

Knowledge and conscientiousness - two vectors in musical performance

Ruxandra MIREA¹

Abstract: *Our study is interdisciplinary, at the intersection of two fields that serve equally the material and spiritual reality: Music and Psychology. In order to better integrate the two sciences into the multidimensional dimension of the moment, to understand the ability of a musician to build and sustain the assertive artistic act, we have conducted the research starting from the following hypothesis: it is assumed that there is a positive correlation between the level of conscientiousness and the accumulated knowledge of students from the Music program. Conscientiousness, the attitude quantified in our research by the FFPI questionnaire, reveals the most important mark of success in profession, career. The second concept involved in this hypothesis aims at knowing, through the accumulated knowledge leading to the transformation of the personality and the acquired behaviours, highlighting in time, an accomplished musician.*

Keywords: *music, psychology, conscientiousness, knowledge, thinking, myelin.*

1. Introduction

Looking diachronically at the universal musical culture, we find the determination of the aesthetic rules that configures the entire artistic creation. The human being, building an aesthetic attitude in education, has exerted a taste for beauty in art, mirroring also beyond it, the algorithm of the transformation of reality. Thus, through beauty, through the flow of emotions, which cause a cognitive attitude, the material world always bears aesthetic, beneficial transformations. That is why, art always enlivens, builds, transforms the human nature. The thinking of the artist and the musician has always influenced interpersonal, social and cultural relationships. Thus, we reveal psychology, as the second science that will help us shape some of the determining aspects in musical performance. This is the science concerned with the study and understanding of the individual, his mind and his

¹ Ovidius University of Constanţa, Faculty of Arts. E-mail: ruxandra.m63@gmail.com

behaviour, for shaping and developing the creative potential of the individual. Thus, our interdisciplinary study will outline the relevance of cumulative knowledge and the acuity of conscientiousness in achieving artistic performances.

2. The conceptual space

The brain, bearing the mark of **neuroplasticity**, is the superior organ that coordinates the nervous, motor, physiological and emotional ensemble.

Myelin is an important element in brain architecture, implicitly in the thinking process and musical expression. Myelin, also called the myelin sheath, is a phospholipid layer designed to electrically isolate nerve fibers, axons, thus facilitating communication between the axon and the glial cell. This shell, which is a living environment, is produced by the Schwann cells in the central nervous system, CNS, or by the oligodendrocytes in the peripheral nervous system, PNS. By the process of enveloping with these Schwann cells, from which cytoplasm is eliminated, cell membranes and myelin are observed. The process of myelination is highlighted with some delay in humans, starting from the uterine period from 8-10 weeks and finishing around the child's 2 years of age. Until the age of 40, the adult assimilates new knowledge and thus, alternating with periods of inertia, new skills are formed, the amount of myelin being also adequate.

The function of myelin has proved to be overwhelming in supporting cognitive activities. The human being, proving perseverance in an activity, activates myelin, meaning, the lipoprotein layer is insistently running, thus protecting it. This spiral signifies the formation of skills and habits in time. Daniel Coyle says that practice is causing myelin production. (Coyle D., 2013, p. 54) This process in man is long lasting, sometimes definitive. Only the disease and the age can damage the lipoprotein layer, otherwise, we assist in strengthening the attitudes and practice. "The only way to change them is to build new habits by repeating new behaviours – through the myelination of new circuits." (Daniel Coyle, 2013, p. 55) In order to maintain the myelin layer constant, it is necessary to study, and musicians do that daily, continually.

Thinking. Thinking proves to be the cognitive process that optimizes the assimilation of information and which, through the six specific operations (Zlate M.), analyzing, synthesizing, comparing, abstracting, materializing, generalizing-individualizing, achieves the relation between objects and phenomena, transforming them in notions, judgments and reasoning. Thinking processes act in synergy, potentiating each other in any action. These activities of thinking correlate

only with the development stages of an individual, in time and by the discipline of the mind.

