

## Musical instrument, personality and interpretation: Music cognition at a college-conservatory

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### Abstract

Orchestral musicians have a tendency to stereotype one another based on their instruments. While research shows that musicians frequently hold these views of other players (Lipton, 1987), there is less research that links personality traits to instrument played. In large ensembles instruments often play ‘roles:’ “basses determine rhythmic pulse,” or “oboes’ solos necessitate high artistic interpretation.” Much of this is determined by training, reception history and instrumental sound. Our research sought to explore the feasibility of examining both personality traits and interpretation among a small sample of musicians focusing on a comparison of instrumental groups (strings, brass, woodwinds) as the independent variable. Our pilot study explored two primary questions: first, do musicians who play strings, woodwinds or brass exhibit different personality traits? Second, do musicians who play these instruments interpret music differently? Our study looked at differences in the ways instrumentalists interpreted three musical examples without markings other than time and key signatures. The 40+ students also took the “Big-Five” personality test. Preliminary data revealed that the Big-Five scores aligned with stereotypes (e.g., brass scoring lowest on neuroticism and woodwinds low on extraversion but high on neuroticism). Groups also displayed consistent differences in their interpretive approach to the musical examples.

**KEYWORDS:** *Orchestra, instrumental groups, personality differences, stereotypes, music, training, musical interpretation*

### Introduction

Stereotypes surrounding the personality traits of instrumentalists are commonly held among classical musicians. For example, oboe players are sometimes thought of as being neurotic individuals, violin players as being “high-maintenance”, and trumpet players for having inflated egos. A number of studies conducted in the 1970s-1980s examined stereotypes and personalities of musicians. Davies (1976) determined that orchestral musicians held strong stereotypic convictions about the

personality traits of their colleagues, grouped by strings, brass and woodwinds. Lipton (1987) found similar results with a much larger sample size (227 musicians vs Davies’ 20). While both of these studies established that instrumentalists had these beliefs of each other, there is less evidence of the actual existence of these personality types. Individual studies have found some evidence to corroborate the commonly-held stereotypes of instrumentalists, although there has been little success with replicating their findings. Kemp’s (1981) study of music students found that woodwind players showed greater shyness, self-sufficiency and radicalism than other instrumentals. Bell and Cresswell (1984) had similar findings that alluded to introversion in wind players. Kemp (1981) also described brass players as possessing “the most clearly defined pattern of traits”, primarily insensitivity and aggression. Kaplan (1961) talked about self-confidence being integral to high achievement on brass instruments, while sensitivity was counter-productive.

More recently, Langendörfer (2008) studied differences in personality traits amongst 122 professional orchestral musicians in Germany, using the German version of the NEO-Five-Factors-Inventory. This commonly used and well-validated measure assesses five broad dimensions (Openness to experience; Conscientiousness; Extraversion; Agreeableness; Neuroticism) of personality. The Big Five uses factor analysis methods on personality data to ascribe the basic building blocks of personality; it has been considered the apex of personality research for decades. Unlike the results of previous studies on stereotyped views of musicians’ personality traits, Langendörfer only found one significant personality difference among instrumentalists; strings had significantly higher scores on conscientiousness compared to woodwind and brass players, with woodwind players scoring lowest. However, stereotypes can go beyond personality traits and into the realm of musicianship - as much can be said about the way that one plays music being inextricably shaped by



the instrument that one plays. Perhaps one of the most commonly held assumptions about musicians (both by musicians and others) is that one's interpretations, their "musicianship" is a measure of who they are as a person.

While there are countless pedagogical instrument-specific books that address musicality and interpretation, to our knowledge there are no systematic studies that investigate interpretative tendencies across instruments trained in the style of Western Art Music. Existing research on focuses on identifying the psychological and cognitive processes underlying musical interpretation. Silverman (2008) created a pedagogic model of the creative processes that shape musical interpretation, concluding that it is created through the interaction of a performer's self-efficacy with various high-level musical processes. Losseff (2011) identifies the psychoanalytic concept of "projective identification" as central to musical interpretation, particularly in the process of a performer inserting their sense of self into musical performance. In their pursuit of creating an "epistemology of performance" Shaffer (1995) identifies the invention of "musical characters" through structurally significant metric and dynamic choices as central to interpretation. Lampl (1996) describes the process as a simultaneous interaction of musical context and directives and the tastes and temperaments of a performer.

