

Mathieu Boucher¹

Andrea Creech

Schulich School of Music, McGill University,
Montréal, Québec, Canada

91

Francis Dubé

Faculté de musique de l'Université Laval,
Québec, Québec, Canada

ABSTRACT The ability to identify weaknesses and improvements in performance without a teacher's feedback, conceptualised here as efficient self-evaluation, is an important aspect of self-regulated music practice. However, the concurrent efforts required to perform and monitor the performance for feedback represent a challenge for any learner. Videotaping the performance and watching it afterwards (video feedback) could constitute a solution to this problem by allowing the learner to concentrate fully on each task. In addition, focusing on the result of a performance (sound produced, interpretation) would yield more musical and technically accurate performances than focusing on technical matters while performing. Nonetheless, musicians seem to naturally focus on their technique while playing, possibly because of the feedback they receive from their teachers. Studies in sports and in music demonstrated that using video feedback would modify the athletes' or musicians' perspective on their performance. In our study, we explored how video feedback could affect the topics addressed in the self-evaluation of a

KEYWORDS:

–Music performance
–video feedback
–attentional focus
–music practice
–self-regulation.

Correspondence

¹ mathieu.boucher4@mcgill.ca

performance by intermediate-advanced musicians ($n = 8$). In comparison with reflections made after performing, after watching a recording of that same performance musicians made more self-evaluative comments about interpretation and instrumental execution, and fewer comments about performance flow or learning stages. We concluded that musicians may self-evaluate different aspects of their performance while using video feedback, as compared with self-evaluations immediately following live performances.

INTRODUCTION

In the context of learning western classical music, developing musicians undertake a vast amount of practice that they mostly regulate by themselves to attain excellence on a musical instrument (Hallam, 2013; Miksza, 2011). Many studies on musical self-regulation have focused on the identification of efficient and less efficient self-regulated practice behaviours of musicians at different levels of advancement (Bartolome, 2009; Duke et al., 2009; Hallam, 2001, 2013; Leon-Guerrero, 2008; McPherson & Renwick, 2001; Mornell et al., 2020; Nielsen, 2001; Nielsen, 2015; Pike, 2017). A salient component of the efficacy of self-regulated music learning highlighted in the results of these studies is the musician's capacity to effectively self-evaluate their playing during practice.

In self-regulated learning, the self-evaluation process is preceded by the process of self-monitoring. Defined as "observing and tracking one's own performance and outcomes" (Zimmerman, 1998, p. 78), self-monitoring allows musicians, for example, to identify while performing the information that they need for self-evaluating afterwards (McPherson & Renwick, 2011). In this context, what musicians are focusing on while playing might be analysed through the lens of attentional focus (Chua et al., 2021; Wulf, 2013).

Attentional Focus

92

As has been demonstrated with athletes, a musical performer's focus of attention while performing might affect the execution and the result of the execution of a motor task. More precisely, numerous studies in sports have established that adopting an external focus of attention during a performance may benefit the performance itself and its learning, and that this effect could apply to a variety of motor tasks and with learners of various skill levels or age (Chua et al., 2021).

For musicians, adopting an external focus of attention could mean focusing on the results of their movements on the instrument (sound produced) rather than their movements *per se* (instrumental technique). Evidence suggests that pianists play more accurately when they focus on the sounds, they produce rather than their movements (Duke et al., 2011). Similarly, untrained singers have been found to produce better tone quality when focusing on their sound while singing rather than the vibrations of their throat (Atkins & Duke, 2013). In a follow-up study with trained singers, Atkins (2017) found that a more distant focus of attention improved their tone quality in comparison with an internal or a more proximal focus of attention. Finally, performances in which musicians focused on musicality (external focus) have been rated as more musical and technically accurate than performances in which musicians focused on their

technique (internal focus) (Mornell & Wulf, 2019). As was the case in studies in other fields (Chua et al., 2021), Mornell and Wulf (2019) found no difference between an internal focus of attention (technique) condition and a control condition (play as they normally did), suggesting that, unless told otherwise, musicians may adopt an internal focus of attention while playing, possibly as a result of the coaching or teaching they received (Chua et al., 2021).

Wulf (2013) suggested that there are few examples of pedagogical interventions aimed at encouraging learners to understand the superiority of an external focus of attention during the learning of a performance and the performance itself. Among potential interventions, video feedback used in sports and music may modify what learners focus on when self-evaluating.