3. Research on the hypothesis. Purpose and objectives of the research

The human brain in harmony with the psyche concretizes the valuable professional ascensions. We thus propose a research on two of the coordinating elements of music performance, musical knowledge and knowledge.

The methodology used. Variables. In the present study, we aim at building a correlation between the level of conscientiousness and the accumulated knowledge of the participants. Each variable is an indicator of an artist's performance in the musical field. **Description of groups.** The group consisted of seventeen students from the Faculty of Arts, "Ovidius" University of Constanta, specializing in Music, belonging to the two academic stages, academic degree and master: Music I - 5 students, Music II - 3 students, Music III - 1 student, Art of Music Education Master I - 5 students, Art of Music Education II - 5 students. The group consists of nine female participants and eight male participants. **Procedure.** The procedure for applying the questionnaires was that already established. **The tools used for data collection.** For the purpose of our research, we have chosen two questionnaires, which, by their correlation, revealed the results. The first *Five Factor Personality Inventory* (FFPI) has a hundred items, grouped in five scales, named after one of the suprafactors: Extraversion (E), Kindness (K), Conscientiousness (C), Emotional Stability (S), Autonomy (A). Conscientiousness is the conscious action of self-discipline, of being responsible, of imposing achievable goals. A high score at this scale reveals the orientation towards obsession, the attitude of maintaining abnormal images in the field of consciousness. A small degree shows a tendency towards inconsistency. The third questionnaire belongs to the researcher of this study. It sums up 15 structured questions on the *Prelude to unison*, in *Suite I*, op. 9, in Do, by George Enescu, referring to the Enescian creation, to the elements of language and stylistics of the work, highlighting the musical knowledge of the questioned people.

Hypothesis. It is presumed that there is a positive correlation between conscientiousness and accumulated knowledge of students from the Music program. To test the hypothesis, we have used the results of the conscientious scale of the FFPI questionnaire and our own musical knowledge test.

The statistical analysis, through the normality test and the present histograms, has confirmed the correlation between the level of consciousness and the accumulated knowledge.

Table 1

Descriptives

		Statistic	Std. Error	
Cons	Mean	67.71	3.105	
	95% Confidence Interval for Lower Bound	61.12		
	Mean	Upper Bound	74.29	
	5% Trimmed Mean	67.56		
	Median	71.00		
	Variance	163.846		
	Std. Deviation	12.800		
	Minimum	49		
	Maximum	89		
	Range	40		
	Interquartile Range	20		
	Skewness	-.041	.550	
	Kurtosis	-1.084	1.063	
	Mean	12.88	.331	
Musical knowledges	95% Confidence Interval for Lower Bound	12.18		
	Mean	Upper Bound	13.58	
	5% Trimmed Mean	12.92		
	Median	13.00		
	Variance	1.860		
	Std. Deviation	1.364		
	Minimum	10		
	Maximum	15		
	Range	5		
	Interquartile Range	2		
	Skewness	-.432	.550	
	Kurtosis	-.598	1.063	

Tests of Normality

Table 2

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cons	.131	17	.200*	.949	17	.434
Musical knowledge	.264	17	.053	.879	17	.031

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

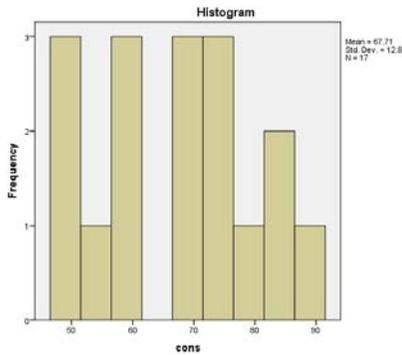


Fig. 1

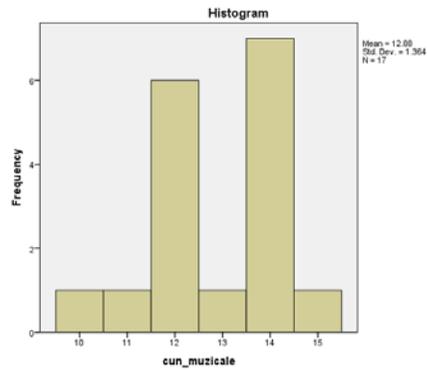


Fig. 2

Table 3

Correlations

		cons	Musical knowledges
Cons	Pearson Correlation	1	.589*
	Sig. (2-tailed)		.013
	N	17	17
Musical knowledges	Pearson Correlation	.589*	1
	Sig. (2-tailed)	.013	
	N	17	17

*. Correlation is significant at the 0.05 level (2-tailed).

