The Second International Conference
Psychology and Music – Interdisciplinary Encounters

(PAM-IE Belgrade 2022)

Main Conference Program, October 26–29, 2022

Parallel Conference Program, October 27, 2022

Main Organizer
Faculty of Music, University of Arts in Belgrade

Co-organizers
Institute of Psychology, Faculty of Philosophy, University of Belgrade
Psychology of Music Section, Serbian Psychological Society
Regional Network Psychology and Music (RNPaM)

How to cite this volume
Bogunović, B., Nikolić, S., & Mutavdžin, D. (Eds.). (2023). *Proceedings of the PAM-IE Belgrade 2022*. Faculty of Music, University of Arts in Belgrade.

Proceedings of the Second International Conference
Psychology and Music – Interdisciplinary Encounters, Belgrade 2022

Editors
Blanka Bogunović, Sanela Nikolić, and Dejana Mutavdžin

Publisher
Faculty of Music, University of Arts in Belgrade, Kralja Milana 50, Belgrade

For publisher
Faculty of Music
Ljiljana Nestorovska

Editor-in-Chief of the Faculty of Music Publications
Gordana Karan

Cover design
Stefan Ignjatović

Technical Editor and Pre-Press
Dušan Ćasić

ISBN-978-86-81340-59-2

PAM-IE Belgrade 2022 Conference and this publication were supported by
the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.

THE SECOND INTERNATIONAL CONFERENCE

Psychology and Music – Interdisciplinary Encounters

PROCEEDINGS

Editors
Blanka Bogunović, Sanela Nikolić, and Dejana Mutavdžin

Faculty of Music, University of Arts in Belgrade, 2023

Music as an Inspiration and Choreographic Cognition

Maja S. Vukadinović
Center for Dance and Flamenco Art Research La Sed Gitana, Novi Sad, Serbia
lasedgitana@gmail.com

Abstract

This paper aims to reflect upon the role of music as an inspiration for dance choreographers, focusing on exploring the relationship between music and the choreographic cognition of the artists to increase the understanding of both. Choreographic cognition is analyzed as a part of a wider area of human cognition – *embodied cognition*. Embodied cognition is understood as a special type of data processing in which certain parts of the body or parts of the sensory system are used to simulate a certain process whereby the person understands it. On the other hand, choreographic cognition refers to the cognitive and mental processes involved in constructing and refining movement material to create a work of art. When it comes to choreographic cognition, this paper discusses the choreographers' choice of music, their understanding, and knowledge about how to use the body as a medium of thinking, relying on visual, somatosensory, tactile, and motor systems while creating new movements, as well as different techniques of how to make it easier for the audience to perceive, understand and appreciate a particular movement, a part of the dance or the entire piece. Besides the implications arising from our analyses, the importance of a dialogic relationship between dance and music is outlined in the conclusion.

Introduction

The creative process in dance is very complex compared to other artistic disciplines. The complexity of dance stands out from its spatial and temporal determination and the fact that tdancers use their own body as an instrument. At the same time, the dancers are both the subject and the object of dance (Arnhajm, 2003; Vukadinović, 2019). In other words, they are the performer, the creator, and the work of art – all in one (Arnhajm, 2003; Brown et al., 2006; Vukadinović & Marković, 2017). In dance as a form of art, regardless of what form of dance is performed, the role of a choreographer in the creative process refers to devising new or using existing movements to compose a harmonious, artistic whole that is a new dance choreography (Hagendoorn, 2008, 2011; Kirsh, 2011; Krešić, 1997; Neubauer, 2006; Stevens & McKechnie, 2005; Vukadinović & Marković, 2012, 2017).

Since the basic instrument of dance is the performer's body, the choreographer's creativity mainly takes place in the kinesthetic medium (Montero, 2012). Kinesthesia is related to the kinesthetic-vestibular system. It refers to the sensations associated with one's body position, muscular tension, balance, and orientation in space. Kinesthesia can be defined as an awareness of the position of one's own body or body movement, which one reaches through receptors in muscles, tendons, ligaments, joints, and the skin (Foster, 2008, 2011; Montero, 2006, 2012; Proske, 2006; Sherrington, 1907). It is also considered that kinesthesia is an integral part of perception (Berthoz, 2000; Foster, 2011; Reynolds, 2007) as well as the multicomponent sensory modality (Jola et al., 2011). Many scientists understand kinesthesia as an integral part of perception, and they use the term proprioception when studying the experiences of dancers during a performance or while mastering a particular movement (Golomer & Dupui, 2000; Hagendoorn, 2003; Hugel et al., 1999; Jola et al., 2011; Leanderson et al., 1996; Montero, 2006, 2016; Moore, 2007; Proske, 2006).

