for the items as compared to the original three-subscale Module.

3.2 Teacher Characteristics and Perception about music talent

Based on the above-mentioned research question, a one-way analysis of variances (ANOVA) was conducted with the following hypotheses:

H₀: In the general population, relevant music teachers' demographics are related to their perception of musical talent.

H_A: In the general population, relevant music teachers' demographics are not related to their perception of musical talent.

In examining group differences among teachers' demographic characteristics and perception of musical talent, we found no significant differences. However, small differences do exist within each group in each demographic area, as well as between groups.

The largest difference within the groups occurred in the educational status demographic area, where the MA group had a 0.67 difference between the Musical Scale and Behavioral Scales – with Musical Scale having a mean of 3.68 and Behavioral Scale having a mean of 3.01, respectively. Nevertheless, even though the means were different,

they were insignificant to justify the difference. (See Table 4.)

Table 4: Music Talent subscales by Teacher Characteristics

	N	df	Mean difference within group	Behavior Scale				Music Scale			
				F	p	Mean	SD	F	p	Mean	SD
Employment Status											
Full time	18	1	0.65	0.16	0.69	2.99	0.68	0.29	0.59	3.64	0.54
Part time	24	40	0.45			3.07	0.64			3.52	0.77
MD (FT & PT)										0.08	0.12
Education Status											
BA	10	2	0.48	0.57	0.57	2.92	0.58	0.88	0.42	3.40	0.74
MA	28	39	0.67			3.01	0.68			3.68	0.70
PhD/DMA	7		0.14			3.26	0.65			3.40	0.44
MD (BA & MA)										0.09	0.28
MD (BA & PhD/DMA)										0.34	0.00
MD (MA & PhD/DMA)										0.25	0.28
Teaching Experience											
0-8 years	10	1	0.63	0.35	0.56	2.92	0.64	0.02	0.89	3.55	0.82
9 and up years	31	39	0.52			3.06	0.67			3.58	0.65
MD (0 - 8 & ≥ 9 years)										0.14	0.03
Type of instrument taught											
Piano only	16	3	0.65	0.21	0.89	3.07	0.65	0.46	0.71	3.58	0.68
Strings Only	6	37	0.48			3.13	0.65			3.61	0.88
Other	11		0.44			3.02	0.80			3.46	0.78
Two or more instruments	8		0.54			2.88	0.52			3.42	0.48
MD (Piano & Strings)										0.06	0.11
MD (Piano & Other)										0.05	0.26
MD (Piano & Two or more)										0.19	0.30
MD (Strings & Other)										0.11	0.15
MD (Strings & Two or more)										0.25	0.19
MD (Other & Two or more)										0.14	0.04
Age Range of Students											
< 15 year old only	15	2	0.49	0.74	0.49	2.88	0.53	3.25	0.05	3.37	0.75
≥ 15 years old only	7	38	0.28			3.00	0.70			3.28	0.40
All age range (< & ≥ 15 years)	19		0.43			3.15	0.73			3.58	0.68
MD (< 15 & ≥ 15 years)										0.12	0.09
MD (< 15 & all ages)										0.27	0.21
MD (≥ 15 & all ages)										0.15	0.30

Note. For additional tables see Appendices IV & V

Furthermore, the smallest difference within groups also occurred in educational status demographic area, where PhD/DMA groups had a 0.14 difference between Behavioral and Musical Scales (3.26 and 3.40, respectively).

The differences also existed between each group in each demographic area. The largest difference between groups occurred in the educational demographic area between BA and PhD/DMA groups in behavioral scale, with the difference of 0.34 (with means of 2.92 and 3.26, respectively), which was still insignificant. Additionally, the smallest difference between groups occurred in the educational area – 0.00 differences between PhD/DMA groups in musical scale with both having means of 3.40.

Similarly, we found no employment group differences on teachers' perception of musical talent, with no difference between full- or part-time music teachers on either subscale.

Likewise, while educational status, teaching experience, and type of instrument(s) that participants taught all showed differences within groups in each demographic characteristic, it was not shown to influence their perception of musical talent.

Lastly, the demographic variable named Age Range of Students showed a small significant differences ($p = 0.05$). In the Musical Scale category within this demographic variable, the largest mean difference between groups was between the “ ≥ 15 years” and the “all ages” groups (see Table 4). However, with $F(2,38) = 3.25$, $p = 0.05$ (musical scale), the three two-group comparisons deemed these differences insignificant. This result was also confirmed by the post-hoc analyses, which indicated the non-existence of significant differences between groups within this demographic area. That is, the age range of students that teachers taught did not change the perception of how musical talent was viewed.

