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Flexibility in the use of shared and individual performance cues in duo performance

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We compared the *performance cues* (*PC*s), i.e. mental landmarks, reported by members of an established cello/piano duo in two concert performances of the F. Bridge *Cello Sonata*. We examined *overlap* between reports for *individual* and *shared* PCs and for both (*all* PCs). For the cellist, overlap across performances was higher for all and individual (35%) than for shared PCs (19%). For the pianist, overlap was highest for all (23%), lower for shared (15%), and lowest for individual PCs (6%). Both musicians prepared more PCs during practice than they actually used in any one performance, using them flexibly to achieve stability in performance. Differences between the musicians may have reflected differences in their musical roles or temperaments.

Keywords: Music performance; memory; performance cues; duo performance; performance stability

Performance cues (*PC*s) are the landmarks in a piece of music that a musician thinks about during performance. They provide a mental map of the piece that allows the performer to monitor the music as it unfolds. PCs are prepared during practice so that they come to mind automatically on stage, giving the musician the ability to focus on each aspect of the piece at the right moment, and providing the flexibility needed to cope with the varying demands of different performances. Musicians' use of PCs has been documented in longitudinal case studies in which experienced performers recorded themselves as they prepared new pieces for performance and then reported the PCs that they used. Their practice, performances, and written recall all suggested that PCs were prepared during practice and acted as memory retrieval

cues during performance (Chaffin *et al.* 2002, Chaffin 2011, Ginsborg *et al.* 2006).

We compared the PCs used by the two members of an established cello/piano duo for two concert performances of the same piece given eight days apart. The cellist had noted that, when playing with the pianist, performances tended to be more different from one time to the next than she was accustomed to with other duo partners that she played with regularly. The two musicians sought to understand this perceived variability by examining the overlap in their PCs, both across performances (*stability*) and with each other (*agreement*). If the pianist's PCs were less stable, this might explain the cellist's impression that their performances together were unusually variable.

We examined stability and agreement for both *individual* and for *shared* PCs. *Shared* PCs direct attention to coordination with other musicians. *Individual* PCs refer to aspects of the music that require attention (such as basic technique, interpretation, expression, structure), irrespective of the other musician. We expected agreement to be higher for shared than for individual PCs.

In the only previous study to examine the use of shared PCs, a singer and conductor reported the PCs they had each used in performing an ensemble chorale work (Ginsborg *et al.* 2006). The musicians first reported their individual PCs, and then jointly reported their shared PCs. This procedure naturally produced perfect agreement on shared PCs. Since one goal of the current study was to compare the overlap of individual and shared PCs, the musicians in our study reported their shared PCs separately, without first comparing their reports.

The one previous study to examine the stability of PCs across performances found that the individual PCs used by a singer in two performances overlapped by approximately 35% (Ginsborg and Chaffin 2012, Ginsborg *et al.* 2013). Although the degree of overlap was reliably greater than chance, it was far from perfect; most PCs in the two performances were different. This instability may have been due to the long interval between the two performances (18 months) and their different circumstances. The first, before a live audience, was thoroughly prepared, while the second, in the practice studio, occurred with minimal rehearsal. One goal of our study was to see whether such instability is a normal characteristic of PCs. Our second goal was to see whether stability was different for the two musicians.

METHOD

Participants

The two musicians had been performing together for several years. Tânia Lisboa, the cellist and first author, was trained in classical cello and piano in Brazil, England, and France, and currently lives in London performing as a cello soloist. Cristina Capparelli Gerling, the pianist and fourth author, was trained in classical piano in Brazil and the US, and is Professor of Music at the Federal University of Rio Grande do Sul (Brazil), where she performs regularly both as a soloist and as a chamber musician.

Materials

The musicians selected the first movement (*Allegro ben moderato*) of the F. Bridge *Cello Sonata* (1917) from a program that they were currently playing together. Bridge's seldom-performed work is one of the greatest in the cello/piano literature. It expresses the desperate and tumultuous response of a pacifist to the Great War, alternating, with great mastery, between pastoral innocence and noble grandeur, between acerbic *scherzandos* and profound melancholy. These shifts in mood must be delineated by the musicians, chiefly through fluctuations of tempo. The movement is 291 bars in length, mostly in 2/2 time, and takes approximately 10 minutes to perform.

Procedure

For this piece, the cellist played from memory and the pianist with the score. Following their usual practice, the musicians met prior to their first concert for a week of intensive rehearsal. In this case, they gave four concerts in the eastern US over a two-week period. On the day after the second and fourth concerts, a week apart, the musicians reported the PCs that they had attended to during the previous day's performance. The musicians completed their reports separately, without consulting each other. Using clean copies of the score, they marked the musical features they had attended to with arrows and annotated them to indicate which aspect(s) of the music were involved: basic (technique), interpretive, expressive, structural, or shared. Both musicians were accustomed to reporting PCs, having previously done so in other studies of their solo performances.

