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Robert J. Evans, Robert Bickel and Edwina D. Pendarvis

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# Musical Talent: Innate or Acquired?

## Perceptions of Students, Parents, and Teachers

Robert J. Evans

Robert Bickel  
Marshall University

Edwina D. Pendarvis

### ABSTRACT

Secondary analysis of descriptive data concerning musically gifted students, their parents, and their teachers yields distinctive attribution patterns for each group. The patterns describe this group of students as attributing much of their success to inborn ability and hard work. These accomplished students, however, describe family members and friends as discouraging their musical development. Parents, in sharp contrast, report their children as having only ordinary levels of inborn talent, and they attribute their children's musical accomplishments to encouragement provided by family and friends. Teachers in this study attribute students' musical development to innate talent, hard work, and schooling. Differences among these attribution patterns are surprising, but are consistent with research that suggests that individuals often make causal attributions that are self-serving, giving a good deal of credit to their own characteristics or influence.

The controversy over *The Bell Curve* (Herrnstein & Murray, 1994) was acrimonious and sustained. Reviews, articles, and monographs published in support or repudiation of Herrnstein and Murray's IQ-intensive genetic determinism demonstrated continued interest in the issue of nature versus nurture as influences on human performance (see, for example, Kinchloe, Steinberg, & Gresson, 1996). Herrnstein and Murray's claims notwithstanding, decades of research have not resolved this issue and, in fact, may never resolve it (Berliner & Biddle, 1995).

Nevertheless, a related, nontrivial question that can be answered is which source is thought to influence achievement more: environmental circumstances or inherited ability? The research reported herein attempts to describe the nature versus nurture accounts of musically gifted students, their parents, and their teachers. Specifically, we attempt to determine whether musically talented students attribute their attain-

### PUTTING THE RESEARCH TO USE

Due to postulated connections between people's beliefs and their actions, this type of research, focusing on gifted students, may lead to a better understanding of patterns of attributional thinking that promote outstanding accomplishments. Such an understanding could lead to development of instructional or counseling methods that encourage productive attributional patterns. It seems reasonable, too, that productive patterns may vary from one group to another. It may be good for children to regard themselves as innately talented, as did the children in our group. However, if parents saw innate talent as the singular factor in their children's accomplishments—if they failed to see their efforts on behalf of their children's achievement as perhaps the most significant factor in their children's achievement—they might not put forth much effort. A productive attributional pattern for teachers of gifted children might be another explanatory pattern altogether. Our group of teachers had high opinions of their students' ability, and they regarded formal instruction as an important contributor to their accomplishments. Perhaps the "Pygmalion effect" contributed to these children's accomplishments. Research studies suggest that high expectations by teachers has a positive effect on children's achievement.

Our research on gifted children's, their parents', and their teachers' patterns of perception is not intended to deny the importance of continuing research designed to discover, in as objective terms as possible, the relative contributions of heredity and environment to outstanding accomplishments. It simply suggests that perceptions regarding the nature/nurture dichotomy may be relevant to educators and counselors who seek to understand gifted children and promote talent development.



ments primarily to inborn talent or to external factors, such as formal education, parental support, and other environmental influences. We also investigate whether the parents and teachers of these musically accomplished young people respond with similar or different attribution patterns to the nature versus nurture issue.

## Literature Review

Attributional theory, deriving in large part from the work of Rotter (1954) and Heider (1958), posits the existence of a relationship between peoples' perceptions of the sources of their success or failure and their actual performance. Attributional research suggests that different groups account for their performance in predictably different ways (Collier, 1994). Much of this work reports that high achievers tend to take credit for their accomplishments in terms of their own ability and effort (Antaki, 1994).

Underachievers' attribution patterns are more complex, and tend to be self-defeating (Graham, 1990). Underachievers often attribute their failures to either their own lack of innate ability or to external factors, such as the difficulty of the task. Even more interesting for present purposes, underachievers typically attribute their occasional successes to external factors. These include circumstances such as the easiness of the task, teacher bias in their favor, and even luck. In discussing attribution patterns, however, it is important to bear in mind that attributions and expectations may be inconsistent with independent measures of students' traits (Marsh, 1984; Peterson & Barrett, 1987). Battle (1972), for example, compared students with above-average IQ scores and below-average IQ scores with regard to expectations of academic success. Battle found that above-average students who did not expect to do well in academic subjects performed at a lower level than below-average students who expected to succeed.

Apparently, ability and expectations have independent effects. Whatever students' measured ability, their performance may be enhanced or undercut depending on their expectations and the way they account for their own success or failure (Peterson & Barrett, 1987; Velez, 1989).