In conclusion, we can say that 80% of the five independent variables – 1) employment status; 2) education; 3) teaching experience; 4) age range of students; and 5) instrument(s) taught by music teachers – confirmed that they did not significantly contribute to how music teachers’ defined and perceive musical talent. Therefore, we can say with certainty that demographics do not in any way figure into the equation when determining who is musically talented and who is not. Furthermore, we can conclude that musical talent is a definite measurement, which is either present or not in students.

3.2 Traits of Musical Talent

Based on the answers given by teachers, the answers-per-item comparison was implemented on the following 11 items. In the *Students’ Receptiveness* factor, the following items with teachers’ answers were examined: #8, #10, #13, #14, and #15. In the *Instrumental and Musical Competence* factor, the following items and teachers’ answers were compared: #1, #3, #4, #5, #6, and #9.

After analyzing teachers’ responses to items, more than half of the participants (55%) had either agreed or strongly agreed that musical talent consists of the following five qualities: 1) great sense of rhythm; 2) good ear for musical notes; 3) creativity with melody phrasing; 4) musical style inclinations; and 5) receptiveness to instruction.

When the five qualities were matched with the corresponding items, the following results were collected: 65% of participants had agreed or strongly agreed that musically talented students can recognize when a musical note is off-key (item #4); and 60% either

agreed or strongly agreed that musically talented students have great sense of rhythm (item #3).

Likewise, 54% of participating teachers either agreed or strongly agreed that musically talented students have their own musical style preference (item #8); and 44% of participating teachers either agreed or strongly agreed that musically talented students are easy to coach/teach (item #10).

Lastly, 43% of teachers either agreed or strongly agreed that musically talented students can come up with their own melody phrasing.

In conclusion we can say that the above-mentioned qualities appear to be constant measures for identifying the musical talent in students. Furthermore, in order for students to be recognized as musically talented, all five qualities need to be present to a certain extent and at the same time.

Note: For tables on above-mentioned items – musical qualities and teachers' answers – please go to Appendix VI.

4. FURTHER DISCUSSION

This study makes an important contribution to the literature by providing a better understanding of musical talent and its attributes.

After analyzing the data, the results point out that the demographic characteristics are not related to how teachers view musical talent. Therefore, we can conclude that results do not support the initial hypothesis, which stated that demographic characteristics – such as length of the employment, experience, educational level, students' age group, as well as the instrument(s) teachers' taught – contribute to a more sophisticated perception of musical talent.

Through their answers, participating teachers have confirmed that musical talent is a constant variable identified similarly across-the-board. The traits that are linked to musical talent are: 1) great sense of rhythm; 2) good ear for musical notes; 3) creativity with melody phrasing; 4) musical style inclinations; and 5) receptiveness to instruction. It is important to note that, while the study was limited to New York City teachers' perception of musical talent, this sample is representative because it encompasses a broad

spectrum of teaching experiences, performance practices, as well as multicultural diversity.

When examining our items, we practiced the exclusion of the ones that did not correlate with a group, a decision based on correlation analysis from participants' frequency and type of responses. If the sample had been bigger, the exclusion of the item could have been avoided. However, the sample of 42 responses was still good enough to consider this research valid.

If similar studies are conducted, the following questions might be considered:

- Does surveying teachers and parents at the same time, and having large N, enable for the emergence of a similar construct?
- Does surveying teachers and students at the same time help determine if the musical talent is closely related to student performance?
- Could the five qualities of musical talent – a great sense of rhythm, good ear for musical notes, creativity with melody phrasing, musical style inclinations, and receptiveness to instruction – be nurtured in students who do not have an innate awareness of them?

As a result of the study, the author created a new questionnaire, entitled PSIRN_5 (which stands for “Phrasing, Style, Instructions, Rhythm, and Notes – Five – Item Questionnaire”). Based on the factor analyses and answers-per-item comparison used in this research, PSIRN_5 was designed with hope that it will be used nationwide in music schools as a tool for determining musical talent in students. (See Appendix VI.)

REFERENCES

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APPENDENCES

Appendix I

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Appendix I

Musical Talent Questionnaire

1. *Musically talented students learn to play the instrument faster:*
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree
2. *Musically talented students learn music fast:*
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree
3. *Musically talented students have a great sense of rhythm*
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree
4. *Musically talented students can recognize when a musical note is off-key:*
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree
5. *Musically talented students memorize the music easily:*
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree
6. *Musically talented students have a great sense of spatial reference to the instrument:*
 - strongly disagree