Previous research which dealt with the role of visual and proprioceptive information

showed that dancers most often rely on their sense of sight (visual sensory modality) when learning and practicing a specific step or movement sequence in front of a mirror (Dearborn & Ross, 2006; Shabbott & Sainburg, 2010). At the same time, during their classes, dancers practice a certain movement until they achieve the proprioceptive integration of information and bodily representation of the movement (Jola et al., 2011). If the language of the dancer is used, achieving proprioceptive integration and bodily representations of movement can be recognized (Hagendoorn, 2003) in acquiring 'good feeling' proprioception or what 'feels that it is right' (Montero, 2012) when performing the movement. Together with other authors (Hugel et al., 1999; Montero, 2006, 2012), Hagendoorn (2003) emphasizes that proprioception serves as a basis for dancers to achieve aesthetic experience during the dance and that in addition to the exteroception (visual sensory modality) of one's movement, proprioception plays a key role not only in learning a movement but also in aesthetic evaluation. Moreover, proprioception plays a crucial role in creating new choreography, especially in the communication between choreographers and dancers.

Next to that, music is also closely related to proprioception; when a person listens to music, a number of its aspects may produce bodily responses (Acitores, 2011). In that sense, the choreographers, when creating a new piece, may reach for their inspiration in bodily sensations, the meaning attributed to music, and the mood induced by the music. Music, in its richness, can stimulate both the body and the soul and, in that way, inspire action, imagination, and creativity in both choreographers and dancers. Considering the characteristics mentioned above of music and dance, the purpose of this study is to analyze and reflect upon the role of music as an inspiration for choreographers, putting an accent on the exploration of the relationship between music and choreographic cognition.

Aim

This paper aims to analyze the relationship between music and choreographic cognition of the artists in order to increase the understanding of both.

Main Contribution

When a choreographer chooses an appropriate piece of music, a serious venture of creating a choreography begins. The choice of music is mostly defined by the form of dance (e.g., classical ballet, contemporary dance, hip-hop, or folk dances), so the choreographic cognition of choreographers is closely related to their musical preference. Thus, music is not an accompaniment of a particular dance but its inspiration. Moreover, the music itself carries meaning. The rhythm, melody, and groove often carry a metaphor and suggest a certain feeling. Kirch (2011) explains that choreographers and dancers use their bodies as a thinking medium, relying on their visual, somatosensory, tactile, and motor systems while creating new movements. Any change in the body as an instrument (flexion, extension, increase or decrease of rigidity, etc.) leads to a change in the form and style of dance. Furthermore, choreographers and dancers do not only depict the music, but they also amplify its meaning by interpreting it through their movements.

When creating a certain dance piece, the choreographer faces many challenges, and the biggest one is to harmonize the movements with the chosen piece of music. In response to these challenges, cognition plays a major role. Some authors assume that, in these cases, the choreographer relies on a specific area of cognition called *choreographic cognition* (Stevens & Glass, 2005; Stevens & McKechnie, 2005).

Choreographic Cognition

Choreographic cognition forms a special part of a wider area of human cognition – *embodied cognition* (Kirsh, 2011). Embodied cognition is understood as a special type of data

processing in which parts of the body or parts of the sensory system are used to simulate a particular process whereby the person understands it (Adams, 2010; Borghi & Cimatti, 2010; Kirsh, 2011). On the other hand, choreographic cognition refers to the cognitive and mental processes involved in constructing and refining movement material to create a work of art. Furthermore, it implies that the choreographer and the performer use their bodies as a means of thinking, where the body has a dual role – it is used both as a medium of cognition and representation. Thus, choreographic cognition partially overlaps with embodied cognition.