Video Feedback

Video feedback, conceptualised in this paper as watching and analysing a video of one's own recorded performance (Boucher et al., 2020, p. 437), might enable the learner to compare their internal perception of a performance with an external point of view.

In the sports context, athletes may benefit from using video feedback by assessing aspects of their performance that they cannot be aware of while performing (Rikli & Smith, 1980; Selder & Del Roland, 1979). Although the benefits of video feedback for performance results would require time to unfold (Guadagnoli et al., 2002; Selder & Del Roland, 1979), video feedback could support athletes' reflective processes in ways that might not be observable with immediate performance testing or external assessment (Hebert et al., 1998).

In the context of musical learning, musicians who use self-recording may self-evaluate their recorded performance differently than evaluations based on recollections, post-performance

(Daniel, 2001; Hamilton & Duke, 2020; Masaki et al., 2011; Silveira & Gavin, 2016), and, furthermore, may self-evaluate differently (Boucher et al., 2021) and chose different learning strategies (Boucher et al., 2020) during practice sessions following video feedback.

Aim

This study will explore whether musicians focus on different aspects of their performances when self-evaluating in two different conditions: after performing (without the aid of a recording) and after watching a recording of the same performance. It addresses the following research question: Would pre-university classical guitarists focus on different aspects of their performance in self-evaluations without the aid of a recording in comparison with self-evaluations made after using video feedback?

93

METHOD

Our purpose in this study was to evaluate how video feedback might affect the self-evaluation of pre-university classical guitarists, with a particular focus on the aspects of a performance that they attend to when self-evaluating. We adopted a within-subjects design whereby the independent variable was the condition for self-evaluation (post-performance without the aid of a recording/post-video), and the dependent variable was the number of coding entries in an observation scheme comprising aspects of playing that the participants identified in their self-evaluative comments.

The within-subjects study reported here formed the second phase of a larger between-subjects experimental design. The study took place in a college in Québec, Canada. We offered the opportunity to participate to all classical guitar students enrolled in a 2-year

pre-university music performance programme. For the large between-subjects experimental study, thirteen males and three females volunteered. We gathered data regarding their age, instrumental level in the programme (first/second year), years of experience in individual lessons, latest grade obtained in an instrumental evaluation, and frequency of using video or audio feedback. All participants reported using video/audio recording less than twice a month, which was a prerequisite for participating in the study. In the large between-subjects study, we matched the participants for their level in the institution's programme (first/second year) to ensure an even distribution, and ranked and paired them according to their latest performance examination grade. We then used a random allocation software to assign the participants ($n = 16$) to a control ($n = 8$) or an experimental group ($n = 8$).

The experimental group, who engaged with video feedback, was the focus of the within-subjects study reported in this paper. The participants in this group ($n = 8$) had an average of 7.1 years of experience in music tuition ($SD = 3.6$); were 19 years-old ($SD = 1.3$) and had received an average grade of 79.6% on their latest performance assessment ($SD = 10.4$). Three of them were in their first year in the programme and five of them were in their second year.

Procedure

During the experimentation, the participants learned the same piece of music, a waltz by French composer Thierry Tisserand. To limit external influences, the chosen piece had not yet been published and we asked the participants not to discuss the experiment with their teacher or peers. The experimentation comprised 10 practice sessions that lasted 20 minutes each, and during which the participants could practise the piece freely. After practice sessions 3, 5, 7, and 9, participants ($n = 8$) performed the piece, or

any part they could, in front of a camera. Immediately after the performance, the researcher asked each participant to self-evaluate their performance by orally answering the question, "Which aspect(s) of your playing would you like to improve in the next practice sessions?" Before the practice session following each recording, the participants watched their recorded performance on a laptop computer and self-evaluated their recorded performance by answering the same question as after its recording. This intervention, watching their recorded performances and self-evaluating afterwards, will henceforth be referred to as "video feedback" in this paper.

In previous studies on video feedback, a coach guided the viewing (Guadagnoli et al., 2002; Rikli & Smith, 1980) or the participants used an observation grid (Masaki et al., 2011; Selder & Del Rolan, 1979) to self-evaluate their video, thus failing to isolate the potential effect of video feedback alone on the learners. Therefore, because of the lack of knowledge on the effects of video feedback on developing musicians, the viewing in this study was free and unguided.

