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Primary School Music Teachers' Professional Development Motivations, Needs, and Preferences: Does Specialization Make a Difference?

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Abstract

There is widespread agreement that one-size-fits-all professional development (PD) has limited potential to foster teacher learning and that PD should be 'responsive' to the demands of teachers with different profiles. The purpose of this study was to analyze the PD motivations, needs, and preferences of primary school music teachers according to their level of specialization in music education. This variable has been relatively unexplored within the field of music teacher PD. A nationwide survey was run to collect the data. Participants were 286 Singapore primary music teachers (about 40% of the entire population), who were split into three groups based on their music education background (*Major* = 113, *Minor* = 64, *Generalist* = 109). Findings indicated that the three groups of teachers had different motivation levels to participate in music-specific PD (e.g., generalists being the least motivated), various needs for further training (e.g., music education majors being the most interested in improving their music content knowledge), and different preferences regarding PD providers and learning formats (e.g., generalists preferring to learn from other fellow teachers within informal settings). We concluded that the level of specialization in music education plays a major role in determining teachers' PD motivations, needs, and preferences. This study has the potential to inform the design of more responsive PD initiatives.

Keywords

Teacher Professional Development • Primary Music Teachers • Specialization • Motivations • Needs • Preferences

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INTRODUCTION

Towards 'responsive' professional development for music teachers

Much of the general literature on teacher professional development (PD) has yielded disappointing results regarding the effectiveness of PD in helping teachers improve their instructional practices, and even more disappointing with regards to its impact on student learning and achievement (e.g., Darling-Hammond, Chung Wei, Andree, Richardson, & Orphanos, 2009; Garet et al., 2011; O'Dwyer et al., 2010). While helping teachers broaden their subject-matter and pedagogical content knowledge seems relatively easy, improving actual classroom practices has proven to be much more difficult (Borko, 2004). One of the most common arguments put forth by scholars to explain these difficulties is that PD might not attend and respond to the actual interests, desires, and/or demands of the teachers, or in other words, that PD might not be 'responsive' (Wlodkowski & Ginsberg, 1995). This idea is consistent with Desimone's (2009) framework, according to which one of the critical features for effective PD is having high degree of coherence (or alignment) with teachers' individual motivations, needs, and preferences.

Teachers often report that one-size-fits-all PD, which generally takes the form of short and sporadic events, is not helpful to acquire new teaching strategies (Darling-Hammond et al., 2009). In such events, ideas tend to be presented in general and abstract terms, disregarding the level of experience and knowledge of participating teachers and not providing them with opportunities for experimentation, discussion, and reflection (Borko, 2004). Our own conception of teacher PD is in stark contrast with the one-size-fits-all approach, which unfortunately is still the most common in many countries (Bautista & Ortega-Ruíz, 2015). Our fundamental idea is that for PD to be meaningful and transformative, it needs to be designed *in response to* teachers' own motivations, needs, and preferences. We acknowledge that there are multiple aspects and practical constraints that need to be considered when planning PD (e.g., available resources, policy directions), and that teachers might not been fully aware of what is 'out there' in terms of promoting their learning. However, based on our constructivist epistemology, we think that the perspectives of the teachers should be always taken as one of the main starting point.

The field of music teacher PD has grown considerably in the past years, not only regarding the number of PD initiatives implemented but also regarding the research that has been conducted (Bautista, Yau, & Wong, accepted). An important part of the literature on music teacher PD has focused on documenting how the PD motivations, needs, and preferences of music educators change and evolve over the course of their teaching careers

(see the special issues published in 2007 and 2011 by the *Journal of Music Teacher Education* and *Arts Education Policy Review*, respectively). For example, Conway (2006) has centered on beginning music teachers and how mentors can help them in 'navigating' the induction period. Eros (2013) has looked at second-stage music teachers (that is, those who have already passed the 'survival years' and have between 4 to 10 years of teaching experience), whereas Bauer (2007) and Bush (2007) have focused on more experienced teachers with different specializations. More recently, Conway (2012) has investigated how music teachers' PD interests evolve across their professional "life-cycle" (see also Conway, 2007; Conway, 2011; Hourigan, 2011; Hunter, 2011; Pellegrino, 2011). Beyond the amount of teaching experience, there are other variables that might also influence music teachers' PD interests and that still require further investigation. For example, Bauer (2007) has highlighted variables such as the area of music in which teachers teach, their teaching responsibilities, the geographical location where they work, or their belonging to music associations.

This study is centered on the variable 'level of specialization in music education,' which has not been explored in prior research (Eros, 2013). We focus on primary school music teachers, a collective that tends to be heterogeneous with regards to preparation level in most countries (Jeanneret & Degraffenreid, 2012). Whereas finding music specialists in primary schools around the world is becoming more common, there are still many generalist teachers who are deployed to teach this subject with very little (if any) preparation. Our study draws on the assumption that teachers with different levels of specialization might also have different PD motivations, needs, and preferences. In particular, our research looks at the following four topics: 1) teachers' motivation levels with regards to music-specific PD; 2) perceived needs for further training; 3) preferred PD facilitators; and 4) preferred PD formats. The next section reviews the most relevant prior literature focusing on these four topics.

Prior studies on music teachers' PD motivations, needs, and preferences

Bowles (2002) investigated the PD motivations, needs, and preferences of 496 music educators from the upper Midwest of the United States of America (USA). Participants taught different education levels (elementary, middle school, university, etc.) and had different teaching specialties (band, choir, elementary general, etc.). Results showed that participants' main motivation to engage in PD was to increase their skills and/or knowledge (intrinsic motivation), followed by receiving university graduate credits (extrinsic motivation). With regards to needs for further training, Bowles found that the preferred PD

topic was music technology, followed by assessment, improvisation, and instrumental-choral literature. Regarding PD providers, respondents showed preference for professional educators and/or artists with expertise in conducting PD activities. Finally, the PD format preferred by these music educators was intensive, consecutive-day summer courses conducted within a college/university.

Another relevant study was conducted by Friedrichs (2001) with 242 high school instrumental teachers in California (USA). One of the aspects explored was the PD activities and formats rated as most valuable and effective by the teachers. In decreasing order, these were hosting a guest clinician or teacher, observing other rehearsals, attending music conferences, and attending concerts. In contrast, the PD activities and formats rated as least effective and valuable were in-services held on the teachers' own school campuses, county office of education workshops, district-sponsored workshops, and non-music workshops. Based on these findings, Friedrichs (2001) concluded that music teachers tend to favor music-focused activities while rejecting those that are 'content-free' (i.e., designed for teachers of multiple academic subjects and dealing with topics not directly applicable in the music classroom).

Similar conclusions were obtained by Bush (2007), who investigated the content and format of the PD workshops preferred by a randomly selected sample of 42 music educators. While the study included teachers from different teaching areas (band, strings, choral, and general music), we will only describe the findings referred to general music teachers because they are the focus of the current paper. Out of the 15 learning areas presented, the most important priorities for the teachers were student assessment in music, followed by lesson planning in music, technology, and curriculum design. Moreover, out of the eight PD formats presented, the general music teachers showed preference for discussions with other fellow music teachers, summer or weekend courses/workshops, and the use of Internet resources.

