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Formal and informal music learning profiles in higher education[1]

Rubén Carrillo[2]; Patricia A. González-Moreno[3]

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Abstract. The aim of this study was to examine the motivational profiles of university students in relation to the use of formal and informal musical learning strategies, and to analyze their training trajectories and how they influenced their preferences and musical activities they perform inside and outside of school. A total of 132 undergraduate music students from two Mexican universities participated in this study. Participants were classified into three groups according to their previous musical experiences and training: formal, informal, and mixed. Based on Eccles et al.'s Expectancy-Value Theory, a scale was adapted to examine students' motivation to use formal (music reading, strict score-based interpretation, solo practice by playing alone) and informal learning strategies (playing by ear, improvisation, playing with others). Their motivational profiles suggest statistically significant differences among the groups in their perception towards various learning strategies: playing by ear, improvising, and playing in groups were favored by informal and mixed groups, while the formal group favored strategies such as music reading and score-based performance. Perceptions of difficulty about these tasks were also different among the groups. These results suggest the need to include a wider range of learning strategies and musical genres within formal higher education to meet students' needs and interests.
Keywords: Informal music learning; popular music; play by ear; music improvisation; music learning strategies.

[es] Perfiles de aprendizaje musical formal e informal en educación superior

Resumen. El propósito del presente estudio fue examinar los perfiles motivacionales de estudiantes universitarios con relación al uso de estrategias de aprendizaje musical formal e informal, así como analizar sus trayectorias de formación y el cómo estas influyen en sus preferencias y las actividades musicales que realizan dentro y fuera de la escuela. En esta investigación participaron 132 estudiantes de programas de licenciatura en música provenientes de dos universidades mexicanas. Los participantes fueron clasificados en tres grupos de acuerdo con sus experiencias musicales y su formación previa: formal, informal y mixto. Se adaptó una escala psicométrica basada en la Teoría de Expectativas y Valores de Eccles et al., para examinar la motivación estudiantil hacia el uso de estrategias de aprendizaje formal (lectura musical, interpretación de repertorio, tocar y practicar solo) e informal (tocar de oído, improvisación, tocar en grupo). Los perfiles motivacionales obtenidos sugieren diferencias significativas entre grupos en su percepción hacia diversas estrategias de aprendizaje, de las cuales tocar de oído, improvisar y tocar en grupo tienden a ser favorecidas por los grupos informal y mixto, mientras que el grupo formal favorece más estrategias como la lectura musical o la interpretación fiel a la partitura. La percepción de dificultad de estas tareas también difiere entre los grupos. Estos resultados apuntan a la necesidad de dimensionar una mayor inclusión de estrategias de aprendizaje y géneros musicales dentro de la educación formal en nivel superior que atiendan a las necesidades e intereses del alumnado.
Palabras clave: Aprendizaje musical informal; música popular; tocar de oído; improvisación musical; estrategias de aprendizaje musical.

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[2] Universidad Autónoma de Chihuahua (México)
E-mail: p215355@uach.mx
https://orcid.org/0000-0002-4105-8079
[3] Universidad Autónoma de Chihuahua (México)
E-mail: pagonzalez@uach.mx
https://orcid.org/0000-0003-4529-0091

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1. Introduction

Musical training programs at a professional level in Mexico, as in other Latin American countries such as Chile, Argentina, and Colombia, are strongly influenced by the European tradition and the conservatory teaching model (Alessandroni, 2013; Bermúdez & Duque, 2000; Burcet, 2017; González-Moreno, 2015; Green, 2002; Holguín-Tovar & Martínez, 2017; Poblete Lagos, 2019; Shifres & Gonnet, 2015; Shifres & Holguín-Tovar, 2015). It focuses on teaching vocal or instrumental performance skills and developing musical literacy through teaching conventional Western notation. This model favors the teaching of classical music and certain practices associated with it, such as a predominant focus on music reading (Burcet, 2017; Lehmann, Sloboda, & Woody, 2007; Puurtinen, 2018; Shifres, 2018; Woody, 2007, 2012), the use of a repertoire of classical composers (Burnard, 2012; Sarath, Myers, & Campbell, 2016; Woody, 2007), and in the mere interpretation of those musical pieces (Sarath et al., 2016).

In contrast, within the field of popular music and informal music education, musicians have used a wide variety of strategies to develop skills necessary for their proper professional performance (Green, 2002), such as learning through interaction with other musicians, the use of self-taught learning methods, as well as enculturation processes (Green, 2002; Lehmann et al., 2007; Vitale, 2011). Informal learning environments are also characterized by favoring learning by ear and imitation (Green, 2002; Woody, 2007), collaborative work, and development of creativity (Burnard, 2012; Green, 2002; Woody, 2007). Because popular musical genres (with the exception of jazz) have not been recognized within the curricula in higher education, musicians have learned them informally.

Due to such differences between teaching and learning styles in formal and informal settings, as well as attitudes and values towards each of these traditions, there has been a separation between both types of musicians, academic and popular, despite the fact that informal learning resources, methods and strategies could be harnessed within formal contexts (Carrillo & González-Moreno, 2019; Green, 2002; Heckel, 2017; Hewitt, 2018; Virkkula, 2015; Virkkula & Kunwar, 2016; Wright, 2016). For this reason, in this research it is considered pertinent to analyze the effects of motivation in music students at the undergraduate level, regarding the use of formal and informal learning strategies, and how this affects the development of their musical aptitudes in the formal educational context.