According to Licht and Dweck (1984), this process can be a major contributor to underachievement because "to conclude that one does not have the ability to do well implies that an escalation of effort would be fruitless" (p. 628). Achievement level, as a result, depends in part on students' understanding of their control over events and outcomes in their own lives (Kelly, 1993).

Research has not yet determined if artistically gifted students are like the high academic achievers studied by Marsh

(1984) and Antaki (1994), who attribute their success to internal factors rather than external ones. It is important to bear in mind, however, that perceptions of the causes of high and low levels of achievement depend in part on social position. Children from low-socioeconomic-status families tend to have an external locus of control (Rotter, 1972), while high-socioeconomic-status students tend to explain their behavior in internal terms, such as high academic ability or ability to work hard (Brantlinger, 1993). Since being identified as gifted is also positively associated with socioeconomic status, it is likely that artistically gifted students will also have an internal locus of control. If so, we would expect them to attribute their success, in large part, to their own talent or at least their capacity for hard work.

Gifted students' explanations of their success also may be influenced by their parents' beliefs and by dominant social expectations. In the U.S., giftedness traditionally has been regarded as substantially inborn (see, for example, Friedman & Rogers, 1998; Hollingworth, 1942; Terman, 1925). As a result, gifted children, as well as their parents, are influenced to account for their high achievement by reference to inborn ability.

It is true that Cox, Daniel, and Boston (1985), reported that MacArthur fellows, a highly talented group that includes writers, filmmakers, and musicians, attributed their achievement to extraordinary support from their parents. This remains, however, an uncommon exception to the usual focus on innate ability. The belief in inborn ability is so commonplace in the U.S. that few studies have focused on the family and school as critical factors in the development of exceptional talent. Bloom (1985), however, followed the precedent set by Pressey (1955) in studying the influence of family and school factors in precocious development. Bloom's work, reported in *Developing Talent in Young People*, emphasized environmental factors and found little evidence of extraordinary early musical talent among a group of world-class musicians.

An important part of Bloom's talent development research project was Sosniak's (1985) retrospective study of 21 unusually accomplished pianists. Sosniak found that these world-class pianists manifested several common characteristics. Among the demographic traits were membership in families of relatively high socioeconomic status. In addition, all were White, and most were male. Sosniak concluded that these pianists' accomplishments could not have been predicted based on early identification of talent. Parents of Sosniak's musically gifted subjects did not provide reports that clearly distinguished the talent of this group from their less-accomplished siblings. Nevertheless, in spite of the absence of supporting evidence, parents had unusually high expectations for the accomplished group and were convinced that they were, in fact, gifted.

According to Sosniak, parents' beliefs as to their children's musical talent may have hastened the start and accelerated the pace of musical instruction. Teachers reported that these same accomplished young pianists learned rapidly, however. In addition, they responded quickly and effectively to suggestions for improvement. Sosniak's study does not include a direct investigation of causal attributions. Her research makes clear, however, that objective accounts of students' early performance and reports of extraordinary musical instruction and experience did not point to inborn giftedness.

## Methods

The many studies of attributions that students make about causal relations between internal or external factors in order to explain outstanding achievement and Sosniak's study of musically accomplished youngsters, with its obvious implications for our interest in attributional patterns, led us to investigate perceptions of ability and other advantages in a group of musically talented students. These same factors prompted us to compare students' attributions regarding the source of their accomplishments with their parents' and teachers' attribution patterns.

## Subjects

The Blue Lake Fine Arts Camp (BLFAC), the site of this study, is typical of many fine arts programs. The students who attended the 1996 BLFAC International Program in Twin Lakes, Mich., were initially accepted into the BLFAC summer program based upon music teacher and school administrator recommendations. From the summer program consisting of nearly 4,000 students, those identified as the most accomplished were invited to audition for the prestigious International Program. Only 260, or 7%, were chosen to participate. Given the highly selective character of the International Program, we identified its participants as musically gifted. International Program participants ranged in age from 12 to 17. Eighty-three were in the orchestra, 85 in the symphonic band, 84 in the choir, and 16 in the jazz band. Nearly 80% of the participants were White, with small numbers of Blacks, Hispanics, Native Americans, and Asians. Almost all came from households with annual incomes over \$60,000. Their parents owned their own homes, and graduate degrees were commonplace, as was employment in professional occupations. In short, these musically gifted students had the ethnic and class characteristics we could expect. Much as with

other students identified as gifted or unusually capable, they were overwhelmingly native Whites, and, with rare exceptions, came from families marked by high levels of education, income, and occupational attainment (Brantlinger, 1993; Sosniak, 1985; Tyler-Wood & Carri, 1993; Velez, 1989).