Finally, Tarnowski and Murphy (2002) investigated the needs for further training of 281 elementary music teachers from Wisconsin and Minnesota (USA). In decreasing order, the most demanded areas were: Orff, teaching with technology, assessment in music, standards-based teaching, Kodaly, world music approach, interdisciplinary approach, and Dalcroze. These priorities differ from the ones described in Bowles (2002) and Bush (2007), which might be due to differences in the data collection instruments utilized. However, the three studies show the high interest of teachers in furthering their learning regarding technology, assessment, and music-specific pedagogies (Orff, Kodaly, Dalcroze).

Given the limited generalizability of these studies, scholars such as Bauer (2007) have

argued that more research is needed to achieve a better understanding of the phenomenon. This paper contributes to strengthen the body of work on music teacher PD with data from a Southeast Asian country: Singapore.

Context for the research: The Singapore Case

Music is a compulsory subject in Singapore primary schools. It is regarded as one of the key focus areas in pursuing the goal of *holistic* education (Lum & Dairianathan, 2013). The objectives of Singapore primary music education are set out in the General Music Programme (GMP), the national syllabus followed by all the Government schools (Ministry of Education, 2014). The GMP proposes that music should be used as a tool to promote inclusivity and diversity of cultures, as well as to foster the development of students' own ethnic and national identity. Students aged between 7 and 14 are expected to achieve a number of learning outcomes, which are organized around five overarching objectives related to music listening, creating, and performing: 1) Perform music in both instrumental and vocal settings, individually and in groups; 2) Create music in both instrumental and vocal settings, individually and in groups; 3) Listen and respond to music; 4) Appreciate music in local and global cultures; and 5) Understand musical elements and concepts.

Currently, the level of specializacion in music education of Singapore primary teachers varies widely. There is a growing group of music specialists, who are highly qualified to teach the music syllabus. These teachers hold major degrees in music education obtained during their initial teacher preparation or in postgraduate programs; in most cases, they also hold external certifications in music theory and/or performance. In the opposite end of the spectrum, there is a much larger group of generalist teachers who teach different subject matters, including music, although commonly just for a reduced number of hours (those that cannot be covered by the music specialist/s of the school). Most of these teachers have no formal training in music or music education. Finally, there is a small group of teachers that lie somewhat in the middle, as they minored in music education during their university years, and in some cases also hold external music certifications. Their teaching load for music vary significantly from case to case. All music teachers, regardless of their degree of music specialization, are expected to follow the GMP national syllabus outlined above (Ministry of Education, 2014).

Unlike most Western countries (Eros, 2013), Singapore offers a plethora of music-specific PD opportunities to further the learning and growth of primary school music teachers. PD providers such as the Singapore Teachers' Academy for the aRts (STAR), the National

Institute of Education (NIE), and the National Arts Council (NAC) currently conduct numerous seminars, workshops, courses, and programs focused on a variety of topics (e.g., music theory, performing, creativity, composition, music-specific pedagogies, assessment, technology, student-centric approaches). These PD initiatives, which have been varied with regards to content and format, aim to enhance the quality and standards of primary music education in Singapore.

GOAL AND RELEVANCE

The goal of this study is to explore the landscape of PD motivations, needs, and preferences across three groups of Singapore primary music teachers with different levels of specialization in music education (*Major*, *Minor*, and *Generalist*). More precisely, we focus on teachers' 1) motivations to participate in music-specific PD, 2) perceived needs for further training, 3) preferred PD facilitators, and 4) preferred PD formats.

We consider this study to be relevant for at least three reasons. First, it contributes to strengthen the body of work on music teachers' PD motivations, needs, and preferences with data from a Southeast Asian country, where not much research of this nature has been yet conducted. In addition, our research focuses on a relatively unexplored variable within the field of music teacher PD (i.e., level of specialization in music education), which will open new venues for future inquiry (Eros, 2013). Second, our research is important for music education policy and practice (not only in Singapore but also in countries with similar music education systems) as it offers information that will guide PD providers in the design of responsive initiatives. Our insights will allow them to improve existing PD (e.g., workshops, courses, programs, school-based PD) and/or create new initiatives in order to better meet the motivations, needs, and preferences of music teachers with different specialization levels. Finally, this study is relevant because it enriches the international PD literature with data focusing on music education, a content area relatively unexplored in mainstream PD research. Because the largest projects in the field have centred on teachers of the core academic subjects (e.g., mathematics, science), we claim that more music-specific research is needed to enhance the quality and responsiveness of the PD opportunities offered to music teachers around the world.

METHOD

Participants

This article draws on a nationwide survey conducted in Singapore during early 2015. The target participants were all music teachers from the primary schools run by the Ministry of Education, regardless of their level of specialization in music education (approximately 800 teachers). We collected 374 initial responses. The data underwent a thorough cleaning process. For example, respondents who did not complete at least 85% of the survey items were eliminated. The participants finally considered in the analysis were 286 primary music teachers (246 females, 38 males, 2 unrecorded), which represent approximately 40% of the total population of primary school music teachers. Their age ranged between 23 and 63 years (M = 37.3, SD = 8.98). They had an average of 11.9 years of general teaching experience (SD = 9.16) and 8.90 years music teaching experience (SD = 8.09).

To achieve the goal of the study, we divided the participants into three groups according to their level of specialization in music education:

- *Major*, teachers holding a major degree in music education: 113 (39.5%).
- *Minor*, teachers holding a minor degree in music education: 64 (22.4%).
- *Generalist*, teachers with no formal background in music education: 109 (38.1%).

Table 1 describes the characteristics of these three groups of teachers, including information about their gender, age, years of teaching experience (general and in music), and hours of music taught per week.

Table 1
Characteristics of the three groups of teachers with different music education backgrounds

	Major 113 teachers (39.5%)	Minor 64 teachers (22.4%)	Generalist 109 teachers (38.1%)
Gender	90 females (79.6%) 21 males (18.6%) 2 missing (1.8%)	55 females (85.9%) 9 males (14.1%)	101 females (92.7%) 8 males (7.3%)
Age	36.9 years (SD = 8.58)	37.0 years (SD = 7.86)	37.8 years (SD = 9.97)
Total amount of teaching experience	11.00 years (SD = 8.69)	11.44 years (SD = 7.70)	13.24 years (SD = 10.31)
Music teaching experience	9.87 years (SD = 8.25)	9.41 years (SD = 6.98)	7.70 years (SD = 8.45)
Hours/week teaching music	12.92 hours (SD = 7.31)	6.87 hours (SD = 6.03)	4.48 hours (SD = 4.75)

We found no statistically significant differences across the three groups with regards to age, total amount of teaching experience, and music teaching experience. In terms of weekly teaching load for music, we found that teachers in the *Major* group taught

significantly more hours compared to teachers from the groups *Minor* (*MD* = 4.43, *SE* = .788, $p < .001$) and *Generalist* (*MD* = 7.16, *SE* = .661, $p < .001$). Similarly, *Minor* also taught significantly more compared to *Generalist* (*MD* = 2.72, *SE* = .783, $p < .005$).

Material and variables

We designed a survey that included multiple types of questions (e.g. open-ended, yes/no, check-all-that-apply, quantitative sliders). The survey was structured in four sections: 1) Demographics (the results of some of the items have been presented above); 2) Motivations with regards to music-specific PD; 3) Prior experiences in music-specific PD; and 4) PD needs, priorities, and preferences. This study focuses on five key items from sections 2) and 4), which were designed to explore teachers' music-specific PD motivations, needs, and preferences (dependent variable). Section 3) items were unrelated to the goals of the present paper. Teachers' responses were compared according to teachers' level of specialization in music education (independent variable).