94

ANALYSIS AND FINDINGS

We transcribed the self-evaluative comments and performed a content analysis of these comments based on recommendations from Saldaña (2009), whereby small units of text are identified that convey a complete, precise meaning. In this context, a unit was established when the participants mentioned a topic in their self-evaluative comments. Coding for the within-subjects study was based on an analytic framework that emerged from the larger between-subjects study, which included validity checks with a fellow researcher/guitarist. All the thematic categories in the original framework were represented in the analysis of the eight participants in the

experimental group. The final coding scheme comprised 17 categories related to specific aspects of a performance. These 17 categories were then grouped into five broader categories that encompassed different themes (Figure 1).

Comparison of the post-performance and post-video feedback self-evaluation

We compared the sum of entries coded in each theme for all post-performance assessments ($n = 4$) and for all post-video feedback assessment ($n = 4$). Overall, the participants made more self-evaluative comments in their post-performance assessments ($n = 138$) than they did after watching the recorded versions of the same performances ($n = 121$). In Figure 2 below, we display the number of comments coded in each theme (see Figure 1) with a comparison of the feedback conditions.

The theme *general evaluation* included the categories *general appreciation* and *comparison of the performances* (Figure 1). In each feedback context (post-performance or post-video feedback), we coded 12 comments in this *general evaluation* theme (Figure 2). The comments coded in the theme *instrumental execution* referred to the technical movements for playing the piece (*general technique*, *clean playing*, *hand position* and *particular techniques*) (Fig. 1). The participants made more comments about this in the post-video feedback assessments ($n = 25$) than in the corresponding post-performance assessments ($n = 15$) (Fig. 2). The comments coded in the theme *interpretation* referred to the categories: *expressivity*, *fluidity*, *sound*, *dynamics and phrasing*. The participants made more comments on this topic in the post-video feedback assessments ($n = 35$) than in the corresponding post-performance assessments ($n = 29$). The categories *state of mind*, *running through the piece* and *tempo*

95

FIGURE 1. Coding scheme: Definition for each category and theme.

GENERAL EVALUATION	INSTRUMENTAL EXECUTION	INTERPRETATION	PERFORMANCE FLOW	LEARNING STAGES
General appreciation Appreciation of the performance or the learning of the piece, with no further details. Key words: "well", "happy", "not happy".	General technique General comments in which the participants discuss the technical aspects of the performance with no further details.	Expressivity General comments in which the participants discuss the musical or expressive aspects of the performance with no further details.	State of mind Reference to the level of concentration, attention, or anxiety during the performance	Amount of music played Amount of music played during the performance. Examples of key words: "went further", "played it entirely", "reaching".
Comparison of 1 performances Comparison between the performances with no further comments on why or how they compare.	Clean playing Technical precision of the playing.	Fluidity Fluidity of the note changes.	Running through the piece The sequence of the sections or phrases of the piece and small errors or unpredictable stumbles during the performance. Examples of key words: "transition", "hesitation", "stumbles".	Familiarisation with the score Assimilation of the information in the score: notes, sight-reading, fingering.
	Hand position Position of the hands or the fingers.	Sound Sound quality, general volume or balance of volume between the voices.	Tempo Metronomic speed of the performance.	Particular sections of the piece Parts of the piece or difficult passages that need additional work, with no mention why.
	Particular techniques Execution of the guitar techniques that are specific to this piece (natural harmonics, slurs, shifts on the fret board).	Dynamics and phrasing Execution of the dynamics and phrasing during the performance.		Assimilation of the piece Reliability and confidence in the learning or the memorisation of the piece with no further details on which aspects of learning/playing are more reliable.

were grouped in the theme *performance flow*. The participants made 16 more comments about this topic in their post-performance assessments ($n = 37$) than in their post-video feedback assessments ($n = 21$). Finally, the comments coded in the theme *learning stages* referred to the *amount of music played, familiarisation with the score, particular sections of the piece and assimilation of the piece*. The participants made 17 more comments related to this theme in their post-performance assessments ($n = 45$) than in their post-video feedback assessments ($n = 28$).

Overall, the highest number of post-performance comments were coded in the theme *learning stages* ($n = 45$), whereas the highest number of post-video feedback comments were coded as *interpretation* ($n = 35$). More specifically, in comparison with post-performance comments, the participants made more post-video feedback comments about *instrumental execution* and *interpretation*, and fewer comments on *performance flow* and *learning stages*.