This research seeks to answer the following questions: (a) What are the previous musical experiences that are most related to the use of formal and informal music learning strategies? (b) What differences exist in students' perceptions of value and expectancies of success towards various musical learning strategies, depending on their type of musical training (formal, informal, and mixed)? (c) To what extent is motivation towards formal and informal music learning strategies related to the development of the musical skills in undergraduate students within formal contexts?

2. The Expectancy-Value Theory and its application in music education

The theoretical framework that supports this research is the *Eccles' Expectancy Value Model of Achievement Choices* (Eccles et al., 1983; Eccles et al., 1993; Wigfield & Eccles, 2000, 2020), which has been recently renamed *Situated Expectancy-Value Theory*, SEVT (Eccles & Wigfield, 2020). This model has served as a reference in other research within the field of music education (González-Moreno, 2010, 2012; McPherson & Hendricks, 2010; McPherson & O'Neill 2010; McPherson, Osborne, Barrett, Davidson & Faulkner, 2015; Mohd & McPherson, 2009; O'Neill & McPherson, 2002; Parkes & Jones, 2012; Uy, 2018).

Based on this theory, researchers have examined students' attitudes at the basic and upper secondary levels regarding the value they attribute to studying music compared to other school subjects (McPherson & O'Neill, 2010), music performance (McCormick & McPherson, 2007; O'Neill & McPherson, 2002), or the role of parents in children's music education (McPherson, 2009) just to mention a few examples. However, no studies were found where this theory has been used to measure attitudes and values about formal and informal musical learning strategies.

2.1. Expectancies of success

Expectancies of success are defined as the individual's self-perception of their own ability to successfully perform a task (Eccles et al., 1983; Eccles & Wigfield, 2002, 2020; O'Neill & McPherson, 2002), which infers that the higher the expectancies, the greater the effort and persistence invested to achieve a task. Positive expectancies favor the motivation to do an activity, while negative ones tend to discourage it (Uy, 2018). According to Eccles and Wigfield (2020), these expectancies arise from the self-concept of one's own abilities, self-schemata of personal and social identities, and even in terms of short and long-term goals. Therefore, this construct is directly related to both the sense of competence or self-efficacy (Bandura, 2005), expressed as self-perception about one's own abilities, which can

affect the choice of activities to be carried out (Eccles et al., 1983; Wigfield & Eccles, 2000, 2020; Wigfield & Eccles, 2020), as well as for the individual's perception of task difficulty (Eccles et al., 1983; Eccles & Wigfield, 2020), which is inversely related to their sense of competence. For example, those subjects who have a low appreciation of their ability to perform adequately in a certain activity also tend to perceive this task as more difficult (Eccles et al., 1983; González-Moreno, 2010; McPherson & O'Neill, 2010; McPherson et al., 2015). These sub-constructs, as a whole, are considered predictors of performance in this task (Eccles & Wigfield, 2020).

2.2. Subjective task values

In addition to the expectancies of success, the motivation to perform a task is influenced by the perceptions of value that the individual has about it (Eccles et al., 1983; Eccles & Wigfield, 2020). This construct is composed of four main elements: (a) interest or intrinsic value of the task, related to the enjoyment experienced in performing the activity; (b) importance or attainment value, defined as the value attributed to perform well in a given task (Eccles et al., 1983; Eccles & Wigfield, 2002, 2020), that is, "if a student believes that it is important to succeed in a given activity, the task has high attainment value for that child" (Uy, 2018, p. 32); (c) utility value or usefulness, related to the utility that can be obtained from performing a task (Eccles et al., 1983; Eccles & Wigfield, 2002, 2020); and (d) perceived cost, attributed to participating in the task, both in relation to the effort, the emotional cost, or the cost of giving up one activity for another (Eccles & Wigfield, 2020).

Within this quantitative, descriptive, and exploratory study, the constructs of expectancies of success (expectancies, sense of competence, and task difficulty) and subjective task values (interest, importance, and utility) were examined. Because the cost of participating in a task is a complex multidimensional sub-construct (Eccles & Wigfield, 2020), there being no intention to delve into its interrelationships with the other sub-constructs, it was decided to omit its inclusion in the research. Even though the theory suggests a very complex model, starting from the particular circumstances of the individual within the sociocultural context, processed through cognition (perceptions about the context and interpretations of past experiences) and the generation of the individual's motivational beliefs, this study focused exclusively on the constructs described above, as predictors of the decisions that the individuals make to achieve their goals.

3. Method

A total of 132 undergraduate music students from two universities located, one in the north and the other in central Mexico, participated in this research. The study was conducted with second and fourth semester students, with 77 men and 55 women participating (58.3% and 41.7%, respectively). The range of the participating group was from 18 to 47 years of age, 75% of them being between 18 and 22 years old.

Based on the information obtained through the research instrument, the participants were classified into three groups according to their musical experiences and previous training, a classification used to statistically analyze their motivational profiles: (1) students with mainly classical training, without experience in popular music (referred to as "Formal"; $n = 44$, 33.33%); (2) students with formal training but with more than three years experience in popular music ("Informal"; $n = 37$, 28.03%), (c) students with formal studies but with limited or less than three years experience in popular music ("Mixed"; $n = 51$, 38.63%).