Procedure

The survey was constructed and distributed via 'Qualtrics Online Survey Software' (http://qualitrics.com/). Prior to distribution, the survey was piloted in the context of individual interviews with 12 teachers, which allowed us to improve the quality and legibility of the items. Following ethical guidelines in Singapore, we first contacted the leader/s (e.g., Principal, Vice-Principal) of each of the schools. We sent them a personalized email that contained general information about our project and requested their collaboration 'in distributing our online survey to **ALL the music teachers in your school**, both certified and non-certified in music (regardless of the number of hours they teach music)" (excerpt taken from our email to the school leaders). The email also provided a hyperlink to the online survey and more specific information for the music teachers. In particular, teachers were informed that the survey: a) focused on their ideas and experiences concerning music-specific PD; b) was anonymous and confidential; and c) took about 20 minutes to complete. All teachers provided informed consent prior to the start of the survey.

Data Analysis

We applied several data analysis techniques, depending on the nature of the item at hand. Descriptive statistics were generated to provide preliminary overviews of the results in

all items (e.g., group means, standard deviations, frequencies, percentages, mean ranks). For items involving categorical responses, we applied non-parametric analyses such as Chi-square test. Finally, parametric tests such as analyses of variance (ANOVA) and post-hoc Scheffe tests were applied in quantitative items to analyze the differences across the three groups of teachers (*Major*, *Minor*, *Generalist*). All data analyses were conducted with SPSS (version 22).

RESULTS

This section is divided into four subsections focusing on teachers' 1) motivations to participate in music-specific PD, 2) perceived needs for further training, 3) preferred PD facilitators, and 4) preferred PD formats. In each of the subsections, we first present the question/s asked to the teachers followed by some overall statistical comparisons. Only the most relevant statistically significant differences are highlighted. In addition, subsections include tables containing the means, standard deviations, and ranks of the items presented to the teachers, as well as figures that represent the results graphically for a better understanding.

1) Motivations to participate in music-specific PD

Table 2

Motives to engage in music-specific PD: Ranks, means and standard deviations by group

"When I engage in Music PD activities, I generally do it because I want to..."	Major		Minor		Generalist	
	Rank	M (SD)	Rank	M (SD)	Rank	M (SD)
Become a better music teacher	1	93.6 (9.00)	1	91.7 (12.0)	1	90.9 (13.3)
Enhance my music content knowledge	2	93.4 (9.74)	2	91.3 (12.7)	3	90.1 (13.6)
Gain confidence and feel more competent as a Music teacher	3	92.5 (10.6)	3	89.5 (18.3)	2	88.8 (12.1)
Enhance pupils' musical learning	4	91.4 (11.0)	4	89.1 (13.5)	4	87.4 (14.1)
Keep abreast of the Ministry policies and syllabus changes	5	85.9 (17.5)	5	84.1 (18.4)	5	80.3 (21.6)
Interact with other music teachers	6	79.9 (18.9)	6	75.9 (23.1)	6	68.9 (28.0)
Improve appraisal performance for promotion	7	49.2 (31.6)	8	48.8 (33.0)	9	43.5 (32.9)
Look good on my CV to develop future career prospects	8	46.6 (29.7)	7	42.5 (29.6)	7	39.6 (30.3)
Fulfill my school's required hours of training	9	40.1 (30.9)	9	39.6 (28.8)	8	39.3 (31.7)
I do it because I have to, not because I want to.	10	20.8 (26.0)	10	21.9 (25.1)	10	34.3 (31.4)

Our survey asked "How motivated are you in participating in PD activities in Music Education?" Responses were gathered using a continuum slider, with 0 being 'Not motivated at all' and 100 being 'Extremely motivated'. The results showed that Singapore primary school music teachers are highly motivated to participate in music-specific PD, with an average response of 74.9 (SD = 21.7). However, a one way ANOVA revealed the existence of significant variations in the motivation levels of the three groups (Welch $F_{2,275}$ = 25.21, p < .001). Post-hoc Scheffe test indicated that the teachers from the group *Major* were significantly more motivated than those from the other two groups (MD = 8.91, SE = 3.22, p < .05; MD = 19.14, SE = 2.70, p < .001). Similarly, the teachers from the group *Minor* were

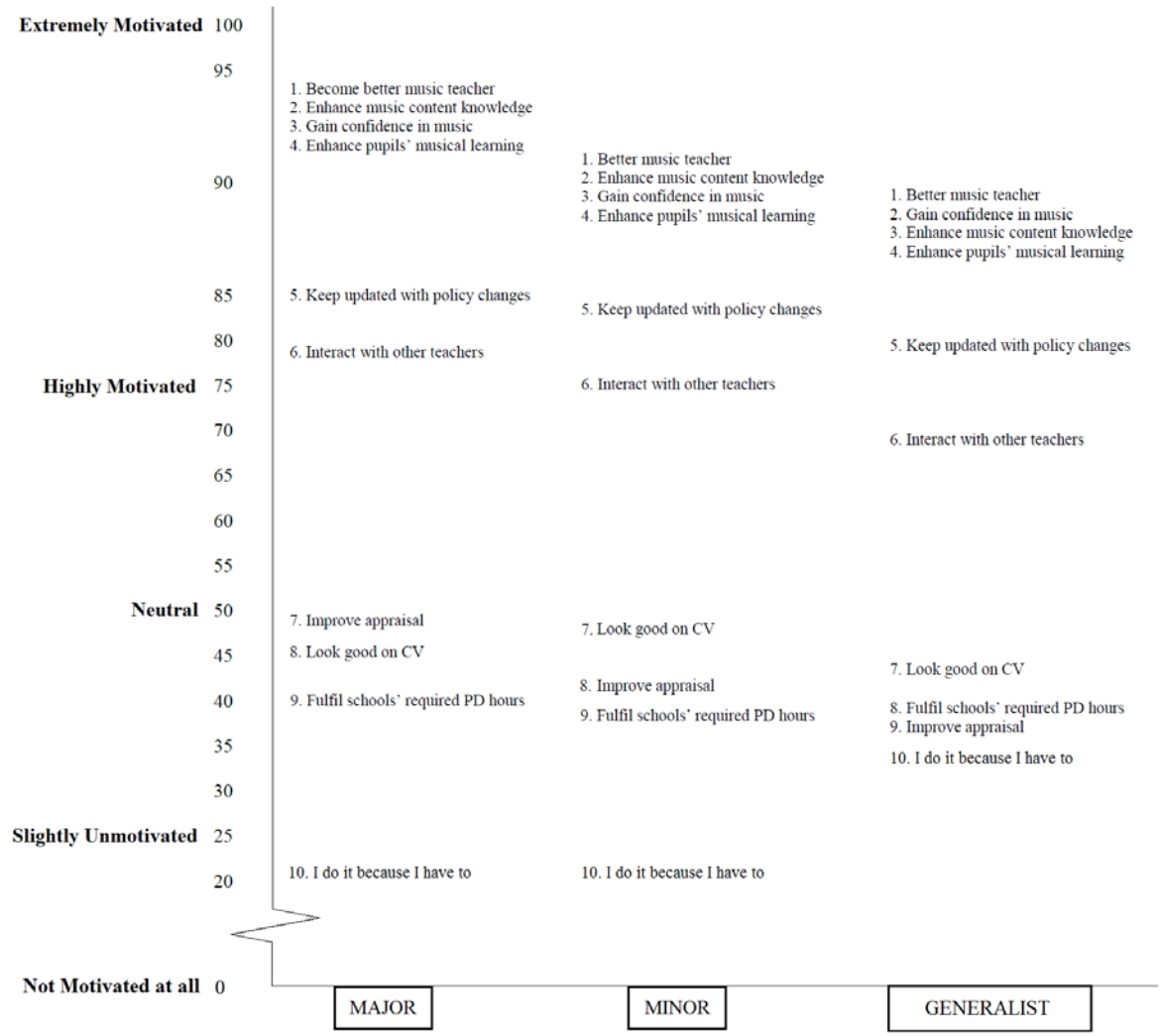
significantly more motivated than those from the group *Generalist* (*MD* = 10.22, *SE* = 3.24, $p < .05$).