For example, a choreographer can assign a task to dancers in which they have to switch from one modality to another by imagining that their bones are made of rubber or by thinking about what it feels like when they are being attacked. After recalling those images or experiences, they have to translate their feelings into movement (Kirch, 2011). Studying how the choreographer uses different modalities (somatosensory, visual, and emotional) to stimulate dancers, Kirch observes that creativity in dance consists of the generation of an idea in one of these modalities, mapping it in another and checking that idea in a third modality (Kirch, 2011). He assumes that the choreographer's cognition manifests using the body and sensory systems as a thinking medium. He concludes that the power of cognition of the choreographers and their creativity consists of the ability to represent a certain idea in as many modalities as possible and to switch from one modality to another easily. In addition to Kirsh's conclusion, an important aspect of choreographic cognition is the choreographer's knowledge of how a particular music sequence could be emphasized, intensified, accentuated, or diminished through the mastery of body movement (Vukadinović, 2019).

According to Stevens and collaborators (Stevens & Glass, 2005), dance is the domain where choreographic cognition reaches its complete application and expression. In that sense, the creativity inherent in choreographic cognition is based on the research of movement and the source of inspiration for it. This type of creativity can be found in various modalities such as music, image, space, rhythm, impact, texture, psychological tension, feeling, word, sound, and concept (Stevens & Glass, 2005). Moreover, an affective and expressive component in creating and performing dance distinguishes this activity from all other forms, such as, for example, athletics or gymnastics. Finally, the findings of Stevens and collaborators (Stevens & Glass, 2005; Stevens & McKechnie, 2005) may be summarized in the conclusion that cognition in dance is based on embodied knowledge related to movements and sequences of movements. For them, the embodiment includes the body as a medium whose movements carry information about the physical, conceptual, and psychological aspects of the world, both for the performer and his audience (Stevens & Glass, 2005).

A significant part of choreographic cognition, as well as of the creativity of the choreographers, is their knowledge about a wide range of different techniques which may serve to make it easier for the audience to perceive, understand, and appreciate a certain movement, a part of the dance or the entire piece. Choreographers use repetition of movements for these purposes; they connect movements with specific associations or references. Furthermore, they use spatial organization in the form of alignment, grouping of dancers, or hierarchy among dancers and the like (Hagendoorn, 2008; Stevens & McKechnie, 2005). In addition to these techniques, the choreographers' specific style can be another manifestation of choreographic cognition. During their practice, many choreographers manage to develop and invent their own characteristic 'vocabulary' of movement, which represents their 'personal seal' so that their style becomes recognizable by the movements specific only to their work. Within the framework of modern and contemporary dance, such choreographers are, for example, Martha Graham, Cunningham, Jose Limon, Sonia Tayeh, Travis Wall, etc. (Cunningham, 1968; Graham, 1991, 1973; Hagendoorn, 2005, 2011; Folks,

2008; Limón, 1955; Stevens & McKechnie, 2005; Vitkay-Kuczera & Vukadinović, 2017).

Conclusion

Based on our analyses, some possibilities for future empirical and theoretical research may be discussed. Namely, the current dance practice tends to combine different forms of dance with a genre of music that is not usual for that particular dance form (e.g., hip-hop dance and classical pieces, flamenco dance, and R'n'B music). When it comes to creating new dance movements, it is emphasized that the choreographers' creativity relies on choreographic cognition, the choreographers' knowledge, as well as on his/her use of different sensory systems and the possibility of 'transition' between them (audio, visual, olfactory, tactile, kinesthetic). This can open a fruitful field for empirical research regarding the aesthetic experience of both, music and dance. Furthermore, the practical, theoretical, and empirical exploration of the contemporary tendency to combine various genres of music with different dance forms does not just pose a challenge for choreographers in creating new directions of artistic expression. Still, it can also increase our understanding of choreography and music cognition.

It can be concluded that their dialogical relationship should be brought into focus in the attempt to understand the connection between music and dance. Music is an inspiration for the creation of dance choreography, it stimulates choreographic cognition, but it is also *vice versa*, since dance may emphasize, intensify, or sometimes even inspire the creation of music and that way, enrich music cognition.