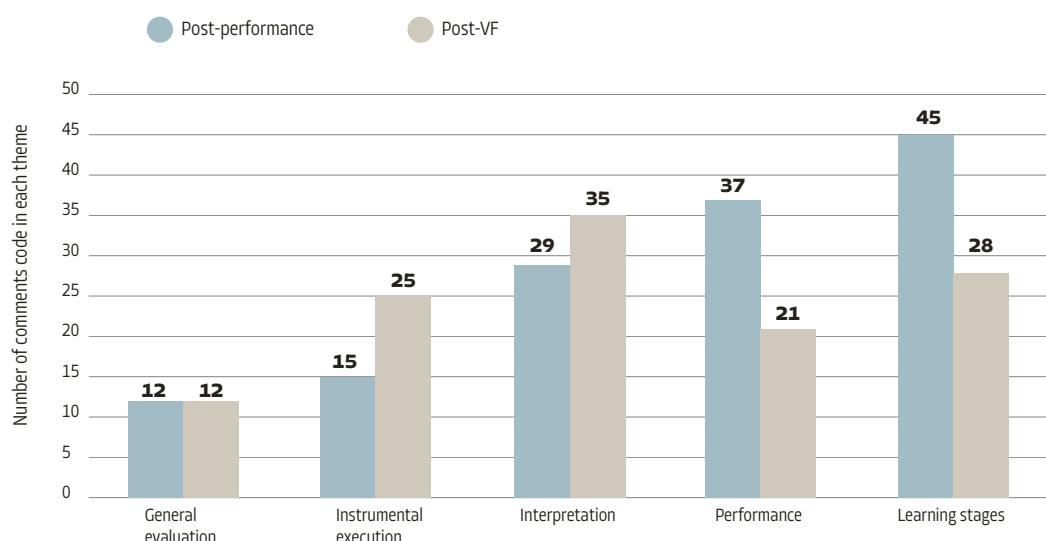
DISCUSSION

The purpose of the study reported here was to explore whether pre-university classical guitarists would focus on different aspects of a performance when self-evaluating after performing than after watching a video of that performance. We compared the number of times that the participants commented on various aspects of their playing after performing – without the use of the recording – and after watching their recorded performance. We found differences of more than ten comments between each feedback condition in three of the five themes.

96

It appeared that, although the participants self-evaluated the same performance, they assessed different aspects of their performance depending on whether they were self-evaluating after performing or after watching the video-recorded performance. In their post-video feedback assessments, the participants made more comments about instrumental execution and interpretation, and fewer comments on performance flow and the learning process of the piece than in their post-performance assessments.

FIGURE 2. Comparison between the post-performance and post-video-feedback self-evaluation for the number of comments coded in each theme.



The findings suggested that, after viewing the recorded performances, the guitarists focused more on details related to the task of performing the piece (*interpretation* and *instrumental execution*) and focused less on their learning process (*learning stages*) or on how the performance went globally (*performance flow*).

The focus on different aspects of the performance depending on the feedback condition reported here adds to the results reported by Daniel (2001) in which 86% of the participants claimed that video feedback changed their perception of the performance, and to the results by Masaki et al. (2011) in which the participants self-evaluated their recorded performances more objectively. This also supports the suggestion that musicians should record a performance and watch it afterwards (McPherson & Renwick, 2011) to gain a new perspective on their playing.

After watching the recorded performance, the participants focused the greatest number of their comments on interpretation. This focus on the results of the movements (*interpretation*) rather than their learning process (*learning stages*) or the movements themselves (*instrumental execution*) may help musicians play more musically and more accurately (Duke et al., 2011; Mornell & Wulf, 2019).

Engagement with video feedback, fostering new perspectives on performance, could support a learner's self-evaluation and reflection before observable changes appear in performance results, as was the case in the study by Hebert et al. (1998). Moreover, our study demonstrated that video feedback could raise awareness in musicians on the interpretation of a piece of music, even in the early stage of its learning. Video feedback might thus constitute an interesting intervention to develop an external focus of attention among musicians (Wulf, 2013). However, our data did not demonstrate that musicians, during the first practice sessions of a piece, would transfer

this focus on interpretation in their following post-performance self-evaluations.

LIMITATIONS AND FUTURE STUDIES

Besides the small sample size, the participants were all studying western classical music with the same group of teachers in the same institution. In the large between-subjects study, the randomised allocation of participants in the experimental or control condition yielded a difference in the groups' overall performance level: the experimental group – the focus of this within-subjects study – had a lower average grade in their latest performance assessment than the control group. Thus, we could have obtained different findings with a more equal distribution of the participants in each group. Notwithstanding these limitations, we considered that the sample size was large enough to identify tendencies that could be addressed in future research, but also small enough to allow a thorough analysis of the participants' data.