Moreover, our survey presented the statement "When I engage in Music PD activities, I generally do it because I want to...", followed by 10 motives for engagement. The teachers were asked to give a response for each of the motives provided, using a continuous slider that ranged from 'Not motivated at all' (0) to 'Extremely motivated' (100). In Table 2, we present the means, standard deviations, and ranks of the different motives by group. As can be observed, the three groups presented practically identical rankings.

Figure 1 provides a graphical representation of the results. The vertical axis represents the slider presented to the teachers (from 'Not motivated at all' to 'Extremely motivated'). The motives are displayed according to the means obtained in each group, which are ranked from the highest mean (indicated with 1) to the lowest mean (indicated with 10). Note that the wording of the motives has been shorten for presentation purposes. The figure visually shows that the mean scores of the 10 motives differed across groups to a large extent, especially between the groups *Major* and *Generalist*. Notice that nine out of the ten motives obtained higher means in the *Major* group. The only exception was the item reflecting lack of motivation ('I do it because I have to, not because I want to'), which obtained a mean significantly higher in the group *Generalist*.

After these descriptive analyses, we grouped the 10 motives thematically according to four categories: intrinsic motives (x5), extrinsic motives (x3), relational motive (x1), and lack of motivation (x1). By and large for all three groups, teachers were most driven by intrinsic motives (e.g., 'Become a better music teacher'; see motives ranked 1-5 in Table 1). Next we found the relational motive ('Interact with other music teachers'), followed by the three extrinsic motives (e.g., 'Fulfil my school's required hours of training'; see motives ranked 7-9 in Table 1). The item showing lack of motivation obtained the lowest mean score in all three groups. However, a one-way ANOVA revealed significant differences in several motives ($F_{2, 1110} = 7.72$, $p < .001$; $F_{2, 219} = 4.56$, $p < .05$), showing that the group *Major* was more driven by intrinsic and relational motives than the group *Generalist* (*MD* = 3.85, *SE* = .998, $p < .001$; *MD* = 10.98, *SE* = 3.64, $p < .05$). In addition, there was also significant variation in lack of motivation ($F_{2, 202} = 5.02$, $p < .05$) with the *Generalist* group feeling significantly more unmotivated to participate in music-specific PD than the *Major* group (*MD* = 13.56, *SE* = 4.50, $p < .05$).

Figure 1.
Motives to engage in music-specific PD: Rankings of the mean scores for all three groups*



* The vertical axis represents the slider scale. Motives are displayed according to the average scores obtained (or means). The wording of the motives has been shorten for presentation purposes

2) Perceived needs for further training

For this section, our survey asked: "To better achieve the overall aims of Music education in Singapore, to what extent do YOU (not other teachers!) need further training in the following areas?" A list of 17 areas was presented, each of them followed by a slider from 'No need for further training at all' (0) through 'Extreme need for further training' (100). As shown in Table 3, most areas obtained mean scores higher than 70 over 100 in all three groups, which indicates that Singapore music teachers feel the need to improve in many areas. We can also observe that the group *Major*, despite having more prior training in music education, obtained higher mean scores than the other two groups in most areas presented.

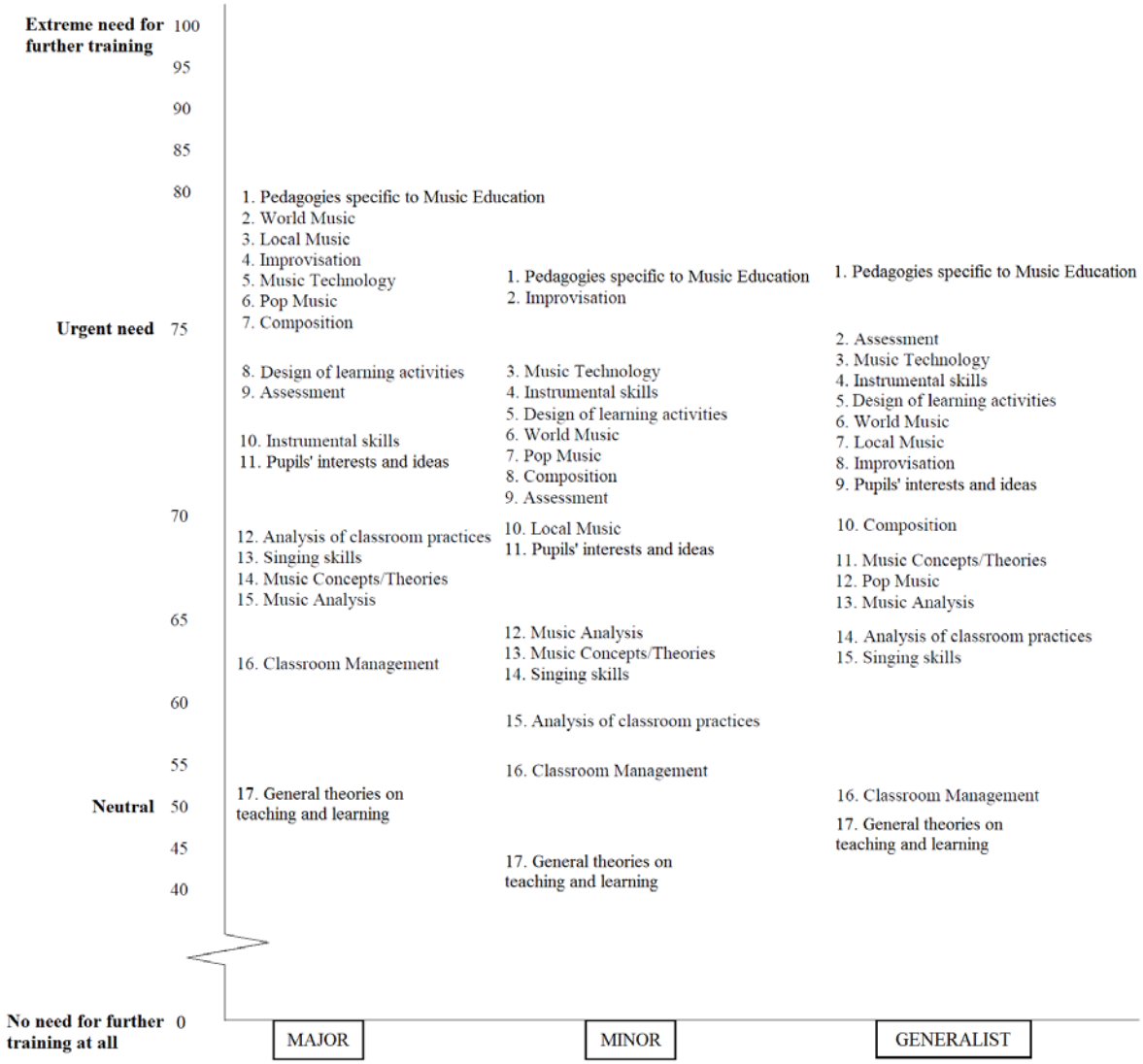
This could be interpreted as a result of *Major*'s higher intrinsic motivation level towards music education matters.