These students had, moreover, received favorable attention from school teachers and administrators. This accounted for their acceptance at the Blue Lake Fine Arts Camp and for the opportunity to compete for a position in the highly selective International Program. Favorable attention from school personnel is much more common among socially and economically advantaged students than among others (Howley, Howley, & Pendarvis, 1995; Kelly, 1993; Lareau, 1989; Oakes, 1986; Swartz, 1997).

## Data Collection

During spring and summer pre-European tour rehearsals, survey packets including the questionnaires described below were mailed to each of the 260 International Program participants. Mailing was scheduled so that participants received the packets during the break between a May weekend rehearsal and the intensive rehearsal week in June. Each packet contained a cover letter with instructions, a questionnaire for the student participant, a questionnaire for his or her parents, and a questionnaire for the teacher who initially recommended the student for BLFAC. The packets also contained self-addressed stamped envelopes to return completed surveys directly to us by mail.

## Instrument

Twenty-one items were common to each of the questionnaires, with minor variations in wording to reflect respondents' role as student, parent, or teacher. Some of the information to be collected was attitudinal, and some was prosaically factual. Each of the questions on each questionnaire was a Likert item, with a fixed set of five response categories determined by the nature of the question (student questions are listed in Table 1).

Unfortunately, conception and execution of this data collection effort preceded development of our interest in attribution patterns for giftedness. Consequently, the questionnaires were not designed for scale development. Instead, they were intended to elicit diffusely descriptive information for a preliminary report on a broad range of characteristics of an unusually capable subset of students involved in a summer camp for musically accomplished students, as well as their parents and teachers.

Table 1

**Opportunities for Attribution:  
Items With Interpretable Loadings**

- I believe I was born with special musical abilities.
- I believe my teachers feel I was born with special musical abilities.
- I believe my friends feel I was born with special musical abilities.
- At what age did you first become interested in singing or playing?
- At what age did you first sing or play for family, friends, or others?
- Did close friends support your musical interests?
- Did family members support your musical interests?
- Were preschool teachers supportive of your musical interests?
- Were regular school teachers supportive of your musical interests?
- How old were you when you received your first special award or recognition in school?
- How many years have you studied music in school?
- How many years have you taken private lessons?
- Did you want to practice?

*Note.* Items are taken from the Student Questionnaire. The same items, with minor changes in wording depending on the role of the respondent, appear on Teacher and Parent Questionnaires. All items have five fixed response categories. The kinds of categories depend on the substance of the question.

### Mode of Analysis

For this paper, as a result of this change in plans, we performed a secondary analysis. We are not using the information in the questionnaires for rather loosely defined descriptive purposes as originally planned. Instead, we employed selected questionnaire items in what amounts to an opportunistic effort to identify factors that students, parents, and teachers use in explaining students' musical development. In effect, we were trying to discern attributions used in accounting for musical development and looking for distinctive patterns of attribution among the three sets of respondents.

The hoped-for outcome was a set of ideal-types or epitomes that succinctly characterize students, parents, and teachers in terms of how they account for students' musical attainments. We were especially interested in identifying similarities and differences in ideal-typical attribution patterns among the three groups.

It was not our intention to collect data that would constitute a probability sample. Instead, we mailed questionnaires to all members of the three populations of prospective respondents: students, their parents, and their teachers. Thus, the populations consisted of 260 accomplished student musicians, 260 sets of parents, and 260 teachers.

In this secondary analysis, however, our interest was no longer limited to these populations. While acknowledging strict limitations on selection of prospective respondents, we hope tentatively to offer an analysis of broader interest, even though generalizability is obviously problematic.

We acknowledge, of course, that there is no sound statistical basis for such inferences. Nevertheless, as we have already noted, the students in our sample are, in a variety of readily observable ways, much like gifted students reported by many other observers. They are mainly native-born Whites from comparatively high-socioeconomic-status families. As with other kinds of giftedness, being unusually accomplished musically rarely provides a means of dramatic upward social mobility for young people. Instead, students with such attributes are usually those born into ethnically, socially, and economically advantaged circumstances.

The gifted students we studied, their families of origin, their teachers, and their pertinent in-school and out-of-school experiences are socially typical of those we would expect to find associated with a highly selective program for unusually capable young people.

### Response Rate

The response rate, with two waves of the mail-out questionnaires, was 48% for students, 47% for parents, and 34% for teachers. This translates into 125 student respondents, 123 parent respondents, and 88 teacher respondents. The relatively low return rates make both internal and external validity problematic, which we discuss below.