Thus, this pilot study explored two primary questions of orchestrally trained musicians: Do musicians who play strings, woodwinds or brass exhibit different personality traits? Do musicians who play strings, woodwinds or brass interpret music differently? A common thought about musicians is that "musicality<sup>1</sup> is what is inside of you". Our research sought to explore this question through measures of personality and interpretation.

## **Method**

### *Sample*

A total of 42 participants: strings = 18 (7 violins, 6 celli, 2 violas, 3 bass); woodwinds = 9 (3 flutes, 2 clarinets, 1 bassoon, 3 alto saxophones) and brass = 15 (6 trumpets, 3 horns, , 3 tuba, 3 trombones). Eligibility was limited to those holding at least a bachelor's degree in performance from an American institution or Conservatory. Participants were recruited online, with a majority drawn from the student body of the Peabody Conservatory. Participants completed the entirety of the three-part survey online which took about 20 minutes. Upon completion, participants received a \$10 award. This project grew out of a final project from a Music

Cognition class at the Peabody Conservatory of the Johns Hopkins University, with the first phase taking place in Fall 2018, and the second between July 2020-January 2021. The data in this paper is exclusively from the 2020-2021 edition of the project.

### *Outcome 1: Big-Five Personality Test*

The short version of the Big Five personality test, IPIP-NEO-PI-R consists of 120 items measuring the five major domains of personality: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Johnson, 2014). A unique barcode was generated for each participant that allowed us to view and compare their results. Participants completed the IPIP-NEO-PI-R through [www.bigfive-test.com](http://www.bigfive-test.com).

### *Outcome 2: Interpretation*

Participants recorded themselves playing three given musical examples (shown in Figure 1) that had no expressive markings to indicate tempo, dynamics, articulation, phrasing, or style. They were instructed to "interpret" the music, and to add tempi, dynamics, articulation and phrasing as they saw fit. The examples provided were the same for each instrument, with appropriate transposition for the key center of specific instruments to avoid unnecessary and additional technical difficulty.

The recordings were evaluated by researchers on the factors of phrasing, dynamics, tempo/rubato/rhythm, and articulation. The tempos of each example were also recorded in beats per minute (BPM), and an average tempo was calculated for each participant. Each participant was given an "interpretation score" from 1-10 to indicate the amount and variety of deviations from the written music that they employed. A low interpretation score would indicate a performance with little use of and variety of the expressive devices listed above, such as a performance of all three excerpts at the same tempo and dynamic, with no added articulations. A high score would indicate frequent use of several expressive devices with variety within each category, such as a performance that uses contrasting tempi, dynamics and phrasing throughout the three examples. Interpretation was rated by the first two authors of this paper. Inter-rater reliability was assessed by the first two authors independently rating the first five musicians' tapes and meeting to assess concordance of ratings, which established consistency based off of similar measures. Authors also met for four hour-long sessions to discuss interpretation results and the grading scale in greater detail to ensure consistency.

Research Study - Trumpet, French horn, Clarinet  
As written (no transposition)



Figure 1: Musical examples given to participants

Results

The results of the personality test and interpretation showed some preliminary success in creating measurable outcomes when analyzed by instrument group. Some preliminary possibilities of patterns between instrument groups and different interpretive choices also were observed.

Personality traits by instrument family

Table 1 presents our preliminary pilot data. The data does not show large ranges of scores for the big five personality traits. Since the sample size of 42 is too small to conduct statistical analyses, statistical differences between instrument families for the five personality traits cannot be determined. Numerically, for neuroticism, extraversion and agreeableness, some diversion of scores is observed. For example, for neuroticism brass scores were numerically lower than strings and winds. While for extraversion strings showed a higher numerical score than brass and winds, and for agreeableness, brass scores were higher than strings and winds.