Table 3

Needs for further training: Ranks, means, and standard deviations by group

"To better achieve the overall aims of Music education in Singapore, to what extent do YOU (not other teachers!) need further training in the following areas?"	Major		Minor		Generalist	
	Rank	M (SD)	Rank	M (SD)	Rank	M (SD)
Pedagogies specific to Music Education (Kodaly, Dalcroze, Orff)	1	79.8 (20.0)	1	77.1 (23.5)	1	77.7 (24.4)
World Music	2	79.0 (17.6)	6	72.0 (24.3)	6	73.3 (24.9)
Local Music	3	77.8 (16.2)	10	69.5 (25.0)	7	73.3 (25.1)
Improvisation	4	77.4 (21.4)	2	76.0 (25.0)	8	73.3 (27.4)
Music technology	5	76.5 (24.4)	3	74.2 (23.0)	3	74.8 (24.9)
Pop Music	6	75.8 (21.0)	7	71.8 (27.4)	12	67.8 (28.2)
Composition	7	75.4 (22.1)	8	71.2 (26.6)	10	70.7 (29.4)
Design and implementation of Music learning activities	8	74.3 (23.2)	5	72.5 (20.5)	5	74.1 (24.6)
Assessment	9	74.0 (23.1)	9	70.3 (24.6)	2	75.2 (24.6)
Instrumental skills	10	73.1 (24.2)	4	73.4 (26.0)	4	74.4 (26.0)
Pupils' musical interests, preferences, and intuitive ideas	11	72.8 (21.6)	11	68.4 (24.3)	9	72.7 (24.4)
Analyzing your own or other teachers' classroom practices	12	68.3 (23.0)	15	59.7 (29.7)	14	64.8 (27.9)
Singing skills	13	68.0 (27.1)	14	63.3 (30.6)	15	64.0 (31.9)
Music concepts or theories	14	67.6 (26.6)	13	63.6 (29.6)	11	68.9 (30.0)
Music analysis (structures, harmony)	15	66.7 (27.6)	12	64.2 (30.0)	13	66.6 (31.3)
Classroom management	16	63.5 (30.9)	16	55.8 (33.8)	16	53.7 (33.6)
General theories on teaching and learning (not specific to Music)	17	52.0 (28.5)	17	44.7 (23.2)	17	48.2 (31.1)

Figure 2.
Needs for further training: Rankings of the mean scores for all three groups*



* The vertical axis represents the slider scale. Areas are displayed according to the mean scores obtained. The names of the areas have been shorten for presentation purposes

Our data revealed the existence of interesting similarities and differences in teachers' needs for further training. Regarding similarities, 'Pedagogies specific to Music Education (Kodaly, Dalcroze, Orff)' came as the first priority for all groups. The least relevant areas were content-free, that is, those non-specific to music education ('Classroom management' and 'General theories on teaching and learning (non-specific to Music)'). Regarding differences, we found that *Major* teachers were very interested in improving their knowledge on different musical genres ('World music,' 'Local music,' 'Pop Music'), whereas these areas were only middle-ranked or bottom-ranked in the groups *Minor* and *Generalist*. 'Instrumental skills' was another area where we found interesting differences. It occupied the

4th rank in the groups *Minor* and *Generalist* as opposed to 10th in *Major*. Finally, the area of 'Assessment' was a clear priority for the group *Generalist*, occupying the 2nd rank, whereas it was only the 9th priority for the other two groups. Figure 2 graphically shows the results of the three groups (interpretation rules are similar to those of Figure 1).

Finally, we grouped the 17 learning areas thematically according to four categories: musical knowledge and skills (x6), music-specific pedagogies and practices (x4), various musical genres (x3), and general areas (x4). The most relevant statistically significant differences found concern the category various musical genres, for which the ANOVA was statistically significant, $F(2, 768) = 7.178$, $p < .001$. A post hoc Scheffe test revealed that *Major* had a higher need for various musical genres compared to both *Minor* (MD = 7.68, SE = 2.29, p < .005) and *Generalist* (*MD* = 5.78, *SE* = 1.91, $p < .05$). No differences were found between *Minor* and *Generalist*.

3) Preferred PD facilitators

Our survey asked the teachers: "To improve your knowledge and skills as a Music teacher, to what extent would you be interested in learning from the following groups?" We presented 10 types of providers that frequently offer music-specific PD in Singapore, and asked the teachers to express their interest in each of them using a continuous slider (with 0 being 'Not interested at all' to 100 being 'Extremely interested').

Table 4 presents the ranks, means, and standard deviations obtained by the different providers across groups. The three groups showed considerable interest in all 10 facilitators, with the minimum average response being 65.8 (*SD* = 28.5). One-way ANOVAs followed by post hoc scheffe tests indicated that teachers from the group *Major* produced significantly higher mean scores than the group *Generalist* in seven of the 10 PD facilitators: 'PD providers (STAR, NIE, WSQ)' ($F_{2, 278} = 8.33$, *MD* = 12.76, *SE* = 3.13, $p < .001$); 'Curriculum designers' ($F_{2, 276} = 6.09$, *MD* = 11.87, *SE* = 3.43, $p < .05$); 'Professors from tertiary institutions' ($F_{2, 277} = 14.8$, *MD* = 19.60, *SE* = 3.60, $p < .001$); 'Expert musicians' ($F_{2, 277} = 12.0$, *MD* = 16.86, *SE* = 3.44, $p < .001$); 'Music practitioners' ($F_{2, 278} = 9.73$, *MD* = 13.91, *SE* = 3.20, $p < .001$); 'Seasoned music educators or pedagogues' ($F_{2, 279} = 10.38$, *MD* = 13.60, *SE* = 2.99, $p < .001$); and 'International researchers' ($F_{2, 275} = 14.9$, *MD* = 19.40, *SE* = 3.59, $p < .001$).