### Data Analysis

The statistical tool used to analyze the questionnaire data for each category of respondents was alpha factor analysis. It was our intention to collect and analyze population data for each of the three groups, producing a conceptually parsimonious summary of student, parent, and teacher attribution patterns. This objective seemed well-suited to use of alpha factor analysis (Nunnally & Bernstein, 1994; Tacq, 1997). In this vein, it is useful to recall that, in the first edition of Nunnally's now-classic text *Psychometric Theory*, he admonished factor analysts that misinterpretation is especially likely with analyses having fewer than 10 subjects per interpreted item (Nunnally, 1967). This is a criterion that we nearly meet for two groups, students and parents, but not for teachers. In our analyses, the number of subjects per item is approximately 9.6 for students and 9.5 parents, but only 6.8 for teachers. More recently, Grimm and Yarnold (1995) have suggested that factor analyses with as few as five respondents per item are acceptable, provided the total number of

respondents is at least 100. The student and parent groups easily meet these criteria, but there are only 88 teachers. Tabachnik and Fidell (1996) have still another rule of thumb: At least 300 cases are needed, unless each factor has loadings of .800 or more. If the latter criterion is met, 150 cases will do.

Stevens (1996), however, has advised avoiding fixed respondents-per-item and total-sample criteria through use of a straightforward means of tying the interpretability of factor loadings to sample size. Specifically, Stevens recommended that factor analysts forego the usual rule of thumb, whereby they retain for interpretation loadings of .300 or greater. In place of this convention, Stevens provided simple but explicit guidelines for increasing the numerical magnitude of interpreted loadings as sample size decreases. Loadings that fall below this value are not interpreted. It is true that our ratio of respondents to items is, by most standards, not large. In view of this, we have followed Stevens' procedure, interpreting only factor loadings with absolute values of .463 or higher for students, .471 or higher for parents, and .548 or higher for teachers (also see Nunnally & Bernstein, 1994).

As a result, the number of items with loadings that are actually reported drops to 13. (See Tables 3, 4, and 5.) The remaining nine items are not included for interpretation.

Interpretable Factors

Scree plots for each of the three groups of respondents appear in Figure 1. The break in the plots for students and teachers clearly occurs after the second factor has been extracted. The break in the parent plot is less obvious and illustrates the often judgment-call way in which scree plots must be interpreted. In this instance, the break seems to occur after the third factor has been extracted. Accordingly, usual rules of thumb for scree plots would have us retain for interpretation the first two factors for students and teachers and the first three for parents (Johnson & Wichern, 1998).

Furthermore, for the parent group, each of the three factors has at least three interpretably large loadings. For students, however, the third component had only one interpretably large loading, and for teachers there were none. For each of the seven retained factors, moreover, the interpretable loadings have moderate to high levels of internal consistency, with values of Cronbach's alpha ranging from .61 to .81 (Frary, 1995; Paita, Love, Leftwachra, & Grabovsky, 1999). Consistent with the Kaiser criterion for interpretability, each of the retained factors has an eigenvalue above 1.00 (Grimm & Yarnold, 1995), and each factor explains more than 10% of the total variance in the data set. For each of the three groups, moreover, none of the variables has a loading large enough to be interpretable on more than one factor. In each group, while

