

Investigating consistency in verbal descriptions of violin preference by experienced players

Charalampos Saitis,^{1†} Claudia Fritz,² Catherine Guastavino,³ Bruno L. Giordano,⁴ Gary P. Scavone¹

¹*Schulich School of Music, CIRMMT, McGill University, Montreal, Canada*

²*Lutheries-Acoustique-Musique, Université Pierre et Marie Curie, UMR CNRS 7190, Paris, France*

³*School of Information Sciences, CIRMMT, McGill University, Montreal, Canada*

⁴*Institute of Neuroscience and Psychology, University of Glasgow, Scotland, UK*

[†]charalampos.saitis@mail.mcgill.ca

ABSTRACT

Background

Attempts to quantify the differences between “good” and “bad” instruments from vibrational measurements and/or listening tests have largely been inconclusive. The qualities of a violin depend upon a number of different, often subtle factors. Most of them are mechanical-acoustical, referring to the way the instrument vibrates and radiates sound. However, there are other, perceptual factors that relate to the way the player “feels” the instrument. The overall goal of this study is to better understand how violinists perceptually assess violins. This is a critical aspect of violin acoustics that has only recently been considered essential in developing an understanding of what distinguishes one instrument from another. As a starting point, we need to know how consistent players are at assessing violins and whether there is agreement between violinists.

Method

We conducted content analyses on free-format verbal descriptions collected in a perceptual experiment investigating intra-individual consistency and inter-individual agreement in preference judgments by experienced violinists (Saitis *et al.*). In the experiment (in two identical sessions 3–7 days apart), 20 musicians played 8 violins of different make and age and were asked to rank them in order of preference (from least to most preferred), and provide rationale for their choices through a specially designed questionnaire. Participants were selected according to their musical background (8 females, 12 males; average age = 34 yrs; 11 native English speakers, 3 native French speakers, 6 other). They had at least 15 years of violin experience (average violin training = 26 yrs; average violin practice per week = 15 hrs). The group consisted of 13 professional and 7 amateur musicians.

We focused on those questions directly related to violin preference descriptions: (Q1) *How and based on which criteria did you make your ranking? (Avec quels critères avez-vous effectué votre classement et de quelle façon les avez-vous utilisés ?)* (Q2) *Considering the violin you ranked as “most preferred,” can you say why? (A propos du violon que vous avez classé comme votre préféré: pourriez-vous nous dire pourquoi ?)* (Q3) *Considering the violin you ranked as “least preferred,” can you say why? (A propos du violon que vous avez classé en dernier: pourriez-vous nous dire pourquoi ?)* (Q4) *More generally, what is a good violin for you? (En général, comment définissez-vous personnellement un très bon violon ?)* The responses were classified in eleven semantic

categories (criteria) emerging from the free-format data: *ease/control/effort, response/articulation, purity/clarity, richness, other descriptions, subjective judgement, range of color, projection, resonance, balance across strings, and size/shape/comfort*. Linguistic devices constructed on the same stem (e.g., “rich,” “richness”) were grouped together. We also grouped together lexical devices that were semantically related (e.g., “balance” and “evenness”). Finally, all occurrences in each category were counted.

Results

Based on these analyses, we first examined inter-individual consistency in the verbal descriptions between sessions. For each participant, we first computed a verbal profile defined as the proportion of times that a criterion was used (number of occurrences of the criterion divided by sum of occurrences of all criteria). Within each session, we defined a verbal distance by calculating the Euclidean distances between the profiles of 2 participants for all possible pairs. A considerable amount of inter-individual variability was observed [average distance in Session 1 = .45; average distance in Session 2 = .46]. For each participant, we computed a measure of intra-individual consistency defined as the distance between the profiles obtained in each session. Participants were found to be self-consistent in their preference criteria [average distance = .3].

Furthermore, we run cluster analyses on the verbal and ranking profiles (proportion of times that a violin was ranked as more preferred than any of the other violins across all trials) of the participants. The two resulting classifications are highly dissimilar. Accordingly, inter-individual variability in the verbal responses does not seem to explain inter-individual variability in the rankings. Finally, for each participant, we computed a ranking distance defined as $1 - W$, W being the Kendall concordance coefficient across all rankings. We observed a low correlation between verbal and ranking distances: participants who made very consistent preference rankings were not necessarily consistent in verbal descriptions of preference and vice versa.

Conclusions

This paper reports content analyses on spontaneous verbal descriptions of violin preference by experienced players. Results for inter- and intra-individual consistency in the preference criteria are in close agreement with previously obtained results concerning the preference rankings of the participants: violinists are self-consistent but there is a significant lack of agreement between individuals. However, further analyses yielded no obvious relationship between verbal and nonverbal consistency within and across violin

players. More rigorous linguistic analyses of the verbal data corpus will be discussed in a separate paper.

Keywords

Violin, acoustics, perception

REFERENCES

Saitis, C., Giordano, B. L., Fritz, C., & Scavone, G. P. Perceptual evaluation of violins: A quantitative analysis of preference judgments by experienced players. *J. Acoust. Soc. Am.* (Under review.)