Table 4

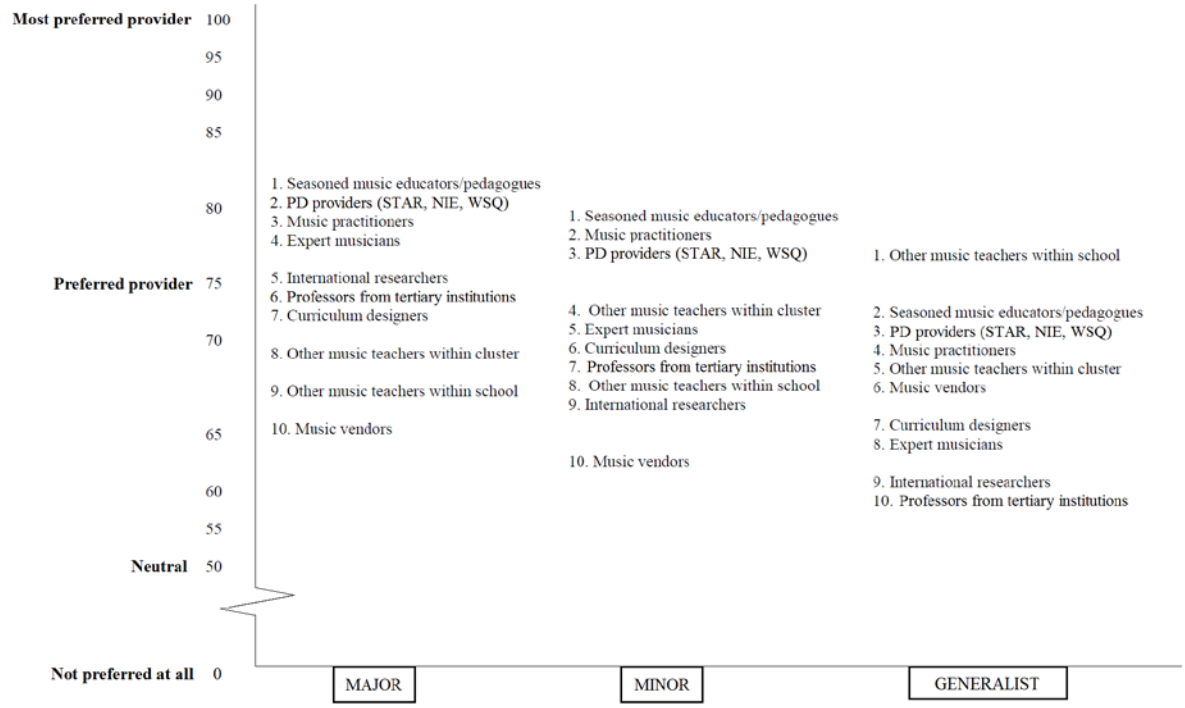
Preferred PD providers: Ranks, means and standard deviations by group

"To improve your knowledge and skills as a Music teacher, to what extent would you be interested in learning from the following groups?"	Major		Minor		Generalist	
	Rank	M (SD)	Rank	M (SD)	Rank	M (SD)
Seasoned music educators or pedagogues	1	85.9 (17.0)	1	80.1 (20.2)	2	76.8 (27.4)
PD providers (STAR, NIE, WSQ)*	2	84.4 (19.0)	3	78.1 (21.6)	3	71.7 (27.5)
Music practitioners	3	83.6 (19.4)	2	79.3 (19.7)	4	69.7 (29.2)
Expert musicians	4	81.5 (21.0)	5	72.9 (23.3)	8	64.9 (30.2)
Other music teachers within my school	9	70.7 (25.6)	8	70.0 (22.8)	1	76.8 (25.2)
Other music teachers within my cluster	8	74.8 (23.2)	4	74.7 (18.9)	5	69.1 (28.9)
Curriculum designers from the Ministry	7	77.8 (21.7)	6	70.4 (23.4)	7	66.0 (29.5)
Professors from tertiary Music institutions	6	79.1 (21.7)	7	70.2 (26.5)	10	59.5 (31.0)
International researchers in Music Education	5	79.6 (19.2)	9	67.3 (29.1)	9	60.2 (30.7)
Music vendors (Town4Kids, Music Factory, MasteReign)**	10	65.9 (29.6)	10	62.7 (28.3)	6	67.6 (27.5)

(*) STAR stands for Singapore Teachers' Academy for the aRts (Ministry of Education); NIE stands for National Institute of Education; WSQ stands for The Singapore Workforce Skills Qualifications (WSQ) (**) These are the name of private companies that provide music education services to Singapore public schools.

One commonality across the three groups was the interest to learn primarily from facilitators who have experience teaching music to students. Facilitators such as 'Seasoned music educators or pedagogues' and 'PD providers (STAR, NIE, WSQ)' were top-ranked in all three groups. An interesting finding was that 'Other Music teachers within my school' was the first-ranked facilitator in the *Generalist* group, whereas it was only 9th in *Major* and 8th in *Minor*. Note that despite the pronounced differences in the groups' rankings (see Figure 3 for a graphical representation), differences between means were not statistically significant. Similarly, we found that the *Generalist* group was more interested to learn from 'Music vendors' than the *Major* and *Minor* groups, for whom this provider was ranked last (10th) (once again, differences between means were not statistically significant). Interestingly, highly specialized PD facilitators such as 'International researchers in Music Education,' 'Professors from tertiary Music institutions' resulted middle-ranked in the *Major* group as opposed to bottom-raked in the group *Generalist*.

Figure 3.
Preferred PD providers: Rankings of the mean scores for all three groups*



* The vertical axis represents the slider scale. PD providers are displayed according to the mean scores obtained. The names of the PD providers have ben shorten for presentation purposes.

4) Preferred PD formats

For this section, we presented the statement "In the future, I would like to participate in PD activities that have the following format…" The statement was followed by nine types of learning formats commonly available to music teachers in Singapore. We asked the teachers to rate their interest in each of the formats using a continuous slider (with 0 being 'Not interested at all' to 100 being 'Extremely interested'). Table 5 presents the ranks, means, and standard deviations obtained by the different items across groups.

Similar to the results described above, the mean scores for the *Major* group were, overall, higher than those of the groups *Minor* and *Generalist*. In particular, one-way ANOVA's followed by post hoc Scheffe tests indicated that *Major* obtained significantly higher means than *Generalist* in four of the nine PD formats: 'Formal courses or diplomas from NIE, STAR, ABRSM or WSQ' ($F_{2, 256} = 14.38$, $MD = 21.71$, $SE = 4.05$, $p < .001$); 'Conferences, symposiums, or conventions' ($F_{2, 252} = 13.46$, $MD = 20.23$, $SE = 3.96$, $p < .001$); 'Meetings with other music teachers (at school, cluster meetings)' ($F_{2, 258} = 4.78$, $MD = 11.59$, $SE = 3.75$, $p < .05$); and 'Attending more concerts and other music-related events' ($F_{2, 257} = 5.84$, $MD = 11.15$, $SE = 3.47$, $p < .05$).