3.1. Research instruments

A psychometric scale based on Eccles et al.' (1983, 1993), Expectancy-Value Theory, initially developed by McPherson and colleagues (McPherson & O'Neill, 2010; McPherson et al., 2015) and adapted to this study, was administered to the students in order to investigate their motivation towards the study of music, particularly their motivation towards the use of formal and informal music learning strategies. The first section was used to collect general data about the students' musical training and their previous experiences, while the second section sought to measure the motivational profiles towards six music learning strategies, three of them strongly related to formal musical learning: (1) rehearsed music reading (Lehmann et al., 2007; Woody, 2007, 2012), (2) musical interpretation, that is, performing music strictly as written (Sarath et al., 2016) and (3) playing alone, understood as studying individually. The remaining three strategies were related to informal learning: (4) playing by ear (Green, 2002; Woody, 2007), (5) improvisation, and (6) playing with others (Burnard, 2012; Green, 2002; Woody, 2007).

The instrument used was previously analyzed in a pilot test to determine its validity and reliability. The validation process is described in greater detail in Carrillo & González-Moreno (2019). The instrument was revised in order to meet: (a) construct validity; (b) content validity; (c) face validity; and (d) discriminant validity through factorial analysis, where the KMO values obtained were found in the range of 0.752 and 0.904 for the pilot test, considering values greater than 0.7 as adequate (Beavers et al., 2013). Similar to what was done in the pilot study, the reduction of variables was carried out by factorial analysis, the KMO and Bartlett sphericity indices remained within very good to outstanding ranges, being even higher than those obtained in the pilot test (Table 1).

Table 1. Kaiser-Meyer-Olkin index and Bartlett's sphericity test for each of the learning strategies.

Parameter	Play by ear	Improvise	Play with others	Read music	Strict Interpretation	Play alone
KMO Index	.90	.90	.89	.91	.79	.80
Bartlett's sphericity	.00	.00	.00	.00	.00	.00

In the final study, the internal reliability indices of the scale for the various constructs, measured through Chronbach's coefficient alpha, were adequate and ranged from .694 to .911.

4. Results

4.1. Musical experiences in students' training and professional practice

Participants were asked whether they worked outside of school on any music-related activity. Using a Chi-squared goodness of fit test (χ^2), significant differences were found in their responses (p = .024; alpha = .05). The results suggest that the vast majority of students with exclusively formal training did not work on musical activities (n = 31, 70.5% of the formal group), while more than half of students in informal and mixed groups did work on professional musical activities (n = 19, 52.8%; n = 28, 56.0%, respectively).

In addition to work activities, students were asked about their participation in musical ensembles (classical or popular) outside of school, the distribution differences between groups being statistically significant (p < .01). The results obtained show that a much higher percentage of students in the informal and mixed groups had had previous musical experience in ensembles outside of school (n = 31, 86.1%, and n = 47, 92.2%, respectively), compared to the percentage of students in the formal group who reported having had such experience (n = 24, 57.1%).

In relation to music consumption, significant differences in genres were found among the groups such as classical music (baroque, classical, romantic and impressionist periods) (p < .01), contemporary classical music (second half of the 20th century and 21st century) (p < .01), jazz (p < .05) and other musical types (religious music, flamenco, film) (p < .05). The results showed that students in the formal group listened to classical and contemporary music to a greater extent. 75% (n = 33) of the formal group reported listening to classical music daily or almost daily, in contrast to informal and mixed groups in which the majority reported that they listened to it between one and four times a week. In the case of contemporary classical music, the formal and mixed groups reported listening to it more, as opposed to the informal group, where 42.9% (n = 15) reported never listening to it. In the case of jazz, the informal group reported greater listening with more than 67% (n = 33). Finally, in the case of other genres not mentioned in the survey, within which the participants mentioned genres such as Christian music, film music, and K-pop, a higher consumption was found among the informal and mixed groups, in both cases with 60 to 66% of them (n = 9 and n = 8, respectively). They listened to these genres daily or almost daily, while the formal group, more than 83% (n = 15) indicated they did not listen to any other genres not mentioned in the instrument.

Similarly, the participants were questioned about their experience as performing musicians in various musical genres. After a Chi square test (χ^2), statistically significant differences were found among the groups in genres such as classical music, rock, metal, and Sinaloan band (p <.01). Participants in the formal group reported having a greater experience in classical music with 77% (n = 34), in contrast to 24.3% (n = 9) and 27.5% (n = 14) of the informal and mixed groups, respectively. The opposite case occurs in pop music, where 65.9% (n = 29) of participants in the formal group reported having no experience, in contrast to formal and mixed groups whose members reported having experience in that genre with 62% (n = 23) and 67% (n = 34), respectively. The same occurred with other popular music genres such as rock, metal, and Sinaloan band, where the majority of informal and mixed group members reported having experience, unlike the formal group musicians.

Regarding the activities carried out within the school, some statistically significant differences (p < .01) were found in terms of the frequency of carrying out activities such as improvising, playing with others, and playing by ear. In Table 2, it can be observed that 41.9% (n = 18) of the formal group members reported that they never performed improvisational activities, whereas 39.5% (n = 17) reported doing it only 1 or 2 times per week. On the contrary, in the case of the informal group, 32.4% of members (n = 12) reported improvising daily while another 32.4% (n = 12) said they did it at least 3 or 4 times a week. In the case of playing with others, 25.6% (n = 11) of the formal group members reported never using this learning strategy; these percentages are lower in the informal and mixed groups, with 13.5% (n = 5) and 9.8% (n = 5), respectively. In the case of playing by ear, only 9.1% (n = 4) of the formal group members reported doing it daily, as opposed to 34.3% (n = 12) of the informal group.