disagree
undecided
agree
strongly agree

7. *Musically talented students feel the music:*

strongly disagree
disagree
undecided
agree
strongly agree

8. *Musically talented students have their own musical style preferences:*

strongly disagree
disagree
undecided
agree
strongly agree

9. *Musically talented students can come up with their own melody phrasing:*

strongly disagree
disagree
undecided
agree
strongly agree

10. *Musically talented students are easy to coach/teach:*

strongly disagree
disagree
undecided
agree
strongly agree

11. *Musically talented students love to practice:*

strongly disagree
disagree
undecided
agree

strongly agree

12. *Musically talented students do not need lot of guidance:*

strongly disagree

disagree

undecided

agree

strongly agree

13. *Musically talented students can concentrate/focus for a long period of time:*

strongly disagree

disagree

undecided

agree

strongly agree

14. *Musically talented students are competitive in nature:*

strongly disagree

disagree

undecided

agree

strongly agree

15. *Musically talented students take initiative to learn new music on their own:*

strongly disagree

disagree

undecided

agree

strongly agree

Appendix II

Demographic Questionnaire:

Which instrument(s) do you teach?

Cello Guitar Piano Viola Violin Other (please specify)

Which of these best describes you?

Full Time Teacher Part Time Teacher

How long have you been teaching?

(0 - 3) years (4 - 8) years (9 - 14) years (15 and up) years

What is your students' age range? (

(5 and below) (5 - 12) (6 - 18) (13 and above)

What is the highest degree that you hold?

Bachelor Master PhD Other (please specify)

How often do you search for tips and articles on new teaching techniques on the Internet, magazines, books, articles, and/or workshops?

Daily Weekly Monthly Never

How competitive are you with other music teachers?

Not at all Somewhat Very

Appendix III

Description of Study sample

Table 1: Employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Full Time	18	42.9	42.9	42.9
	2 Part Time	24	57.1	57.1	100.0
	Total	42	100.0	100.0	

Table 2: EDU Teachers' Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 BA	10	23.8	23.8	23.8
	2 MA	25	59.5	59.5	83.3
	3 PhD/DMA	7	16.7	16.7	100.0
	Total	42	100.0	100.0	

Table 3: EXP Teaching Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 0-3 years	3	7.1	7.1	7.3
	2 2-4 years	7	16.7	16.7	24.4
	3 9-14 years	7	16.7	16.7	41.5
	4 15-up years	24	57.1	58.5	100.0
	Total	41	97.6	100.0	
Missing	System	1	2.4		
Total		42	100.0		

Table 4: EXP2 Teaching Experience_2 groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 0-8 years	10	23.8	24.4	24.4
	2.00 9-up year	31	73.8	75.6	100.0
	Total	41	97.6	100.0	
Missing	System	1	2.4		
Total		42	100.0		

Table 5: Age-range Student age range

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.0	< 15 y/o only	15	35.7	36.6	36.6
		2.00 ≥ 15 y/o only	7	16.7	17.1	53.7
	2.0	3.00 all age range (< and >15)	19	45.2	46.3	100.0
		Total	41	97.6	100.0	
Missing	System	1	2.4			
Total		42	100.0			

Table 6: Type_Inst Type & Number of instruments teacher

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	piano only	16	38.1	39.0	39.0
	2	strings only	6	14.3	14.6	53.7
	3	other	11	26.2	26.8	80.5
	4	two or more instruments	8	19.0	19.5	100.0
		Total	41	97.6	100.0	
Missing	System	1	2.4			
Total		42	100.0			

Appendix IV

Descriptive results for Music Talent subscales by Teacher Characteristics

	N	Behavior Scale			Music Scale		
		Mean	SD	<i>p</i>	Mean	SD	<i>p</i>
<i>Employment Status</i>							
Full time	18	2.99	.68	.69	3.64	.54	.59
Part time	24	3.07	.64		3.52	.77	
<i>Education Status</i>							
BA	10	2.92	.58	.57	3.40	.74	.42
MA	28	3.01	.68		3.68	.70	
PhD/DMA	7	3.26	.65		3.40	.44	
<i>Teaching Experience</i>							
0-8 years	10	2.92	.64	.56	3.55	.82	.89
9 and up years	31	3.06	.67		3.58	.65	
<i>Type of instrument teacher</i>							
Piano only	16	3.07	.65	.89	3.72	.65	.71
String Only	6	3.13	.65		3.61	.88	
Other	11	3.02	.80		3.46	.78	
Two or more instruments	8	2.88	.52		3.42	.48	
<i>Age Range of Students</i>							
< 15 year old only	15	2.88	.53	.49	3.37	.75	.05
>=15 years old only	7	3.00	.70		3.28	.40	
All age range (< & >=15)	19	3.15	.73		3.58	.68	

Note. Although there was an overall group difference on music scale among 3 age group of students ($p=.05$), post-hoc analyses show no group difference (for all two-group comparisons)