Interpretation of data. This hypothesis was confirmed. Calculations and parameters proving that point. Conscientiousness, the quantified attitude in our research by the FFPI questionnaire, reveals the most important mark of success in profession, career. A few key words that characterize conscientiousness have drawn our attention: seriousness, conscientiousness, accountability, punctuality, sense of duty, rigor, acribity. A very important feature among so many features, is the measure of accomplishment in the social plan. The attitude indicates the ability to discipline the mind and to persevere in the proposed field. A study on this subject was written by the author Daniel Coyle, *The Talent Code*. His research in psychology is also based on other important studies by Dr. Fields. The book is based on neuroscience investigations, highlighting neuronal mechanics in sustaining mental attitudes toward achieving an objective.

The author draws attention on the chemistry of attitude, the combination of heredity and the environment. This aspect originally positions certain orientations, talents, skills of a culture and focuses all the interest on its realization. He supports

the state of atemporality in concentrating on the goal, the very clear highlighting of the previous failure and a good orientation of the effort. Daniel Coyle even talks about the mechanisms that are generated when interpreting a chord in La minor, cascading nerve impulses, generating the reaction of other fibers. His focus is on *myelin*, the element that answers many questions in neuroscience. Myelin is a phospholipid layer designed to insulate electrical nerve fibers, axons, thus facilitating communication between the axon and the glial cell. The function of myelin has proved to be dominant in supporting cognitive activities.

A person who persists in a certain activity, activates myelin, and it runs with insistence around the axon, protecting it. This spiral means the formation of skills and habits over time. The skills a musician has, the motricity, are fully explained by the constant activation of myelin. Daniel Coyle says that practice is generating the production of myelin. (Coyle D., 2013, p. 54) This process in man is long lasting, sometimes definitive, resulting in the strengthening of attitudes and practice. Only disease and age can damage the lipoprotein layer. "The only way to change them is to build new habits by repeating new behaviours - by myelinating new circuits." (Daniel Coyle, 2013, p. 55) He draws the route showing that the stimulation of neurons generates the production of myelin which in its turn checks the speed of impulse movement, and speed actually means, in this case, skill.

The second concept involved in this hypothesis concerns **knowledge** through accumulated information. The human being is a social being and the interaction in which he participates determines its physiological, mental, and spiritual development. Learning is an activity that assures the individual, constantly and continuously, the condition of assimilating information, knowledge, habits, behavioral patterns. Once growing up, learning generates human experience. The acquisition of abilities determines human change and transformation. Over time, these acquisitions, which go beyond the basic psychological stages, understanding and memorizing, integrate into a wider process of knowledge. The superior process of knowledge ensures the transformation of the personality and the acquired behaviours.

Psychologist Eric Kandel speaks in his study *The Impact of Psychiatric Thinking on Neurobiological Research*, published in *New England Journal of Medicine*, vol. 301, 19, 1979, pp. 1028-1037, about the adult learning process. He proves the contribution of learning to brain modeling, claiming the benefit of the attitude of obvious conscientiousness in the assimilation of information and personality development. In the context of an existing or undergoing behaviour, the psychologist points out the implications of learning and memory. In his research, he developed two of the simplest forms of learning, accustoming and awareness. Since in the process of music, we recognize the importance of

accustoming, in the consistent study, of cognitive and motor practice, we shall also refer to this concept. Eric Kandel argues that habit is a minimization of behavioural reactions generated by stimuli. In this context, the individual assimilates new reactions by being forced to remove the incorrect ones. He talks about the effects of brain modeling as a result of information acquisitions that lead to changes in human behaviour. "If short-term habit requires a transient decrease in synaptic efficacy, long-term habits lead to prolonged and deep functional inactivation of a previously existing connection." (Kandel E., 2013, p. 46)