Table 2. Frequency in the use of musical learning strategies within school.

Activity	Never		1-2 times		3-4 times		5-6 times		Daily	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Improvise**										
Formal	18	41.9	17	39.5	3	7.0	0	0	5	11.6
Informal	5	13.5	3	8.1	12	32.4	5	13.5	12	32.4
Mixed	11	21.6	20	39.2	8	15.7	5	9.8	7	13.7
Read music										
Formal	0	0	2	4.5	3	6.8	7	15.9	32	72.7
Informal	0	0	5	13.5	8	21.6	10	27.0	14	37.8
Mixed	1	2.0	5	9.8	4	7.8	14	27.5	27	52.9
Play with others**										
Formal	11	25.6	9	20.9	17	39.5	4	9.3	2	4.7
Informal	5	13.5	5	13.5	14	37.8	8	21.6	5	13.5
Mixed	5	9.8	26	51.0	9	17.6	9	17.6	2	3.9
Strict Interpretation										
Formal	3	6.8	6	13.6	8	18.2	14	31.8	13	29.5
Informal	3	8.1	12	32.4	8	21.6	7	18.9	7	18.9
Mixed	5	9.8	10	19.6	11	21.6	12	23.5	13	25.5
Play by ear**										
Formal	9	20.5	17	38.6	9	20.5	5	11.4	4	9.1
Informal	5	14.3	7	20.0	5	14.3	6	17.1	12	34.3
Mixed	7	13.7	7	13.7	23	45.1	4	7.8	10	19.6
Play alone										
Formal	1	2.3	6	13.6	9	20.5	8	18.2	20	45.5
Informal	3	8.1	4	10.8	6	16.2	11	29.7	13	35.1
Mixed	3	5.9	3	5.9	9	17.6	12	23.5	24	47.1

Note. ** $p < .01$.

Similarly, students were asked about how frequently they used musical learning strategies outside the school context (Table 3). For improvisation, the results again suggest that, outside school, it was a more common practice for the members of the informal group, where 40.5% ($n = 15$) reported doing it daily, as opposed to 9.3% ($n = 4$) reported by the formal group ($p < .01$).

The same was observed with the activity of playing with others, where only 2.3% ($n = 1$) of the formal group reported playing daily in musical ensembles outside of school, as opposed to 22.2% ($n = 8$) of the informal group. In addition, 60.5% ($n = 26$) of the formal group reported not playing in an ensemble outside school, this percentage being significantly higher when compared to the informal group, with a 19.4% ($n = 7$).

Table 3. Frequency in the use of musical learning strategies outside school.

Activity	Never		1-2 times		3-4 times		5-6 times		Daily	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Read music										
Formal	0	0	7	16.3	5	11.6	13	30.2	18	41.9
Informal	2	5.4	10	27.0	10	27.0	3	8.1	12	32.4
Mixed	2	3.9	7	13.7	16	31.4	7	13.7	19	37.3
Play with others**										
Formal	26	60.5	8	18.6	6	14.0	2	4.7	1	2.3
Informal	7	19.4	8	22.2	7	19.4	6	16.7	8	22.2
Mixed	15	30.0	19	38.0	11	22.0	3	6.0	2	4.0

Interpretation										
Formal	7	15.9	8	18.2	10	22.7	12	27.3	7	15.9
Informal	2	5.6	11	30.6	10	27.8	6	16.7	7	19.4
Mixed	6	11.8	4	7.8	16	31.4	16	31.4	9	17.6
Play by ear										
Formal	7	15.9	10	22.7	13	29.5	10	22.7	4	9.1
Informal	2	5.4	7	18.9	7	18.9	7	18.9	14	37.8
Mixed	5	10.0	8	16.0	11	22.0	12	24.0	14	28.0
Play alone										
Formal	1	2.3	6	13.6	7	15.9	10	22.7	20	45.5
Informal	0	0	1	2.7	9	24.3	13	35.1	14	37.8
Mixed	1	2.0	4	7.8	8	15.7	16	31.4	22	43.1
Improvise**										
Formal	12	27.9	18	41.9	5	11.6	4	9.3	4	9.3
Informal	4	10.8	2	5.4	7	18.9	9	24.3	15	40.5
Mixed	10	19.6	12	23.5	10	19.6	8	15.7	11	21.6

Note. ** $p < .01$.

4.2 Profile analysis of motivational constructs

A series of multivariate analyses known as Profile Analysis were carried out in order to examine the differences between the perceptions of value and expectancies of success towards the various musical learning strategies, depending on the student's type of musical training. This type of analysis is an application of MANOVA in a situation where there is more than one dependent variable and all of them are measured on the same scale (Tabachnick & Fidell, 2007). The statistical model for the profile analysis included repeated measures which, although usually being used to measure pre-post test responses or changes over time, can also be used to measure several dependent variables measured at the same time (Tabachnick & Fidell, 2007). The profile analysis sought to test three hypotheses: (1) to determine if there are differences among groups with respect to their assessment of the different learning strategies; (2) to determine if there are any differences among learning strategies; and (3) to check whether motivational profiles differ among groups, that is, whether there is any parallelism in their profiles.