Appendix V

ANOVAs for Teachers' Demographic Characteristics

Table 1: Teachers' Employment

		Sum of Squares	df	Mean Square	F	Sig.
Beh Music Behavioral Scale	Between Groups	.068	1	.068	.160	.691
	Within Groups	17.080	40	.427		
	Total	17.149	41			
Music Music-Music Scale	Between Groups	.134	1	.134	.290	.593
	Within Groups	18.554	40	.464		
	Total	18.688	41			

Note: Teacher employment status (full or part time) does not related to how they define music talent

Table 2: Teachers' Education

		Sum of Squares	df	Mean Square	F	Sig.
Beh Music Behavioral Scale	Between Groups	.489	2	.244	.572	.569
	Within Groups	16.660	39	.427		
	Total	17.149	41			
Music Music-Music Scale	Between Groups	.805	2	.403	.878	.424
	Within Groups	17.883	39	.459		
	Total	18.688	41			

Note: Teachers' Education is not related to how they define music talent (or NO education group difference on two domains of music talent)

Table 3: Teachers' Experience

		Sum of Squares	df	Mean Square	F	Sig.
Beh Music Behavioral Scale	Between Groups	.153	1	.153	.352	.556
	Within Groups	16.967	39	.435		
	Total	17.120	40			
Music Music-Music Scale	Between Groups	.009	1	.009	.018	.893
	Within Groups	18.622	39	.477		
	Total	18.631	40			

Note: Teachers' teaching experience is not related to their view about music talent

Table 4: Instrument taught

		Sum of Squares	df	Mean Square	F	Sig.
Beh Music Behavioral Scale	Between Groups	.284	3	.095	.208	.890
	Within Groups	16.836	37	.455		
	Total	17.120	40			
Music Music-Music Scale	Between Groups	.675	3	.225	.464	.709
	Within Groups	17.956	37	.485		
	Total	18.631	40			

Note: Type of instrument teachers taught is not related to teachers' view of music talent

Table 4: Instrument taught

		Sum of Squares	df	Mean Square	F	Sig.
Beh Music Behavioral Scale	Between Groups	.638	2	.319	.735	.486
	Within Groups	16.482	38	.434		
	Total	17.120	40			
Music Music-Music Scale	Between Groups	2.722	2	1.361	3.251	.050
	Within Groups	15.909	38	.419		
	Total	18.631	40			

Note: Age of students that teacher teach is not related to their view of music talent.

- Post-hoc analyses for music domain did not show significant group difference

Appendix VI

Table 1: Good Ears for Musical Notes (Item #4)

Musically talented students can recognize when a musical note is off-key:		
Answer Options	Response Percent	Response Count
strongly disagree	2.3%	1
disagree	4.7%	2
undecided	27.9%	12
agree	37.2%	16
strongly agree	27.9%	12
<i>answered question</i>		43

Table 2: Great Sense of Rhythm (Item #3)

Musically talented students have a great sense of rhythm:		
Answer Options	Response Percent	Response Count
strongly disagree	2.4%	1
disagree	7.1%	3
undecided	31.0%	13
agree	38.1%	16
strongly agree	21.4%	9
<i>answered question</i>		42

Table 3: Musical Style Inclinations (Item #8)

Musically talented students have their own musical style preferences:		
Answer Options	Response Percent	Response Count
strongly disagree	0.0%	0
disagree	19.5%	8
undecided	26.8%	11
agree	51.2%	21
strongly agree	2.4%	1
<i>answered question</i>		41

Table 4: Receptiveness to Instruction (Item #10)

Musically talented students are easy to coach/teach:		
Answer Options	Response Percent	Response Count
strongly disagree	7.3%	3
disagree	19.5%	8
undecided	29.3%	12
agree	34.1%	14
strongly agree	9.8%	4
<i>answered question</i>		41

Table 5: Creativity w/ Melody Phrasing (Item #9)

Musically talented students can come up with their own melody phrasing:		
Answer Options	Response Percent	Response Count
strongly disagree	0.0%	0
disagree	14.3%	6
undecided	42.9%	18
agree	35.7%	15
strongly agree	7.1%	3
<i>answered question</i>		42

Appendix VII

PSIRN_5

(Phrasing, Style, Instructions, Rhythm and Notes 5 - Item Questionnaire)

1. *Student has his/her own musical style preference:*
strongly disagree
disagree
undecided
agree
strongly agree

2. *Student is easy to coach/teach:*
strongly disagree
disagree
undecided
agree
strongly agree

3. *Student has a good sense of rhythm*
strongly disagree
disagree
undecided
agree
strongly agree

4. *Student can recognize when a musical note is off-key:*
strongly disagree
disagree
undecided
agree
strongly agree

5. *Student take initiative to come up with his/her own melody phrasing:*
strongly disagree
disagree
undecided
agree
strongly agree