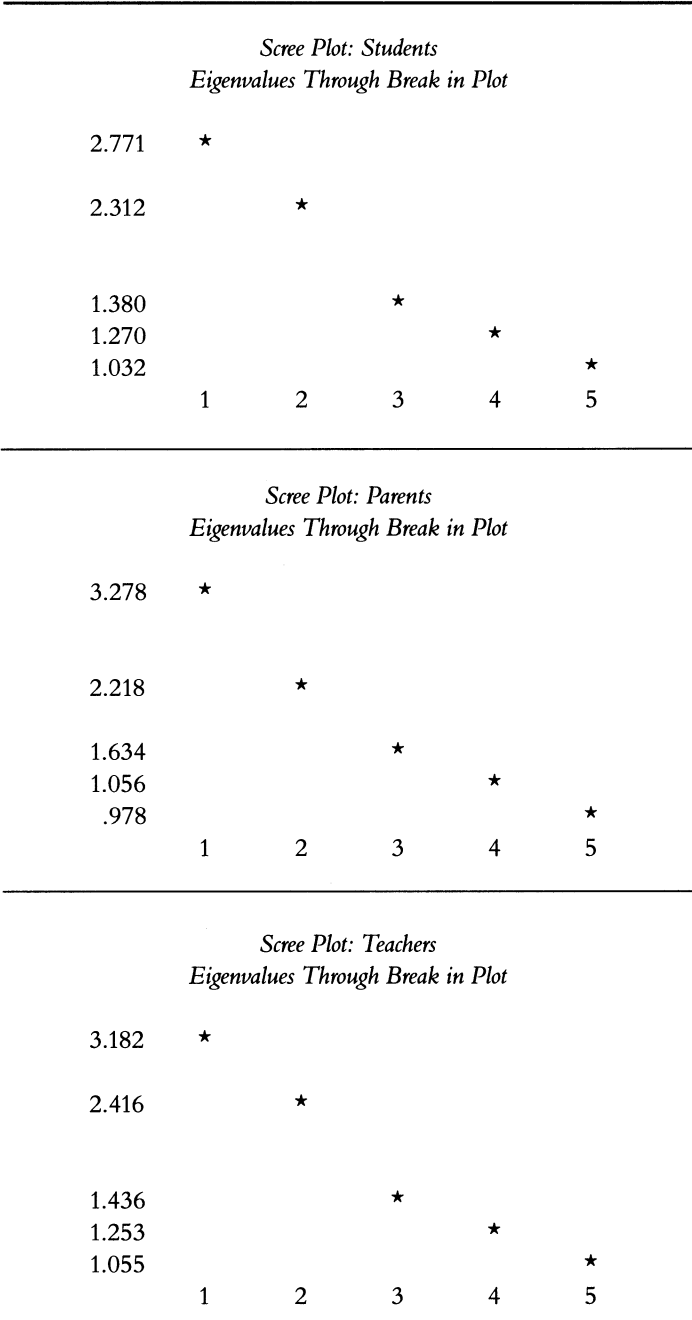


Figure 1. Scree Plots: Students, Parents, and Teachers

each factor has at least two interpretably large loadings, none has more than five. For each group, each factor has one or more loadings that is very close to zero. Finally, Table 2 makes clear that the correlations among the obliquely rotated factors for each group are not strong. In short, Thurstone's simple structure is usefully approximated for each set of respondents (Nunnally & Bernstein, 1994; Tabachnik & Fidell, 1996). Thus, retention of three factors for interpretation for the parent group and two factors for the student and teacher groups



**Table 2**  
***Rationale for Oblique Rotation***

<i>Students: Factor Correlation Matrix</i>		
	I	II
I		
II	-.032	

<i>Parents: Factor Correlation Matrix</i>			
	I	II	III
I			
II	.183		
III	.151	-.046	

<i>Teachers: Factor Correlation Matrix</i>		
	I	II
I		
II	-.130	

seems a reasonable decision, defensible on a variety of statistical grounds (Grimm & Yarnold, 1995; Tacq, 1997).

### ***Rotation of Factors***

The choice of a method of rotation to increase interpretability of factors often seems essentially arbitrary (Pedhazur & Schmelkin, 1991). When deciding whether to use orthogonal or oblique rotation, however, substantive criteria should be employed (SAS Institute, 1990; Tacq, 1997). Specifically, do we expect the variables we are using to yield factors reflecting constructs that correspond to everyday phenomena that are, in fact, independent or associated? In the present instance, the past 30 years of research in education and related areas makes it virtually certain that individual, family, school, and a variety of contextual factors will be associated (see, for example, Bryk & Raudenbush, 1992; Coleman et al., 1966; Farkas, 1996; Iversen, 1991; Lareau, 1989). Each of these sets of variables constitutes part of a context of interrelated, mutually implicative social and cultural influences. Consequently, we have concluded that orthogonal rotation is inconsistent with substantive knowledge pertinent to our research, and we employ oblique rotation. The specific rotation method is direct Oblimin, the only oblique rotation procedure available with our SPSS software.

Oblique rotation produces two matrices: the pattern matrix and the structure matrix. The two matrices are identical only if the factors are, in fact, orthogonal. Otherwise, the pattern matrix, with loadings analogous to partial standardized regression coefficients, is the one interpreted (Stevens, 1996; Tabachnik & Fidell, 1996). Pattern matrices are reported and interpreted in this paper. Component correlation matrices following oblique rotation appear in Table 2. As noted above, there are modest correlations among some factors, indicating that they are, in fact, not orthogonal.

## **Results**

The basic question that undergirds our work can be simply stated: Do students, parents, and teachers account for students' musical success in the same ways? If so, the factor structures for all three groups will be the same. If not, different factor structures, representing differing patterns of attribution, will emerge, which will permit construction of distinctive ideal-types, epitomizing the attribution patterns for each of the three groups.

### ***Role-Specific Attributions: Students***

The two factors used in interpreting students' role-specific attributions are reported in Table 3. The first factor (named *Talent Discouraged*) has three interpretable loadings that refer to innate musical ability and two that refer to support for musical development provided by parents and friends.