A proper revision of the data was carried out in order to verify that it was susceptible to analysis using this technique. The multivariate analysis used is robust even when sampling normality violations exist and does not present problems in evaluating unequal sample sizes (Tabachnick & Fidell, 2007). According to Tabachnick and Fidell (2007), it is necessary that the size of the smallest group be greater than the number of dependent variables to be analyzed. It is also recommendable that there be no atypical cases (outliers), aspects that were not an issue in this study because the sample size was large enough ($N = 132$), there being six dependent variables involved in the analyses and the smallest group of the sample was $n = 37$. Additionally, no atypical cases were found, this being due to the use of the Likert scale that inherently limits the ranges to be measured. In this study, three profile analyses were performed for the dependent variables of subjective task values, expectancies of success, and difficulty of the task, which are reported below.

4.2.1. Subjective values attributed to learning strategies

In the first profile analysis that examined how the students valued the six musical learning strategies investigated in the study, the students' type of training was the independent variable (between-subjects) and the evaluations obtained in the questionnaire in relation to each of the musical learning strategies, both formal and informal, were the dependent variables (within-subjects).

According to the first hypothesis of the profile analysis, which examined the differences in the general means of each group, no statistical significance was observed between them regarding the evaluation of the strategies in general [$F(2, 128) = 2.17$, $p = .118$]. This was to some extent predictable, given the combination of results, since while students with informal or mixed training value informal strategies more, students in the formal group value formal strategies, resulting in very small differences between overall means (formal, M = 4.20, SD = .51; mixed, M = 4.36, SD = .34; informal, M = 4.37, SD = .48).

Regarding the differences in the ratings given to each of the learning strategies, the results showed statistically significant differences [Hotelling's T = .45, $F(5, 124) = 11.14$, $p < .01$], suggesting that the ratings differ from each other, thus discarding the hypothesis of similarity in the mean response (flatness). This can easily be observed in

Figure 1, where it is shown that there are no straight lines; that is, perceptions differ depending on the strategy in question. For example, playing in an ensemble (M = 4.59, SD = .05) is more valued than playing alone (M = 4.24, SD = .07) or performing strictly as written in the score (M = 4.03, SD = .08).

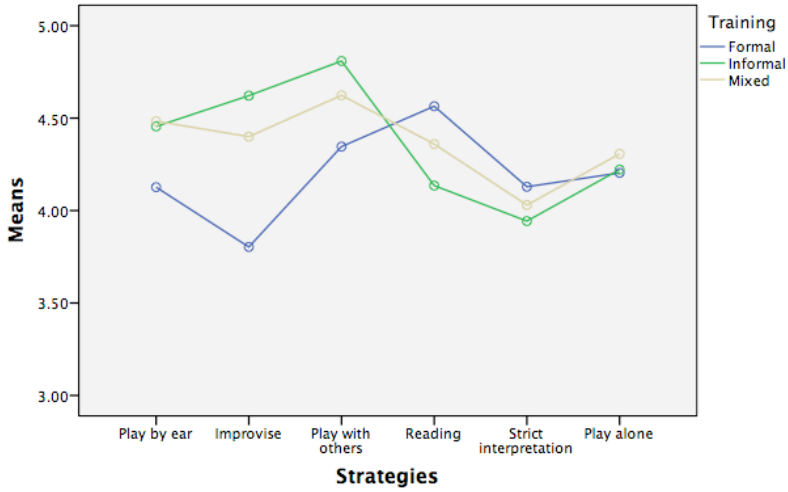

Figure 1. Perceptions of value attributed to learning strategies by type of training.

Finally, significant differences are observed among profiles considering the Type of Training x Learning Strategy interaction [Pillai's Criterion = .25, $F(10, 250) = 3.54$, $p < .01$], discarding parallelism and showing statistically significant differences among the profiles of the groups depending on the type of strategy in question. Figure 1 shows a strong similarity between the informal and mixed groups, which differ significantly from the formal group; this suggests that student training influences their perception of the various learning strategies. Students with a predominantly formal education tend to value strategies considered formal, such as reading (M = 4.56, SD = .61) and interpretation (M = 4.13, SD = .85), whereas students with informal and mixed training prefer informal strategies, such as playing by ear (Informal, M = 4.45, SD = .68; Mixed, M = 4.48, SD = .49), improvisation (Informal, M = 4.62, SD = .65; Mixed, M = 4.40, SD = .68) and playing in a group (Informal, M = 4.81, SD = .28; Mixed, M = 4.62, SD = .54). Regarding the strategy of playing alone, no significant differences are observed.

4.2.2. Expectancies of success in relation to learning strategies

A second profile analysis was carried out to examine students' expectancies of success in relation to the various musical learning strategies. The students' type of training was used as the independent variable (between-subjects) and the students' perceptions towards each of the musical learning strategies were used as dependent variables (within-subjects).

Significant differences were found among groups regarding the expectancies of success in general [$F(2, 128) = 5.3$, $p = .006$], which can be observed in Figure 2. The general means suggest that the informal and the mixed groups (M = 3.75, SD = .63, and M = 3.61, SD = .65, respectively) report statistically higher expectancies of success than the formal group (M = 3.29, SD = .66).