Table 1: presents preliminary pilot data on Big-Five scores organized by instrument family

Instrument Family	Neuroticism:	Extraversion:	Openness to experience:	Agreeableness:	Conscientiousness:
Strings	75.3	84.8	88.9	91.7	89.1
Winds	84.2	74	90	84.2	87.6
Brass	68.7	78.5	91.9	93.8	90.3
Group Average:	73.6	80.5	90.3	90.1	88.9

Interpretation and instrument family

The average interpretation score for the group was 6.1 on a 10-point scale. When grouped by families, string instruments had the highest average interpretation

scores of 6.87, followed by woodwinds at 6.5, and the brass instruments at 5.205. Within the woodwind family, there was the biggest range of interpretation scores, with the clarinets at 3.5 and the alto saxophones at 9. Brass instruments generally all played at medium-loud dynamic or louder, and all played a clear, forward tenuto start to notes on the border of heavy starts of notes. String instruments showed the most variety as a family in each category.

Table 2: String Instruments interpretation data

Violin (7)	Interpretation overview:	Phrasing:	Dynamics:	Tempo/Pulse/Rubato:	Articulation
Interpretation score: 5.78	violins displayed the greatest variety across all players; generally players used one tool extensively rather than a multitude of tools at the same time	Variety of tools used to show different phrasings, using dynamics, articulations, bowings, lengths, tone color, and direction	Mostly mezzo-forte with some crescendos and decrescendos	General average at 91.66 bpm, with a max range of 66	Variety of long, short, weight, accents, lift, etc.
Viola (2)	Interpretation overview:	Phrasing:	Dynamics:	Tempo/Pulse/Rubato:	Articulation
Interpretation score: 7	violins displayed the greatest variety within all players; generally players used many tools extensively	Variety of tools used to show different phrasings, all of which were very clear and intentional (dynamics, articulations, dynamics)	Range from mezzo-piano to forte, with a lot of crescendos and decrescendos used	Large range from 60 to 178 bpm, rubato used	Variety of long, short, weight, accents, lift, etc.
Cello (6)	Interpretation overview:	Phrasing:	Dynamics:	Tempo/Pulse/Rubato:	Articulation
Interpretation score: 7	Displayed a variety of choices of tools to show interpretation within their submissions, and across submissions as well; some players employed one tool to great degree, while others used different tools in different ways	Variety in choices to show different phrasings: articulation, direction, dynamics, and rubato	Mostly at quieter tempos around mezzo-piano or piano, with some crescendos/decrease onds	Most tempos were around 70 to 90, with some examples at 100 and the fastest at 156. Rubato was used frequently in different players	Many different articulations within examples and across players, all of which was very intentional and used to phrase differently; 'bounce', tenuto, legato, staccato, etc.
Double Bass (3)	Interpretation overview:	Phrasing:	Dynamics:	Tempo/Pulse/Rubato:	Articulation
Interpretation score: 5.7	Double basses had generally a clear, even, and consistent sound and sound quality; Articulation choices were made to show different phrasings, but otherwise sound was even with no drastic changes in any category	Generally a very even sound with some evidence of phrasing through articulation choices (legato versus tenuto)	Generally around mezzo-forte with some use of crescendos/decrease onds; one player showed greater variety from piano to forte	Tempos were mostly at around 100-110, consistent across players	Note lengths were generally even, with some different uses in longer tenuto notes versus some staccato

Table 2 shows brief summarizations of individual instruments' use of each expressive device, listed together with the rest of the instruments in the family they belong to. Interpretation scores are given as well as general overviews. All participating instruments were grouped in this way according to their families and compared to one another.

Discussion

Analyzing our respondents' scores by instrument family produced some interesting data, some of which aligns with existing research and others which contrast it. As our interpretation task is previously unstudied, there is no research to contrast it with, but findings can be related to practical and pedagogical factors.

Our research revealed preliminary evidence that instrumental groups of winds, brass and strings might share personality and interpretative characteristics. With personality, scores from the big-five test indicate some numerical diversion of scores that might indicate a basis for existing stereotypes of players. Other studies of musicians' personalities have found wind players to have unique personalities (Kemp, 1981; Bell and Cresswell, 1984). Our study also found that wind players deviated from our test averages on several

accounts, with above-average neuroticism (84.2), below average extraversion (74) and below-average agreeableness (84.2). This aligns with the stereotype of woodwind players as being withdrawn, serious and anxious. Our brass players also exhibited some personality traits consistent with the stereotype of brass players being more “laid-back” and “social”, having below-average neuroticism and high agreeableness.