References

Acitores, A. P. (2011). Towards a theory of proprioception as a bodily basis for consciousness in music. In D. Clarke & E. Clarke (Eds.), *Music and consciousness: Philosophical, psychological, and cultural perspectives* (1st ed., pp. 215–230). Oxford Academic. https://doi.org/10.1093/acprof:oso/9780199553792. 003.0066

Adams, F. (2010). Embodied cognition. *Phenomenology and the Cognitive Science*, *9*(4), 619–628. https://psycnet.apa.org/record/2010-25040-009

Arnhajm, R. (2003). *Prilog psihologiji umetnosti* [A contribution to the psychology of art]. SKC Beograd.

Berthoz, A. (2000). *The brain's sense of movement.* Harvard University Press.

Borghi, A. M., & Cimatti, F. (2010). Embodied cognition and beyond: Acting and seeing the body. *Neuropsychologia*, *48*(3), 763–773. https://doi.org/10.1016/j.neuropsychologia.2009.10.029

Brown, S., Martinez, M. J., & Parsons, L. M. (2006). The neural basis of human dance. *Cerebral Cortex*, *16*(8), 1157–1167. https://doi.org/10.1093/cercor/bhj057

Cunningham, M. (1968). *Changes: Notes on choreography.* Something Else Press.

Dearborn, K., & Ross, R. (2006). Dance learning and the mirror: Comparison study of dance phrase learning with and without mirrors. *Journal of Dance Education*, *6*(4), 109–115. https://doi.org/10.1080/15290824.2006.10387323

Folks, Dž. L. (2008). *Moderna tela. Ples i američki modernizam od Marte Grejam do Alvina Ejlija.* Clio.

Foster, S. (2008). Movement's contagion: The kinesthetic impact of performance. In D. Tracy (Ed.), *The Cambridge companion to performance studies* (pp. 46–59). Cambridge University Press. https://doi.org/10.1017/CCOL9780521874014.004

Foster, S. (2011). *Choreographing empathy: Kinesthesia in performance* (1st ed.). Routledge. https://doi.org/10.4324/9780203840702

Golomer, E., & Dupui, P. (2000). Spectral analysis of adult dancers sways: Sex and interaction vision-proprioception. *International Journal of Neuroscience*, *105*(1–4), 15–26. https://doi.org/10.3109/00207450009003262

Graham, M. (1973). *The notebooks of Martha Graham* (1st ed.). Harcourt.

Graham, M. (1991). *Blood memory: An authobiography* (1st ed.). Doubleday.

Hagendoorn, I. (2003). The dancing brain. *Cerebrum*, *5*(2), 19–34. http://inclusivedance.eu/wp-content/uploads/2017/04/The-Dancing-Brain.pdf

Hagendoorn, I. (2005). Dance perception and the brain. In R. Grove, C. Stevens, & S. McKechnie (Eds.), *Thinking in four dimensions: Creativity and cognition in contemporary dance* (pp. 137–148).

Melbourne University Press. https://search.informit.org/doi/10.3316/informit.018054756362361

Hagendoorn I. (2008). Emergent patterns in dance improvisation and choreography. In A. A. Minai & Y. Bar-Yam (Eds.), *Unifying themes in complex systems IV* (pp. 183–195). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-73849-7_21

Hagendoorn, I. (2011). Dance, choreography and the brain. I F. Bacci & D. Melcher (Eds.), *Art and the senses* (pp. 499–514). Oxford University Press.

Hugel, F., Cadopi, M. Kohler, F., & Perrin, P. (1999). Postural control of ballet dancers: A specific use of visual input for artistic purposes. *International Journal of Sports Medicine*, *20*(2), 86–92. https://doi.org/10.1055/s-2007-971098

Jola, C., Davis, A., & Haggard, P. (2011). Proprioceptive integration and body representation: Insights into dancers' expertise. *Experimental Brain Research*, *213*(2–3), 257–265. https://doi.org/10.1007/s00221-011-2743-7

Kirsh, D. (2011). Creative cognition in choreography. In D. Ventura, P. Gervás, D. Fox Harrell, M. L. Maher, A. Pease, & G. Wiggins (Eds.), *Proceedings of 2nd international conference on computational creativity* (pp. 141–146). México City, México. https://computationalcreativity.net/iccc2011/proceedings/the_cognitive/kirsh_iccc11.pdf

Krešić, I. (1997). Osnovni problemi umetničke igre [Basic problems of artistic play]. In S. Hrnjica, V. Panić, K. Radoš, & I. Krešić (Eds.), *Psihologija* (pp. 245–279). Zavod za udžbenike i nastavna sredstva.