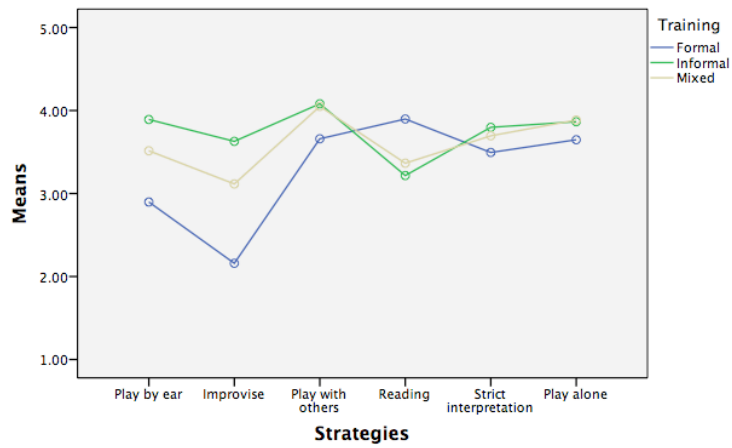

Figure 2. Expectancies of success attributed to learning strategies by type of training.

In relation to the expectancies of success towards each of the learning strategies (within-subjects factor), the results also showed statistically significant differences [Hotelling's T = .74, $F(5, 124) = 18.44$, $p < .01$]. With this, the hypothesis of similarity in the mean response is rejected, since, as can be seen in Figure 2, improvisation is the strategy in which students feel the least expectancies of success (M = 2.97, SD = .09), compared to the other learning strategies.

Regarding the parallelism test, significant differences were found between the profiles, given the interaction between Type of Training and Learning Strategy [Λ Wilks = .71, $F(10, 248) = 4.72$, $p < .01$]. As in the construct of values, a strong similarity can be observed between the informal and mixed groups, and a completely different profile for the formal group (see Figure 2). This again suggests that expectancies of success towards the various learning strategies differ depending on the students' training. In this case, the informal and mixed groups show, in general, a greater sense of competence and greater confidence to perform in all learning strategies except reading (Informal, M = 3.2, SD = 1.0; Mixed, M = 3.37, SD = .94), in which the formal group reports higher expectancies of success (M = 3.9, SD = .87; see Figure 2). This suggests that informal and mixed groups have greater confidence and perception of competence in a broader range of musical strategies compared to the group that only have experience in formal education. In other words, informal and mixed groups show a more optimistic perception of themselves with regard to their musical competencies, except for reading.

4.2.3. Perceptions about task difficulty

A third profile analysis was carried out in this case to examine perceptions of task difficulty; like in the previous analyses, students' type of training was the independent variable (between-subjects) and students' perception of difficulty reported in relation to the various musical learning strategies (within-subjects) were dependent variables.

According to the first hypothesis that examined differences in the general means of each group, the results did not reach statistical significance [$F(2, 127) = 2.52$, $p = .09$], which suggests that the overall perceptions of difficulty towards learning strategies as a whole are similar among groups (Formal, M = 2.55, SD = 63; Mixed, M = 2.35, SD = .72; Informal, M = 2.21, SD = .70). This again, may be due to the combination of results, because those with informal or mixed training perceived less difficulty towards informal strategies, while students from the formal group, on their part, perceived informal strategies as more difficult. By analyzing Figure 3, strong coincidences can be found among the three groups in relation to the perceived difficulty of playing with others and performing music strictly as written in the score.

The results of the study showed statistically significant differences in students' perceptions of difficulty towards the diverse learning strategies [Hotelling's T = .59, $F(5, 123) = 14.54$, $p < .01$], ruling out the hypothesis of similarity in the mean response. Figure 3 shows the absence of straight lines in the profiles; while improvisation is considered the most difficult activity by all groups (M = 2.89, SD = .10), playing with others is considered the least difficult (M = 2.00, SE = .09).

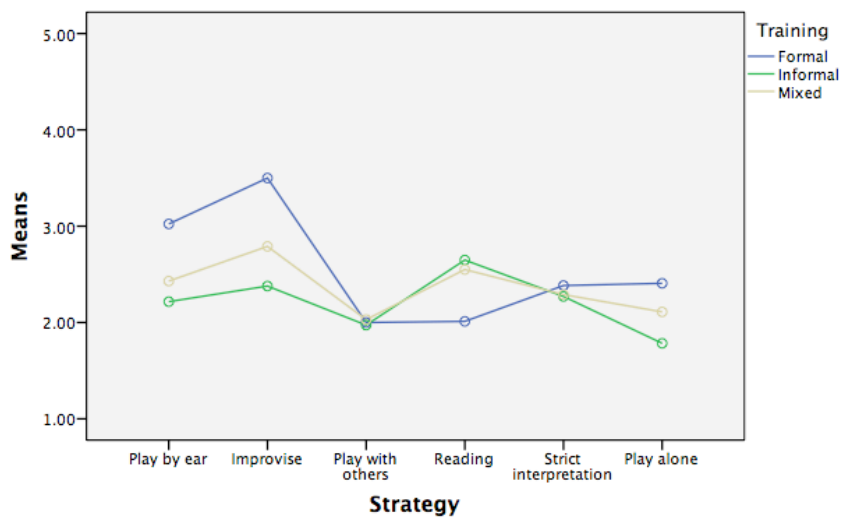

Figure 3. Perceptions of task difficulty attributed to each learning strategy by type of musical training.

Even when certain similarities can be observed among profiles of the three groups (Figure 3), differences among them reached statistical significance [Λ Wilks = .75, $F(10, 246) = 3.75$, $p < .01$], ruling out parallelism, given the interactions between lines. As with expectancies of success, differences in students' perceptions can be observed, especially in relation to improvisation and reading, students from the formal group consider improvisation as a difficult activity (M = 3.50, SD = 1.14) and reading as a simpler activity (M = 2.01, SD = 1.03), whereas in the informal group, and to a lesser extent in the mixed group, the opposite occurs (see Figure 3). Again, except

for reading, the formal group's perceptions of difficulty are higher in the rest of the activities compared to the informal and mixed groups.