Clearly, students are convinced that they have innate musical talent. Moreover, they view their teachers and friends as emphatically sharing this judgment. Students' talent and the shared belief as to its existence and value are credited by students with fostering their musical development.

But, note the two negative loadings corresponding to encouragement offered by family and friends. These same students saw family and friends as actively discouraging their musical development. The interpretable loadings on the second student factor (named *Profitable Involvement*), however, indicate that in spite of students' judgment that family and friends discouraged their musical development, the students experienced early exposure and involvement in music, worked long and hard on their musical growth both in and out of school, and received in-school recognition for their accomplishments.

### ***Role-Specific Attributions: Parents***

Parents' attribution patterns are sharply different from students' patterns. The first three interpretable loadings on

Table 3

*Students' Role-Specific Attributions of Musical Development: Mavericks \**

	I Talent Discouraged	II Profitable Involvement
<i>Shared Belief in Talent Fostered Musical Development</i>		
Students Believe	.679	-.068
Teachers Believe	.662	-.030
Friends Believe	.730	.035
<i>Early Involvement Fostered Musical Development</i>		
Early Interest	.073	.499
Early Performance	-.095	.676
<i>Social Support Fostered Musical Development</i>		
Friends Encourage	-.489	.052
Family Encourages	-.529	-.022
<i>School Support Fostered Musical Development</i>		
Preschool Teachers	-.370	-.253
School Teachers	-.114	.001
In-School Recognition	-.071	.487
<i>Work Fostered Musical Development</i>		
Years of School Work	.030	.664
Years of Private Work	.000	.465
Prone to Practice	-.114	-.001
Cronbach's Alpha	.76	.68
Eigenvalues	2.771	2.312
Variance Explained	21.3%	17.8%
Total=39.1%		
n=125		

Note. Bartlett Test of Sphericity = 375.71,  $p < .00001$ ; Kaiser-Meyer-Olkin Test of Sampling Adequacy = .6311; \* Loadings less than .463 not interpreted.

the first parent factor (named *No-Talent Impediment*) in Table 4 make clear that parents' views do not correspond to the students' judgment that their musical success can be attributed to a shared belief in their innate talent. On the contrary, these

three negative loadings make evident that parents are convinced that no one attributes musical ability to students. Instead, we see an attribution pattern that suggests an absence of belief in students' talent.

The magnitude and consistency of the negative loadings is striking, especially when contrasted with student attributions and, as we shall see, with teacher attributions. The parents' loadings suggest that they believe and that they attribute to others the belief that students' lack of talent serves as an important impediment to their musical development. In addition, although students' *Profitable Involvement* factor showed an early interest in music, parents attribute not merely a lack of early interest, but an early aversion to music. This seems a reasonable interpretation of the negative loading corresponding to the *Early Interest* variable in the *No-Talent Impediment* factor.

Furthermore, much of the high level of contrast between students and parents pertains to payoffs from hard work. The third factor (named *Payoff-Denied Frustration*) in parents' attribution pattern suggests that hard work leads not merely to disappointment, but may be so frustrating as to be self-defeating. The accompanying absence of in-school recognition seems reasonably interpreted as further undercutting students' musical development. In spite of the lack of both talent and early musical interest that parents attribute to students, the second factor (named *Encouraged Commitment*) indicates that early exposure and involvement, coupled with encouragement offered by friends and family, along with students' predisposition to work, account for students' musical development. This holds, according to parents, in spite of the purportedly disappointing, even perniciously frustrating, influence of hard work itself.

Were it not for the positive loading corresponding to the *Prone to Practice* variable, the negative loadings for in-school and out-of-school work might very well be interpreted to mean that parents judge students' failure to work as diminishing their musical development. In the overall context of factors and loadings found here, however, the negative loadings on the work variables seem better viewed as measures of frustration and lack of payoff. This is the sort of thing one might expect for students who are judged by all to lack musical talent, but who are still actively engaged in music.

It is important to remember, however, that if students had not been identified as musically accomplished, they would not be represented in this data set. According to parents, these accomplishments—even an appearance of giftedness—are due largely to the encouragement offered by family and friends in support of students in their against-the-odds commitment to musical development.



### Role-Specific Attributions: Teachers

Teachers' attribution patterns, as manifest in the factors reported in Table 5, are very similar to those of students. As with students themselves, and in dramatic contrast to the parent group, teachers attribute students' musical development, at least in good part, to shared recognition of students' musical talent. This is abundantly evident in the second factor for teachers (named simply *Talent*). Teachers' first factor (for which we borrow the name *Profitable Involvement* from students' pattern of attributions) also shows that they attribute students' musical development to payoffs from hard work, both in and out of school, and to in-school recognition, much as do students. This contrasts sharply with parents' patterns of attribution.