We also found trends in interpretation by instrument family: strings were above our group average on Interpretation score while brass were below the average. The higher interpretation scores displayed by string players in general may correspond to both the high amount of melodic content in orchestra repertoire, as well as the relative ease of producing sound through a bow on a string, as compared to air-based instruments. This may make it easier for string players to develop the necessary muscles to produce different kinds of sounds, allowing for earlier access to these skills to try to employ them in different interpretive ways. Additionally, further research into the variety of solo repertoire may show that string players could be more exposed to soloistic music, embedding it into standard string pedagogy. The relative ease of sound production compared to the higher amount of tension in brass playing (and to some degree, woodwind playing) may give string players more time to play and practice on a physical level as well.

The primary limitation of our study is the participant pool size, which is too small to conduct statistical analysis or to draw concrete conclusions on any outcome. Many instruments had 2 or 3 participants, with our biggest sample of participants being the violins at 7. Musician age, training, and experience is also another factor to consider, in that our participant pool stretched from first year undergraduates to doctoral students in their last semester. As musical interpretation across instrumental groups is previously unstudied, our outcome task and our “interpretation score” represent starting points for future research rather than a definitive model. Despite our best attempt to make the “interpretation score” objective, it still carries a great potential for subjectivity.

As our research lies at the intersection of several sub disciplines: personality, pedagogy and musical interpretation, it could have wide-ranging practical applicability. Our finding that instrumental groups of aspiring professional musicians may hold some observable differentiated personality traits may also reflect personality traits that promote success on those instruments. If we can develop a greater awareness of

the environmental and psychosocial factors that create the conditions for certain personalities to thrive on a given instrument but not others, perhaps this awareness could be woven into pedagogy and performance practice so that there is greater opportunity for all to succeed. This knowledge could also be integrated into instrument selection/assignment process for beginners of all ages, at individual, institutional and collegial levels. Similarly, our finding that instrumental groups held some consistencies of musical interpretation which reflect their role in the orchestra could enhance and expand upon existing instrument-specific pedagogies and performance training at all levels.

Despite the improvements that need to be made to our study’s design and execution, we think the model holds promise for future research. Beyond the findings discussed in this paper, the study also allows for the examination of personality and interpretation as well as aspects of musical literacy. While our main focus in this paper was the aspects of interpretation that differed across musical groups, there could be great interest in the elements of interpretation that were the same. With a larger sample, information could also be analyzed by instrument, which could hold great implications for comparison to and integration with the wealth of instrument-specific pedagogy that currently exists.

Implications of this research are important in understanding the effects our specific instrumental training have on our general approaches to thinking about and interpreting music. If patterns persist given larger sample sizes, an individual’s training may affect the different aspects of music they may focus on or listen for, and potentially limit other aspects of music because of their instrumental “bias”. This may imply that a more varied education on different instruments may provide for a more varied capacity to listen and interpret music in different ways.

## **Conclusion**

Participant sample sizes are too small to draw incontrovertible conclusions, though the data indicate potential patterns in interpretation: string instruments generally employed the greatest variety in dynamics, articulations, phrasing, and tempo/rhythm, woodwind instruments saw the least consistency in interpretation within the family, and brass players generally played louder and focused on a clear and heavy articulation. Big-Five personality scores reflect existing stereotypes and some research by instrument group. Brass neuroticism scores were numerically lower than strings and winds. Woodwinds had lower agreeableness and

extraversion scores. Strings showed a higher numerical score in extraversion than brass and winds, and for agreeableness, brass scores were higher than strings and winds. Therefore, there are measurable outcomes for personality traits and musical interpretation when grouped by instrument family. These findings could have wide-ranging practical applicability for musicians and music educators and warrant future study. With improvements, our self-created interpretation task and assessment could also hold promise as a method for future studies.

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### End Notes

<sup>1</sup> Note on interchangeability of terms “musicality” and “interpretation”. Musicality is a poorly defined word. We are considering “interpretation” a measure of “musicality”. Many of our respondent’s described musicality as “what is inside of you” and “a culmination of everything you have heard.”

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