Future studies could explore how less experienced or less accomplished musicians could benefit from video feedback supported by an observation grid or a teacher. Furthermore, the participants in our study used video feedback in the first ten practice sessions of a new piece, which might explain the large number of comments related to their learning process. Other studies might explore if we could observe a different effect of video feedback on the self-evaluation of developing musicians when used over a longer period or later in the learning process of a piece. Among the potential effects of video feedback later in the learning process, future studies should verify if musicians transfer the focus on interpretation that we identified in the post-video feedback comments in subsequent post-performance self-evaluations, but earlier in

their learning process than musicians who don't use video feedback.

CONCLUSION

In this study, the participants evaluated different aspects of their playing when viewing their recorded performances. Musicians who used video feedback appeared to have obtained complementary information that they were unable to perceive while playing. Specifically, they focused more on the performance itself rather than their learning process in their post-video-feedback comments. In their evaluation of their recorded performance, our participants, even in the early stages of learning a music piece, focused their attention on interpretation, which was found in other studies to be the focus of attention leading to more musical and technically accurate performances.

From a pedagogical point of view, with the use video feedback student musicians might compare their task-intrinsic feedback after performing with their evaluation of the recorded performance and their teacher's comments on the same performance. For example, musicians could take notes while watching a recorded performance and discuss their observations with their teacher. Teachers could also watch their students' recorded performance with them during the lessons and pause the videos to offer immediate feedback at specific points of the performance.

According to research on video feedback, musicians could benefit from self-recording to modify the way they self-evaluate after performing. Furthermore, taking notes while watching the recordings, comparing recorded performances and self-evaluating from a more objective standpoint, could help developing musicians make sense of external feedback from teachers

or peers, and to empower them to be their own teachers between their instrumental lessons.

FUNDING

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: the first author conducted this study a part of a doctoral research for which he received a scholarship from the *Fonds de recherche du Québec - société et culture*. The first author attended the CEPROM conference with the financial support of McGill University.

98

REFERENCES

ATKINS, R. L. (2017). Effects of focus of attention on tone production in trained singers. *Journal of Research in Music Education*, 64(4), 421-434.

ATKINS, R. L., & DUKE, R. A. (2013). Changes in tone production as a function of focus of attention in untrained singers. *International Journal of Research in Choral Singing*, 4(2), 28.

BARTOLOME, S. J. (2009). Naturally emerging self-regulated practice behaviors among highly successful beginning recorder students. *Research Studies in Music Education*, 31(1), 37-51.

BOUCHER, M., CREECH, A., & DUBÉ, F. (2020). Video feedback and the choice of strategies of college-level guitarists during individual practice. *Musicae Scientiae*, 24(4), 430-448. <https://doi.org/10.1177/1029864918817577>

— (2021). Video feedback and the self-evaluation of college-level guitarists during individual practice. *Psychology of Music*, 49(2), 159-176. <https://doi.org/10.1177/0305735619842374>

CHUA, L.-K., JIMENEZ-DIAZ, J., LEWTHWAITE, R., KIM, T., & WULF, G. (2021). Superiority of external attentional focus for motor perfor-

mance and learning: Systematic reviews and meta-analyses. *Psychological Bulletin*, 147(6), 618.

DANIEL, R. (2001). Self-assessment in performance. *British Journal of Music Education*, 18(3), 215-226.

DUKE, R. A., CASH, C. D., & ALLEN, S. E. (2011). Focus of attention affects performance of motor skills in music. *Journal of Research in Music Education*, 59(1), 44-55.

DUKE, R. A., SIMMONS, A. L., & CASH, C. D. (2009). It's not how much; it's how: Characteristics of practice behavior and retention of performance skills. *Journal of Research in Music Education*, 56(4), 310-321.

GUADAGNOLI, M., HOLCOMB, W., & DAVIS, M. (2002). The efficacy of video feedback for learning the golf swing. *Journal of Sports Sciences*, 20(8), 615-622.

HALLAM, S. (2001). The development of metacognition in musicians: Implications for education. *British Journal of Music Education*, 18(1), 27-39.

— (2013). What predicts level of expertise attained, quality of performance, and future musical aspirations in young instrumental players? *Psychology of Music*, 41(3), 267-291.

HAMILTON, L. M., & DUKE, R. A. (2020). Changes in perception accompany the development of music performance skills. *Journal of Research in Music Education*, 68(2), 175-192.

HEBERT, E., LANDIN, D., & MENICKELLI, J. (1998). Videotape feedback: What learners see and how they use it. *Journal of Sport Pedagogy*, 4, 12-28.