Teachers' second factor (*Talent*) is much like students' first, attributing students' musical attainments to innate talent. Unlike students, however, teachers do not judge that family and friends have discouraged (or encouraged) students' musical development. Again, this is very different from parents' view. All told, results for teachers and students are quite similar, while parents differ sharply from both.

### Ideal Types

By way of further interpreting the attribution patterns manifest in the factors, we will construct three ideal-types, epitomes of these musically accomplished students, according to accounts derived from responses of students, parents, and teachers.

*Maverick.* The ideal-type constructed according to students' attributions is one we will call a profitably involved, talented maverick. Innate musical ability, beneficial schooling, and fruitful hard work are of paramount importance. Although early exposure and involvement in musical activity were helpful, student success was achieved in spite of the discouraging influences of family and friends. Students see themselves as being able, determined, and well-served by schooling and work as they continue to invest time and effort in their musical growth. They do this in spite of the opposition they attribute to family and friends. It is this confluence of attributions that earns students' pattern the "maverick" characterization.

*Self-starter.* The primary differences between students and teachers is in the teacher group's absence of interpretable loadings with respect to support supplied by family and friends. Whereas students attribute a discouraging influence to those nominally closest to them, teachers see no such influence. As with students themselves, teachers' attributions portray students as profitably involved, talented, and school-backed. However, they find neither interest in, nor

**Table 4**

### Parents' Role-Specific Attributions of Musical Development: Plodders \*

	I No-Talent Impediment	II Encouraged Commitment	III Payoff- Denied Frustration
<i>Shared Belief in Talent Fostered Musical Development</i>			
Student Believes	-.603	-.127	-.026
Teachers Believe	-.793	-.151	-.121
Friends Believe	-.797	-.283	-.162
<i>Early Exposure Fostered Musical Development</i>			
Early Interest	-.379	.332	-.307
Early Performance	.384	.802	.242
<i>Social Support Fostered Musical Development</i>			
Friends Encourage	.403	.516	.044
Family Encourages	.387	.497	.242
<i>School Support Fostered Musical Development</i>			
Preschool Teachers	.376	.280	.189
School Teachers	.366	.344	-.106
In-School Recognition	.084	.301	-.479
<i>Work Fostered Musical Development</i>			
Years of School Work	-.206	.043	-.620
Years of Private Work	-.097	-.150	-.817
Prone to Practice	.154	.442	.057
Chonbach's Alpha	.81	.61	.75
Eigenvalues	3.278	2.218	1.634
Variance Explained	25.2%	17.1%	12.6%
Total=54.8%			
n=123			

Note. Bartlett Test of Sphericity = 462.097,  $p < .00001$ ; Kaiser-Meyer-Olkin Test of Sampling Adequacy = .671; \* Loadings less than .471 not interpreted.

opposition to, this process among family and friends. This confluence of attributions prompts the "self-starter" characterization for the teachers' pattern.

Table 5

*Teachers' Role-Specific Attributions of Musical Development: Self-Starters \**

	I Profitable Involvement	II Talent
<i>Shared Belief in Talent Fostered Musical Development</i>		
Student Believes	.061	.878
Teachers Believe	-.028	.569
Friends Believe	-.031	.790
<i>Early Exposure Fostered Musical Development</i>		
Early Interest	.618	.072
Early Performance	.619	-.141
<i>School Support Fostered Musical Development</i>		
Friends Encourage	.414	-.453
Family Encourages	.354	-.377
<i>Social Support Fostered Musical Development</i>		
Preschool Teachers	.342	-.174
School Teachers	.121	-.097
In-School Recognition	.789	-.086
<i>Work Fostered Musical Development</i>		
Years of School Work	.701	-.087
Years of Private Work	.555	.026
Prone to Practice	-.101	-.106
Cronbach's Alpha	.78	.81
Eigenvalues	3.182	2.416
Variance Explained	24.5%	18.6%
Total=43.1%		
n=88		

Note. Bartlett Test of Sphericity = 283.655,  $p < .00001$ ; Kaiser-Meyer-Olkin Test of Sampling Adequacy = .590; \* Loadings less than .548 not interpreted.

*Plodder.* The ideal-type constructed for parents is sharply at odds with that of both students and teachers. The impeding of students' musical development because of a lack of talent and lack of early interest, coupled with the frustrations born of hard work that does not pay off, in the presence of ongoing

encouragement and student commitment, earns the "plodder" characterization. Ordinary in talent and poorly served by both school-based and private investments of time and energy, the plodder continues with his or her musical development. In the absence of exceptional talent, the frustrations seem inevitable and substantial, and ongoing musical development may come as a surprise for which the price was too high. The encouragement and early musical involvement fostered by family and friends must be judged to be powerful forces, indeed, for the "plodder" to continue, actually gaining musical capability over time.