Table 5

Preferred PD formats: Ranks, means and standard deviations by group

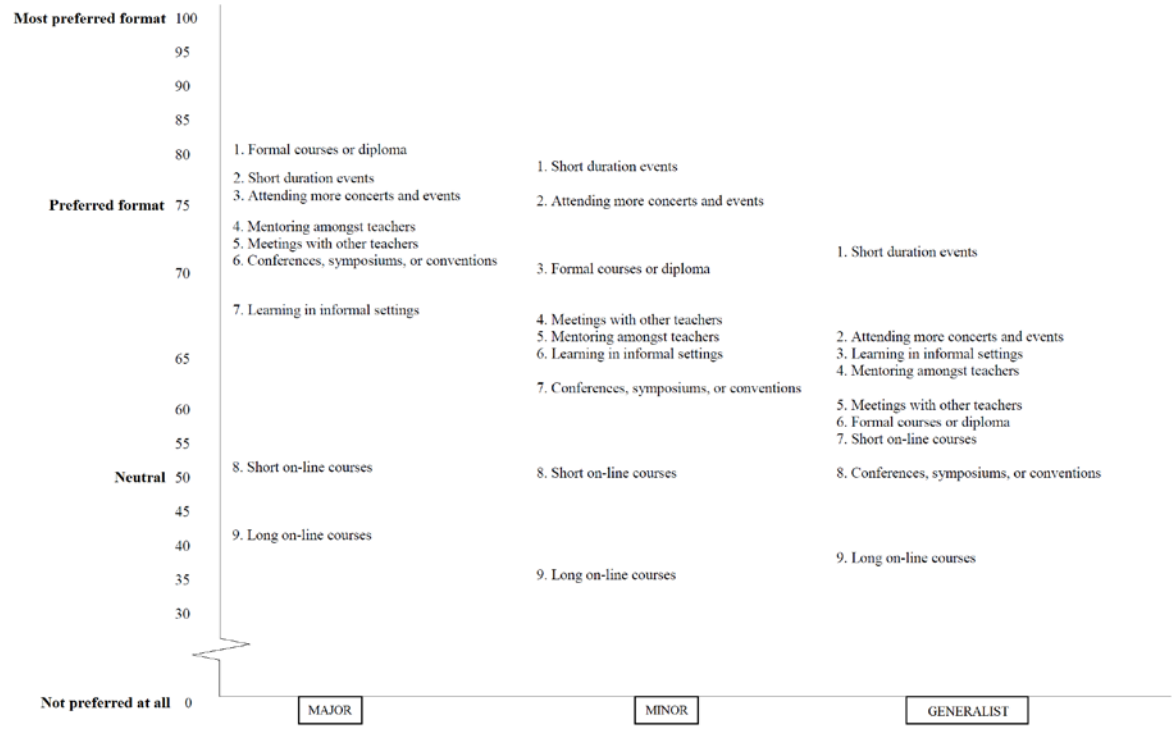
"In the future, I would like to participate in PD activities that have the following format…"	Major		Minor		Generalist	
	Rank	M (SD)	Rank	M (SD)	Rank	M (SD)
Formal courses or diplomas from NIE, STAR, ABRSM or WSQ	1	80.4 (24.2)	3	70.4 (26.1)	6	57.8 (33.1)
Short duration events (2-3 hours approx.) such as seminars, lectures or workshops	2	78.9 (19.5)	1	77.9 (20.9)	1	72.4 (29.2)
Attending more concerts and other Music-related events	3	77.5 (21.2)	2	76.8 (19.1)	2	66.8 (30.4)
Mentoring amongst Music teachers (e.g., observing other teachers' classes)	4	74.1 (24.2)	5	65.9 (27.9)	4	64.7 (30.9)
Meetings with other Music teachers (at school, cluster meetings)	5	73.5 (22.6)	4	66.5 (27.1)	5	61.6 (30.7)
Conferences, symposiums or conventions	6	71.4 (26.0)	7	63.5 (23.8)	8	51.7 (31.3)
Learning in informal settings such as hallway discussions or over lunch	7	67.9 (25.9)	6	65.6 (24.8)	3	65.0 (29.8)
Short on-line courses (2-3 hours)	8	51.8 (34.8)	8	51.4 (32.5)	7	57.2 (35.3)
Long on-line courses (more than 10 hours)	9	41.0 (34.2)	9	37.0 (35.1)	9	37.4 (34.4)

The preferred PD format for the *Major* group was 'Formal courses or diplomas from NIE, STAR, ABRSM or WSQ', which are generally long and intensive PD programs focused on highly specialized music and/or music education content knowledge. In contrasts, *Minor* and *Generalist* preferred to participate in 'Short duration events (2-3 hours approx.) such as seminars, lectures or workshops,' which typically cover less specialized topics. Long formal courses were only ranked 3rd for *Minor* and 6th for *Generalist*, respectively. These results make sense as non-music specialists tend to prefer employing most of their PD entitlement hours[1] to learn about the core academic subjects (e.g., mathematics). Mentoring and collaboration with other teachers, both within the schools and in cluster meetings, were middle-ranked for all three groups of teachers (being ranked 4th and 5th). Interestingly, though, 'Learning in informal settings such as hallway discussions or over lunch' occupied the 3rd ranking for the *Generalist* group. Once again, this preference for informal PD settings seems

[1] Primary teachers in Singapore are entitled to take up to 100 hours of PD per year (see Bautista et al., 2015).

reasonable if we consider that non-specialists music teachers prefer to utilize their formal PD hours to further their learning in other content areas. Finally, 'Conferences, symposiums or conventions' and 'Online courses', both short and long, occupied the bottom rankings in all three groups. Figure 4 presents a graphical representation of these results.

Figure 4.
Preferred PD formats: Rankings of the mean scores for all three groups*



* The vertical axis represents the slider scale. PD formats are displayed according to the mean scores obtained. The names of the PD formats have ben shorten for presentation purposes.

DISCUSSION AND CONCLUSIONS

The educational literature has reiterated the need for PD to be responsive to teachers' motivations, needs, and preferences (Bautista & Ortega-Ruíz, 2015; Desimone, 2009). In this study, we have explored these topics with Singapore primary school music teachers. This paper fills an important gap in the literature, as the variable 'level of specialization in music education' has been relatively unexplored in prior studies on music teacher PD (Eros, 2013). In Singapore, there are music teachers with different levels of prior specialization in music education, ranging from no prior training to major degrees. Our study was based on the assumption that teachers with different levels of specialization might also have different PD motivations, needs, and preferences. A nationwide survey was conducted with 286 music teachers, who were split into three groups (*Major*, *Minor*, and *Generalist*).

Our results showed that teachers with different levels of specialization in music education are not equally motivated to participate in music-specific PD. More specifically, the higher their music education background is, the more motivated they tend to be in furthering their learning as music teachers. It is understandable that music may not be the strongest motivator for less specialized teachers, especially for generalists. These teachers generally teach various subject matters and hence might have other professional learning priorities (Jeanneret & Degraffenreid, 2012). In contrast, music specialists would have to be passionate towards music education to want to pursue a major degree in this field. As such, having opportunities for PD would be a stronger motivator for them than for teachers with lower music-specific backgrounds.

Despite these differences in the overall motivation levels, we found that all three groups of teachers are mainly driven by intrinsic motives. This is consistent with the findings obtained by Bowles (2002) in the USA, whose participants were also intrinsically motivated. However, our study goes beyond in showing that the following driver of teachers' motivations is not extrinsic, but *relational* ('Interact with other music teachers'). Interestingly, the items related to extrinsic motivation and lack of motivation appeared bottom-ranked for all three groups. The fact that music teachers are primarily motivated by internal factors is an important predictor of good performance and commitment in music-specific PD settings (Gagné & Deci, 2005). However, we found that the teachers from the *Generalist* group are comparatively the least intrinsically motivated ones. This suggests the need for PD researchers and providers to find alternative ways to engage these teachers. Efforts should focus on fostering and maximising their intrinsic motivation by designing responsive PD that makes them feel invested and enjoyable, while not taking much of their energy and time given their various teaching responsibilities, goals, and priorities.