LEON-GUERRERO, A. (2008). Self-regulation strategies used by student musicians during music practice. *Music Education Research*, 10(1), 91-106.

MASAKI, M., HECHLER, P., GADBOIS, S., & WADDELL, G. (2011). Piano performance assessment: Video feedback and the Quality Assessment in Music Performance Inventory (QAMPI). In A. WILLIAMON, D. EDWARDS, & L. BARTEL (Eds.), *Proceedings of the International Symposium on Performance Science 2011* (p. 503-508). European Association of Conservatoires (AEC).

MC PHERSON, G. E., & RENWICK, J. M. (2001). A longitudinal study of self-regulation in children's musical practice. *Music Education Research*, 3(2), 169-186.

— (2011). Self-regulation and mastery of musical skills. In B. J. ZIMMERMAN & D. H. SCHUNK (Eds.), *Handbook of self-regulation of learning and performance* (p. 234-248). Routledge/Taylor & Francis Group.

MIKSZA, P. (2011). A review of research on practicing: Summary and synthesis of the extant research with implications for a new theoretical orientation. *Bulletin of the Council for Research in Music Education*(190), 51-92. <https://doi.org/10.5406/bulletin.coursesmusedu.190.0051>

MORNELL, A., OSBORNE, M. S., & MCPHERSON, G. E. (2020). Evaluating practice strategies, behavior and learning progress in elite performers: An exploratory study. *Musicae Scientiae*, 24(1), 130-135.

MORNELL, A., & WULF, G. (2019). Adopting an external focus of attention enhances musical performance. *Journal of Research in Music Education*, 66(4), 375-391.

NIELSEN, S. (2001). Self-regulating learning strategies in instrumental music practice. *Music Education Research*, 3(2), 155-167.

— (2015). Learning pre-played solos: Self-regulated learning strategies in jazz/improvised music. *Research Studies in Music Education*, 37(2), 233-246.

PIKE, P. D. (2017). Self-regulation of teenaged pianists during at-home practice. *Psychology of Music*, 45(5), 739-751.

RIKLI, R., & SMITH, G. (1980). Videotape feedback effects on tennis serving form. *Perceptual and Motor Skills*, 50, 895-901.

SALDAÑA, J. (2009). *The coding manual for qualitative researchers*. Sage.

SELDER, D. J., & DEL ROLAN, N. (1979). Knowledge of performance, skill level and performance on the balance beam. *Canadian Journal of Applied Sport sciences. Journal Canadien des Sciences Appliquees au Sport*, 4(3), 226-229.

SILVEIRA, J. M., & GAVIN, R. (2016). The effect of audio recording and playback on self-assessment among middle school instrumental music students. *Psychology of Music*, 44(4), 880-892.

WULF, G. (2013). Attentional focus and motor learning: A review of 15 years. *International Review of Sport and Exercise Psychology*, 6(1), 77-104.

ZIMMERMAN, B. J. (1998). Academic studying and the development of personal skill: A self-regulatory perspective. *Educational Psychologist*, 33(2-3), 73-86.

100

Susanna Mesiaä¹Metropolia University of Applied Sciences,
Helsinki, Finland**101**

ABSTRACT The traditional assessment models and criteria of musical performance in higher music education in the time of learner-centered approaches have been found problematic. They often fall short in capturing the wide array of skills, knowledge, creativity and personal development of a performer. This study contributes to the ongoing endeavor of developing assessment methods which aim to transparency and equality, and which would provide the performer with a multifaceted assessment on their performance. This report discusses and investigates a 360-degree assessment model (360-DAM) applied within the popular music and jazz vocal performance studies at the Metropolia University of Applied Sciences Music degree in Finland. The 360-DAM is presented and discussed with reference to relevant literature. This study adds to the practitioner research knowledge base, as the author is the leader of the collegium and one of the vocal teachers in the degree. The investigation is situated in the case study framework and used questionnaires in data collection. The data was analyzed through qualitative methods to learn what experiences the alums and the teachers have had using the 360-DAM. The findings suggest that the assessment model is able to provide the students with a multifaceted assessment through a professional conversation amongst participants representing different viewpoints to a musical performance. It positions assessment to be *of* learning, *for* learning and *as* learning. Thus, the findings bring forth points of development for the model.

KEYWORDS:

- higher music education
- assessment
- musical performance
- learner-centered
- teaching

Correspondence

¹ susanna.mesia@metropolia.fi