Leanderson, J., Eriksson, E., Nilsson, C., & Wykman, A. (1996). Proprioception in classical ballet dancers. A prospective study of the influence of an ankle sprain on proprioception of the ankle joint. *American Journal of Sports Medicine*, *24*(3), 370–374. https://doi.org/10.1177/036354659602400320

Limón, J. (1955). Composing a dance. *Juilliard Review II*, 17–25.

Montero, B. (2006). Proprioception as an aesthetic sense. *The Journal of Aesthetics and Art Criticism*, *64*(2), 231–242. https://doi.org/10.1111/j.0021-8529.2006.00244.x

Montero, B. (2012). Practice makes perfect: The effect of dance training on the aesthetic judge. *Phenomenology and the Cognitive Science*, *11*(1), 59–68. http://dx.doi.org/10.1007/s11097-011-9236-9

Montero, B. G. (2016). *Though in action. Expertise and the conscious mind.* Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199596775.001.0001

Moore, M. (2007). Golgi tendon organs: Neuroscience update with relevance to stretching and proprioception in dancers. *Journal of Dance Medicine & Science*, *11*(3), 85–92. https://doi.org/10.1177/1089313X0701100304

Neubauer, H. (2006). *Umetnost koreografje* [The art of choreography]. Javni sklad Republike Slovenije za kulturne dejavnosti.

Proske, U. (2006). Kinesthesia: The role of muscle receptors. *Muscle & Nerve*, *34*(5), 545–558. https://doi.org/10.1002/mus.20627

Reynolds, D. (2007). *Rhythmic subjects: Uses of energy in the dances of Mary Wigman, Martha Graham and Merce Cunningham.* Dance Books.

Shabbott, B. A., & Sainburg, R. L. (2010). Learning visuomotor rotation: Simultaneous visual and proprioceptive information is crucial for visuomotor remapping. *Experimental Brain Research*, *203*(1), 75–87. https://doi.org/10.1007/s00221-010-2209-3

Sherrington, C. S. (1907). On the proprio-ceptive system, especially on its reflex aspect. *Brain*, *29*(4), 467–482. https://doi.org/10.1093/brain/29.4.467

Stevens C., & McKechnie, S. (2005). Thinking in action: Thought made visible in contemporary dance. *Cognitive Processing*, *6*(4), 243–252. https://doi.org/10.1007/s10339-005-0014-x

Stevens, K., & Glass, R. (2005). Choreographic cognition: Investigating the psychological processes involved in creating and responding to contemporary dance. In *Conference Proceedings: Dance Rebooted: Initializing the Grid* (pp. 1–21). Tertiary Dance Council of Australia, Australia.

Vitkay-Kuczera A., & Vukadinović, M. S. (2017, August 25–27). Aesthetic experience of contemporary dance choreographies: The influence of the choreographer's style and the observer's identification with story [Conference presentation abstract]. In C.-C. Carbon & J. Fingerhut (Eds.), *Art & Perception: Abstracts from the 5th Visual Science of Art Conference, Berlin, Germany*. https://brill.com/view/journals/artp/5/4/article8-p337_337.xml#d101112863e4476

Vukadinović, M. (2019). *Psihologija plesa i umetničke igre* [The psychology of dance]. Pedagoški fakultet, Sombor i Novosadski centar za istraživanje plesa i umetnost flamenka – La Sed Gitana.

Vukadinović, M., i Marković, S. (2012). Aesthetic experience of dance performances. *Psihologija*, *45*(1), 23–41. https://doi.org/10.2298/PSI1201023V

Vukadinović, M. S., & Marković, S. (2017). The relationship between the dancers' and the audience's aesthetic experience. *Psihologija*, *50*(4), 465–481. https://doi.org/10.2298/PSI160222009V