We tabulated the presence/absence of each type of PC in each bar. We tallied overlap by counting the number of bars where PCs were present in one, both, or neither report. Overlap between each musician's reports for the two performances reflected stability. Overlap between the two musicians for

the same performance reflected agreement. We tallied overlap separately for all PCs, individual PCs, and shared PCs. Fleiss' Kappa provided a numerical assessment of overlap, with values ranging from 0 to 1.

RESULTS

There was a moderate degree of stability across performances (Figure 1, top rows) and somewhat less agreement between the two musicians (Figure 1, bottom rows). Agreement was higher for the second performance than the first. Both stability and agreement were generally highest for all PCs, intermediate for shared PCs, and lowest for individual PCs. The stability of the cellist's individual and all PCs was the exception: Kappa=0.35 for both. This is the same level of stability observed by Ginsborg *et al.* (in press), for whom Kappa=0.346, by our calculation.

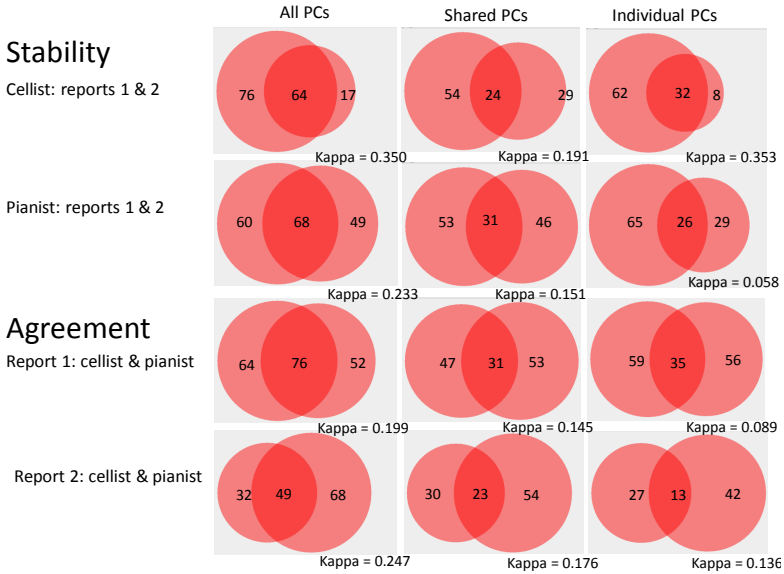

Figure 1. Overlap between PCs for two musicians and two performances for all PCs, individual PCs, and shared PCs, showing stability across performances and agreement between musicians. Areas represent number of PCs reported (Chow and Rodgers 2005). (See full color version at www.performancescience.org.)

DISCUSSION

The stability of all PCs across performances was similar to that observed by Ginsborg *et al.* (in press). In both studies, the overlap of PCs across performances was well above chance levels, but many more PCs differed across the two performances than remained the same. In Ginsborg's study, this instability could have been due to the large differences in the setting and circumstances of the two performances. In our study, settings and circumstances were about as similar as any two performances are likely to be: one week apart, in similar settings, before similar audiences.

The moderate level of stability in the two studies suggests that substantial variation in PCs from one performance to another is normal. It seems that musicians routinely prepare substantially more PCs during practice than they actually use in any one performance and use them flexibly to achieve consistency in performance. PCs maintain the stability of the performance by allowing the musician to adapt to changes in circumstances, both large and small. In Ginsborg *et al.*'s (in press) study, the differences between the performances were substantial; in our study they were minor. Stability was similar in both cases, suggesting that this level of flexibility is a normal characteristic of PC use.

The pianist's PCs were less stable than the cellist's. The difference was smaller for shared and for all PCs (4% and 10% respectively) and largest for individual PCs (30%). The difference provides a possible explanation for the cellist's impression that performances with the pianist differed more from one time to the next than her performances with other duo partners. Other explanations for the difference between the two musicians cannot, of course, be ruled out by this one study.

As with stability, agreement between the two musicians was above chance levels, but far from unanimous. Agreement was higher for all than for shared or individual PCs. It appears that the two musicians often disagreed about which PCs were shared and which were individual; a PC that was shared for one was individual for the other, and vice versa. The lower agreement for shared and individual PCs may reflect the shifting roles of the two musicians as first one and then the other was assigned the musical focus by the composer. The musician taking the focal role might be more likely to think of a PC as individual, while her partner was more likely to think of it as shared.

The pianist reported more shared PCs than the cellist and this difference was more pronounced in the second performance (see Figure 1, column 3, rows 3 and 4). We speculate that this was because, by the last performance and having successfully completed three previous performances, the pianist

had a clearer idea of how the two instruments could work together to achieve the musical possibilities of the piece. If we are correct, then this provides an example of PCs changing in response to the conditions of the moment.

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