5. Discussion

The results of this research, in relation to the motivation and the use of formal and informal learning strategies, both inside and outside of school, suggest notable differences between students based on their educational and musical experiences. These results reflect the differences that have characterized musical training within higher education institutions, as compared to music learning in informal contexts, showing how those students who have received formal musical training, particularly within the classical music tradition, use less frequently such learning strategies as improvising (Sarath et al., 2016; Vitale, 2011), playing by ear (Shifres & Holguín-Tovar, 2015; Varvarigou, 2017), and playing with others, since in formal settings individual learning under the teacher-student scheme is preferred (Hallam, 2018; Holguín-Tovar & Martínez, 2017).

In relation to professional interests, students in informal and mixed groups showed a greater openness to working in musical activities outside of school, both in the field of teaching and in the field of performance. This may allow them to graduate with greater experience as performers and to acquire a wide variety of skills leading to success within the musical environment. They furthermore acquire a solid foundation and experience in music teaching by the end of their undergraduate studies, providing them with better tools to face the changing and often precarious labor market (Bille & Jensen, 2018; Guadarrama, Hualde, & López, 2016; Iglesias-Díaz & Villarreal-Jiménez, 2019; Machillot, 2018).

Regarding frequency and genre of music consumption, students from the formal group listened to classical music more frequently, while other popular genres such as jazz were favored in the informal and mixed groups. This was predictable, since, as the literature shows, there is a strong relationship between informal learning and popular music, as well as between formal learning and the tradition of classical music (Dunbar-Hall & Wemyss, 2000; Green, 2002, 2008; Jaffurs, 2004, 2006; Lebler, 2008; Sarath et al., 2016; Virkkula, 2015; Vitale, 2011; Woody 2007, 2012).

The role of the school in developing culture is easily understood. School is the place where students can develop an appreciation for different musical genres throughout their university studies. However, it would be interesting to observe if over time this openness to new genres is maintained or inhibited, leading the students to consider those formally taught as the only ones worthy of study or consumption. This coincides with what was stated with Byo (2018) about the preference of traditional or jazz ensembles over the inclusion of other genres and types of popular music ensembles within formal educational environments. These value judgments could subsequently affect the students' future job opportunities and their performance as professional musicians.

Showing more openness towards the consumption of a greater variety of musical genres would lead to a broader musical culture that can offer graduates more opportunities and competitiveness in the workplace, which gives them additional opportunities for getting involved in music that reflects their own interests (Hallam, Creech, & McQueen, 2018). It is important to remember that according to Green (2002), only 3-4% of the musical consumption of the general public corresponds to classical music, with an even lower percentage for jazz music; other recent studies reaffirm this trend (AMAI, 2014; Chávez, Urbina, & Quevedo, 2019; Ferwerda & Schdell, 2016; Watson, 2020). Therefore, it is imperative to advocate for a greater inclusion of popular music genres, which is the labor field where, most graduates will ultimately work.

Regarding the limitations of the study, no major questions were included to show whether these differences between the formal and informal groups were attributable to the following aspects:

- economic (the need to work)
- self-perception (if students felt more or less capable of carrying out these activities)
- cultural (if students from the formal group did not feel capable of participating in popular music ensembles or they only wanted to participate in classical groups)
- job opportunities (whether there was a greater demand to learn popular music instead of classical music).

These are merely some of the situations that can be inferred. However, they may not be the only ones and there could be others of greater relevance.

Since information was only collected to make a profile of the participants and no further investigation was made in this regard, it is unknown if such preferences are inherent to them. Also unknown is whether the pre-university training environment was determinant, or if their preferences are attributable to the musical training received during their undergraduate studies, and such training has shaped their tastes and interests. As an example, if those who were classified within the formal group already had a taste for classical music or if they developed it during their music training.

5.1. Motivation towards the use of formal and informal learning strategies

The motivational profiles related to the use of formal and informal learning strategies, both inside and outside of school, showed notable differences between the formal, informal, and mixed groups. It is noteworthy that even in strategies such as interpretation (playing the piece as it is written), students in the formal group reported lower expectancies of success, despite there being a greater emphasis on this in their musical instruction. This may be due to constant observations and corrections by teachers regarding their interpretation that may negatively influence their sense of competence.

The formal group also showed a lower expectancy of success for all informal learning strategies (playing by ear, improvising, playing in a group). Although these data were obtained through self-reports and not by direct observation, the results of the descriptive statistics and profile analysis show consistency with the literature. This has indicated that creativity and improvisation are not properly promoted in formal education (Dolan et al., 2018; Sarath et al., 2016; Vitale, 2011) and, therefore, musicians do not feel competent in carrying out these activities (Lehmann et al., 2007).

In addition to the learning strategies used in school, data was also collected about the frequency of strategy use outside of school. The results obtained were similar in both cases. There continued to be significant differences between the informal and mixed groups of students in activities such as improvisation and group playing, as compared to the formal group. Although, this information complements the results and makes for a more complete profile of those who participated in the study, the results obtained showed us that the use of strategies during school has a strong influence on what the students do outside. This influence on their musical practice can also have an effect on those who later dedicate themselves to teaching. This has various implications, since these habits may possibly lead them to replicate the same practices with their students in the future, continuing with the trends observed until today. This is why it is imperative to instill and advocate for a wide variety of musical practices and strategies within formal environments from now on. Thus, the practice of future music teachers will be modified, allowing for a change to permeate the teaching/learning practice of the new generations.