Our study also sought to find out music teachers' needs for further training. The three groups of teachers showed interest in furthering their learning in most of the 17 areas presented, which reflects their high levels of intrinsic motivation. As shown in the literature, motivated and committed music teachers strongly embrace PD opportunities (Conway, 2012). Beyond this general finding, our results present both similarities and differences with prior studies. Similar to Tarnowski and Murphy (2002) and Bowles (2002), we found that Singapore music teachers are also highly interested in music-specific pedagogies (Orff, Kodaly, Dalcroze), which was the top-ranked area for all three groups. Music technology was also highly ranked (3rd for *Minor* and *Generalist* and 5th for *Major*), although it was not the top priority as reported on in Bush (2007) and Bowles (2002). Additionally, similar to what

Friedrichs (2001) found, our research shows that 'content-free' PD opportunities are not the learning priorities for Singapore music teachers. Indeed, the two bottom-ranked areas for all three groups were 'Classroom management' and 'General theories on teaching and learning (non-specific to Music)', topics about which teachers from any subject matter would be able to learn.

With the exception of the top-ranked and two bottom-ranked areas, the ranking of the remaining 14 areas varied considerably across teachers with different backgrounds, indicating that learning needs are in fact *not* the same. Our evidence suggest that, for example, a PD course on instrumental skills would be quite appealing for teachers from *Minor* and *Generalist*, which makes sense as many of these teachers might not know how to play musical instruments. In contrast, such course would be rather unattractive for *Major* teachers, who would prefer learning about specialized music content knowledge, especially about different musical genres such as pop, local, and word music. Moreover, unlike the study by Bowles (2002) in which teachers highly rated assessment and improvisation, our data shows that the importance given to those areas by Singapore music teachers largely varies according to their level of specialization in music education. Our data offer important insights as to how to 'tailor' the content of PD to better meet the needs of different teachers.

Knowing the PD facilitators that music teachers want to learn from is also essential in designing responsive PD. We found that the three groups of teachers were interested to learn from all ten music PD facilitators presented, although with interesting differences that will be discussed below. We also found the higher the specialization in music education, the more enthusiastic teachers tend to be about learning from these facilitators. This result is once again consistent with the fact that teachers' motivation increases alongside with their music education specialization level.

The three groups showed high interest to learn from facilitators with practical experience in the music classroom, such as seasoned music educators/pedagogues and the current music-specific providers in Singapore (e.g., master teachers from STAR). Authors such as Bowles (2002) and Friedrichs (2001) have previously reported on this preference for professional music educators. Interestingly, the first-ranked facilitator for the *Generalist* group was 'Other Music teachers within my school', whereas this item was only 9th in *Major* and 8th in *Minor*. This emphasis on peer support makes sense if we consider that generalist music teachers, as explained above, often prefer to utilize their annual PD hours attending courses/programs related to the core content areas (e.g., mathematics), as they generally teach multiple subjects. Thus, receiving the in-house support from more trained teachers within

school hours would be the most strategic and practical way to go for generalist teachers, as this would allow them to improve in music and still have the time and resources to participate in PD more related to their top professional interests. A rather surprising result was that specialized PD providers such as university music professors and international music education researchers were only middle-ranked in the *Major* group and bottom-raked in the group *Generalist*.

These results show that music teachers favour learning from those that they identify as more experienced colleagues. Bush (2007) and Conway (2006, 2012) have previously reported that music teachers' most preferred type of PD is interacting with other music teachers, but not necessarily more experienced. The fact that Singapore teachers favor learning from music educators that are more competent than themselves might be due to cultural reasons, as seniority is highly respected and valued in Asian countries like Singapore (Bautista, Wong, & Gopinathan, 2015). Despite cultural differences, these findings should remind us that collegial collaboration and peer coaching has strong potential for success in music education. Consequently, school administrators should first look at the skills and knowledge available within the schools before sending teachers out for external PD (Bauer, 2007; Bush, 2007; Jeanneret & Degraffenreid, 2012).

Finally, we investigated whether music teachers' preferences concerning PD formats differed according to their level of specialization in music education. As with the other topics investigated, the *Major* group obtained higher mean scores than *Minor* and *Generalist* in the majority of formats. Once again, this finding may be interpreted as a reflection of the different motivation levels towards music-specific PD of the three groups. We also found that the formal courses and diplomas offered by the music-specific PD providers in Singapore (e.g., NIE, STAR) were rated as the top PD format by the *Major* group. These PD experiences tend to be long (ranging from 5 days to 4 months), work intensive, and highly specialized, involving collaboration among experienced music teachers and facilitators. A similar preference for intensive consecutive-day PD courses and programs was found by Bowles (2002).

However, an unexpected finding was that the top preference for the *Minor* and *Generalist* groups was short duration events such as seminars, lectures, or workshops, which are generally 2-3 hours long and typically cover less specialized topics. Longer PD formats were only ranked 3rd for *Minor* and 6th for *Generalist*, respectively. This result radically differs from recommendations by PD scholars, who are generally against short PD events given their reduced impact on teachers' classroom practices and students' learning (e.g.,

Darling-Hammond et al., 2009; Garet et al., 2011; O'Dwyer et al., 2010). Our finding also differs from the study by Friedrichs (2001), whose participants rated short workshops as the least effective and valuable PD format. From the viewpoint of *Minor* and *Generalist* teachers themselves, however, we think that this preference for short learning formats makes perfect sense. We need to consider that these teachers teach multiple subjects and many of them may prefer to reserve their PD time and resources to learn about content areas other than music (Jeanneret & Degraffenreid, 2012). Engaging in short music-specific PD would therefore allow them to participate in longer and more demanding PD initiatives related to other subjects.

PD formats involving peer collaboration and mentoring, both within a teacher's own school and in cluster/district meetings, were middle-ranked (4^{th} or 5^{th}) for all three groups. As mentioned above, this result differs from several studies in which interaction with peers has been found to be teachers' preferred PD type (Bowles, 2002; Bush, 2007; Conway, 2006, 2012). Yet we found that the 3^{rd} top format for the *Generalist* group was learning in informal settings (e.g., hallway discussions, over lunch), which seems more consistent with the prior literature. Finally, the lowest ranked PD formats for all three groups were conferences, symposiums, or conventions, as well as online courses (both short and long). These data provide us with important insights as to how to best customize the format of PD to meet the preferences of teachers with different profiles.

We conclude that the level of specialization in music education plays a major role in determining teachers' PD motivations, needs, and preferences. This study is not exempt of limitations. For example, the results come from a single source of data (i.e., online survey). To provide additional support for our findings, it would be desirable to conduct further studies based on other data sources (e.g., interviews, focus group discussions). Moreover, the sizes of the different groups were uneven. The number of teachers that are deployed to teach music in Singapore primary schools fluctuates every year, and there is no official information on the actual sizes of the three different groups. However, we estimate that the groups *Major* and *Minor* were reasonably well represented whereas *Generalist* was under-represented. This might be due to a variety of reasons (e.g., school leaders might have not forwarded the survey to the generalist teachers, they decided not to complete the survey given its optional nature, lack of time due to other commitments). Future research should try to overcome this limitation. Finally, this study focuses on one single country, Singapore. We encourage researchers from other nations to investigate whether the differences described are also observed among other samples of primary school music teachers.

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