Musicians, in the process of knowledge and creation, use thinking. Thinking activities streamline the process of knowledge in the musical field: conceptualization; understanding; solving problems; creation. The musician's brain has a constant influence on social dynamics, especially in the cultural one. Cognitive growth or decrease is ensured by the level of education. Research shows that the involvement in and through education, the assimilation of information, and the development of intellectual attributes, by ensuring a constancy in learning new things and supporting them, ensures intellectual longevity. The musician has precisely these aspects as goals, acquiring and integrating new works, musical scales. This aspect implies, by studying a new scale, the approach to a new composer, a new style, necessary for the accumulation of information of the history of musical culture. Then, the new musical languages that accompany the new work are necessary for the evolutionary leap of the artist. Through constant practice, which involves conscientiousness, attention, will, concentration, memorization, compliance with the teacher's advice, and, the involvement of his own musical sensibility, differentiated on the aesthetics approach, the musician creates a musical image that can be offered to the public. The concentration of attention is an emerging aspect of music. The final musical image is due to it. The unitary vision of a musical work can also be highlighted by the quality of focus on each musical element, which ultimately must correspond to stylistics and time. Concentration sends the thought, which has the power to build new elements in a musical work. Richard Davidson (*Brain and Emotional Intelligence*) supports the importance of concentrating the attention that has the ability to restore obsolete habits through neural plasticity, forming other networks, to the detriment of old ones.

The intense practice in music implies that cognition, as a result of an assumed orientation, implies passion and dedication, as well as its elevation to the level of mastery. We practice as musicians these three attitudes in order to develop our talent. Coyle Daniel also designates them, practice, production and craftsmanship in practice. From a physiological point of view, the aspect can be translated by the above-mentioned attitudes that lead to the constitution of the need for myelin, the substance that ensures the speed and the motor and cognitive

safety. "But the myelin plays a massive role in the way in which learning takes place." (Daniele Coyle 2013, pp. 51-52) The way to build a new activity, a new work, a new creation, is to insist on activating it as often as possible. To the extent that there is implication, through tenacity and consistency, there are remarkable results that determine the shaping and building of skills and actions. Daniel Coyle argues that, although the myelin responsible with the intellectual capacity, deteriorates with age, by its ability to be alive and to regenerate, and "even when myelin decomposes, we can still build it up until the end of life" (Coyle 2013, 219).

In order to maintain the constant myelin layer, exercise and study are required, and musicians do that daily, continually. An artist, in order to be able to support a stage program, needs years of preparation.

4. Conclusions

Our study has aimed at investigating the relevance of conscientiousness and the accumulated knowledge in shaping the performance of a musician. The livelihood that a musician is capable of when interpreting a musical work is due to a long work of assimilation, fixation and rendering of musical and collateral notions and knowledge. This knowledge involves neural networks built during the study of specialized disciplines as well as during the study of an instrument, constituted in skills, attitudes, behaviours. Also, knowledge is revealed in the handling of sound material, fixed by musical thinking, with its own means involving personality factors, by the amalgamation of emotional styles defined by Richard Davidson. We have learned, following the studies of the prefrontal cortex, that it is responsible both for the manifestation of thought and emotions "and that the barricade that psychology has raised between reason and emotion has no ground" (Davidson and Begley 2013, 63).

References

- Coyle, Daniel. 2013. *The Talent Code*. Bucharest: Lifestyle Publishing.
- Davidson, Richard J., Sharon Begley. 2013. *Brain and Emotional Intelligence*. Bucharest: Litera Publishing House.
- Kandel Erich. 2013. *Psychiatry, Psychoanalysis and the New Biology of the Mind*. Bucharest: Trei Publishing House.
- Zlate, Mielu. 2009. *Fundamentals of Psychology*. Iași: Polirom Publishing House.