## Discussion

We have made a determined effort to identify the methodological deficiencies in the research reported above. The sample size is not large in relation to the number of items on each questionnaire, and return rates are lower than we would have liked. Using now-familiar terminology introduced by Campbell and Stanley (1963), internal validity and external validity may be problematic because of the related problems of sample size and return rate.

Our foregoing discussion addressed the problem of internal validity, making the case that the number of respondents per item in each factor is sufficiently large so that interpretations are justifiable. Moreover, there is nothing strained or tendentious about the interpretation we have given to our factor analysis results. We have proceeded in a cautiously exploratory manner, and the factors seem usefully, even if tentatively, interpretable as ideal-typical response patterns, distinctively epitomizing the attributions of the three groups. External validity, however, remains problematic. The response rate for the three groups varies from 48% for students to 47% for parents to 34% for teachers. The possibility that our data set yields atypical results when applied to the three populations of respondents is quite real, even though we attempted to collect population data, rather than a probability sample. It is useful to recognize, however, that the three groups are approximately homogeneous internally with regard to variables that may be confounded with attribution patterns, such as education, occupation, income, and ethnicity. Although the statistical basis for generalizability is uncertain due to the possibility of important variables being confounded with returns, the internal homogeneity of our three groups makes this much less likely than would typically be the case.

In the same vein, it bears repeating that the students in our sample are, in socially consequential ways, much like the gifted students reported by many other observers. They are

mainly native-born Whites of comparatively high socioeconomic status. As with other kinds of giftedness, being unusually accomplished musically rarely provides a means of dramatic upward social mobility. Instead, students with these accomplishments are usually those born into ethnically, socially, and economically advantaged circumstances. These are, moreover, the students whose giftedness is most likely to be recognized, nurtured, and rewarded by teachers and others. Perhaps the strongest claim we can make on behalf of our analysis and interpretation is that they make clear-cut sense. *Maverick*, *Self-Starter*, and *Plodder* are, to be sure, nothing more nor less than informed interpretations of statistical analyses. Nevertheless, they do make dramatically evident the striking differences between students' and teachers' attributions, on the one hand, and parents' attributions, on the other.

### Conclusions

At the outset, we asked if musically accomplished students were much like other high achievers, attributing their talent, in good part, to innate ability. It is obvious that analysis of our data leads us to an emphatic "Yes."

It is also true, however, that attribution patterns are complex, and their comparisons yield surprises. There is nothing in the literature on giftedness that would have prepared us for the finding that musically accomplished students perceive family and friends as discouraging their efforts at musical development.

Similarly, there is nothing in the literature on giftedness that would have prepared us for the finding that parents of musically accomplished students would have a wildly contradictory view, judging students' success to have occurred because of encouragement and experience and in spite of a lack of innate ability. Based on the literature on giftedness, we would have expected to find the opposite. The attribution pattern of teachers, in fact, approximates those we would expect to find for parents, since it includes innate ability, interest, exposure and involvement, and hard work. Even teachers' attribution pattern, however, does not include encouragement by family and friends. This research sensitizes us to the possibility that attribution patterns concerning giftedness may be activity-specific, varying from one endeavor to another. Too facile a generalization from one set of activities to another may generate confusion and misunderstanding. Certainly, attribution patterns pertaining to students specifically gifted in music are, in some ways, quite different from numerous reports concerning students in other categories of giftedness.

In spite of these surprises, however, there is a common characteristic in all of our patterns. All the patterns are consistent with Marsh's (1984) finding that attributions of sources

of accomplishment tend to be self-serving. Parents in our study seem to regard their own contributions of encouragement and opportunities for involvement in music as crucial to their children's accomplishments—far more crucial than inborn ability. The teachers seem to regard the schoolwork and in-school rewards as important influences in the development of talented children's musical ability; they tended to discount the influence of family and friends. The students themselves regarded their own ability and hard work as important sources of their success.

This descriptive study suggests the complexity of attributional responses. The differences in perception between students, teachers, and parents make a case for further research identifying various groups' perceptions of the sources of high achievement. The research-documented interactions between students' perceptions about the causes of high achievement and their actual levels of performance may be only a part of the phenomenon of superior accomplishment. How parents feel about the reasons their children achieve and how teachers feel about why their students achieve may also be important contributors to gifted children's levels of achievement. ¶

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