The results of the profile analyses suggest that value perceptions, expectancies of success, and difficulty of the task vary depending on the type of musical training. It was once again observed how students in the formal group valued those strategies related to formal music education more, while students in the informal group valued informal learning strategies more. The most notable differences were found in improvisation and music reading. These findings are consistent when contrasted with what students reported regarding their activities in class and extracurricular activities, and with the reviewed literature (Green, 2002; Lehmann et al., 2007; Sarath et al., 2016; Vitale, 2011).

It is thus observed how in formal education there is still a preference for practices such as reading and strict interpretation of the score over playing by ear and improvisation. However, it also shows that there is a certain incorporation of informal strategies within the universities where this research study was carried out. This highlights that at least in these institutions, there is already a concern to explore a greater diversity of musical learning strategies. There are still limitations, since its application is mainly with musicians who study jazz and popular genres, and in instruments common to these genres, such as electric guitar, electric bass, drums, or saxophone. In contrast, instruments that remain strongly linked to classical music, such as piano and strings, still follow traditional teaching techniques. On the other hand, while some students who participate in both classical and popular genres (piano or voice) receive the support of their professors, other students face disapproval.

In relation to expectancies of success and perceptions of task difficulty, significant differences were found among group profiles and also among learning strategies in general. Informal and mixed groups reported higher expectancies of success for all learning strategies except reading. Comparatively, in relation to perceptions of task difficulty, the formal group perceived more difficulty in using all learning strategies with the exception of music reading.

This implies that, in general, students with informal training have a better perception of their competences and report greater confidence to carry out any of the learning strategies. There is a certain parallelism with a study by Mok (2018), in which the informal strategy of copying and learning musical pieces by ear was chosen by the students for their subsequent performance. However, in that particular study, no statistically significant differences were found between the application of this strategy as compared to the traditional ones, and the students' preference for the use of it was almost double. A similar case occurs with that reported by Varvarigou (2017). In her study, classical music students were taught strategies to play by ear for five weeks, and at the end of the course 78% of them reported feeling greater confidence as musicians. This type of results indicate that the use of informal strategies has a positive impact on students' perception of their music lessons, in addition to developing greater self-confidence and perception of their own abilities, without affecting the quality of instruction, factors that undoubtedly should be taken into consideration.

It is important to recognize that there are not enough elements to assert that the type of instruction received from teachers influences students' self-perception. However, as suggested in the literature, it is a common practice in formal education for students to present pieces and constantly receive corrections from their teachers, which can generate a low perception of their own skills. It is possible that, at least initially, students lack a good perception of themselves and do not have sufficient autonomy to make decisions about their own practice.

Based on the previous arguments, such teaching practices need to be reconsidered and different alternatives should be advocated such as peer learning, communities of practice, and workshops (Virkkula, 2015; Virkkula & Kunwar, 2015). This is not only to train students with a greater openness towards different learning strategies, but also to foster a better conception of themselves and their musical practice, along with a greater autonomy in their learning decisions. If furthermore promotes a more active role in their musical development, going beyond mere theoretical or mechanical issues and developing a greater musical awareness and critical sense (Motoyama, 2015).

6. Conclusions

One of the purposes of carrying out this research was to provide more information and recognize the need of diversifying the learning strategies and musical genres within formal education, with the aim of updating and complementing recurrent practices that persist in the present. This can lead to the training of musicians that are able to handle a wider variety of learning strategies, endowing them with greater autonomy in decision-making and with a greater ability to direct their own learning (Costes-Onishi, 2016; Hallam, Creech, & McQueen, 2018). These individuals could also have a broader repertoire and musical culture, encompassing not only those trends associated with classical music, but also genres of popular music from the late 20th century to the present, broadening their vision and offering them more tools for today's job market. Additionally, these students would have a better self-perception, enhancing their sense of competence towards various musical activities beyond reading and memorizing repertoire, such as improvising, playing by ear, or performing music in an ensemble.

This paradigm shift involves applying teaching in a responsive rather than a directive manner (Green, 2008), which requires greater preparation of the music teacher, since in addition to the musical skills expected in current curricula, they must have the ability to integrate a greater variety of musical learning strategies, both formal and informal, within the university curriculum. As argued by several authors (Byo, 2018; Hallam, Creech, & McQueen, 2018; Hewitt, 2018), the teacher should be able to support learning proposed pieces by ear, while suggesting improvements in techniques for the instrument, skills for conducting music ensemble, composition, and improvisation.

This teaching alternative provides greater diversity and democracy within the classroom, allowing students to be more involved in their own training, which is beneficial for their own self-perception and personal autonomy. It also involves a reassessment of formal learning strategies, which are still very important, but must be reconsidered by the teacher in order to allocate space and time in class to address a variety of innovative strategies to achieve a balance in students' musical development.

The road ahead to achieve significant changes in higher music education is long and enriching. As with all kinds of changes, there will always be resistance, either by professors who after many years of teaching are not inclined to easily change their practices, or even among students who are used to the traditional teaching that has characterized music education at this educational level. Research in education, requires a continuous search for new innovative alternatives, with reliable results from rigorous research which provides empirical evidence to promote changes that music education at the university level needs, which in turn leads to better musical training for future musicians and music educators.

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