7 Musical engagement among families with young children: A CMBI (V.972) study

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Introduction

Parental Musical Engagement (PME) with young children seems to be integrated in human collective associations as a basic form of communication and care given to babies, infants, toddlers, and pre-schoolers. The image of a mother humming to her young child appears to be a common traditional connotation of motherhood and of instinctive parental behaviour. Researchers claim that parents have interacted musically with their infants and young children across cultures and throughout history from the dawn of evolution (Custodero, Britto, & Brooks-Gunn, 2003). Costa-Giomi and Benetti (2017) state that "intentional participation in musical interactions is indeed a staple of child rearing" (p. 291). The uses of music in everyday life of young children and their parents contributes to a wide-ranging number of prerequisite functions and purposes, and is far more complex than is usually considered. For example, *PME* is often also considered a platform for transferring cultural knowledge, which includes acquisition of the norms and rules that are essential for scaffolding the foundations of one's community (Custodero & Johnson-Green, 2003; Merriam, 1964; Sheham & Scott, 1995).

Music experience in childhood has beneficial effects on early cognitive and linguistic development (Beck, 2018; Degé & Schwarzer, 2011; Moreno et al., 2011). For the most part, studies focus on more *formal* musical training as found in educational frameworks including preschool enrichment lessons, elementary school classrooms, and afternoon community centre programmes (Francois, Chobert, Besson, & Schön, 2012). Yet, children under the age of five experience music every day, at times alone and sometimes with family members; these would be defined as *informal* musical interactions. From early infancy throughout toddlerhood to preschool age, children sing songs, dance, perform traditional natural and educational play-songs, hear recorded music, watch video-clips, and even participate in creating music with their siblings and parents (Brodsky & Sulkin, 2011; Flohr, 2005; Valerio, Reynolds, Bolton, Taggart, & Gordon, 1998). Such musical experiences support physical, emotional, cognitive, and social development by providing a pleasant training field for children (Fancourt & Perkins, 2019; Papoušek, 1996; Politimou, Stewart, Mullensiefen, & Franco, 2018; Sulkin & Brodsky, 2015). Initially, parental singing may be the central musical behaviour in early musical interactions when babies and infants are rather limited in active ability (Costa-Giomi, 2014; Costa-Giomi & Ilari, 2014; Shoemark & Arnup, 2014). But, as children grow older, their behavioural repertoire of musical activity widens and becomes more varied, subsequently including vocalizing and singing,

moving and dancing, rhythmic play and instrument playing. These provide opportunities for attention and emotion, integrating music activity into daily routines (such as waking, dressing, eating, playing, cleaning-up, walking, travelling in a car/bus/train), developing social behaviours (such as receptive cooperative gestures like taking turns and sharing, as well as proactive characteristics like initiating and making requests), and creativity (such as making up tunes, rhythms, and movement sequences).

The scientific literature contains many studies about the effects of informal music experiences on children under five years old (e.g. Custodero & Johnson-Green, 2003; Hartas, 2011; Ilari, 2005; Putkinen, Tervaniemi, & Huotilainen, 2013; Shoemark & Arnup, 2014; Williams, Barrett, Welch, Abad, & Broughton, 2015). Some have collected data in the home environment itself, while others meet parents outside of homes such as in parent–child centres, group music play sessions, and even parent–child concert venues (Moorhead & Pond, 1978; Pitt & Hargreaves, 2017; Young, 2003). These studies illustrate that singing, making up songs, moving and dancing, using objects and musical instruments, and listening to music, are the most common musical behaviours that children engage in at home (Barrett, 2009; Gordon, 2003; Ilari & Young, 2016; McPherson, 2009; Mualem & Klein, 2013).

Nonetheless, there are but a few studies that have focused on *PME*. The issue is not whether studies have presented evidence to demonstrate improvement in child development due to home-based musical engagement through some form of outcome measure. But rather: How, Why, and to What extent do parents engage in specific musical activity with their child. Also: How aware are parents of their child's response to parent-initiated music activity. Such information is mostly unavailable due to the fact this kind of data needs to be collected directly from parents. Yet, there are but very few psychometrically standardized measures that target *PME*. Perhaps the very first study (although rarely cited in the literature) is Doan (1973) who developed the *Measurement of Family Involvement in Music*; we note that no details are readily available about the study or the measure itself. However, most researchers credit Brand (1985, 1986) as the first study to target musical engagement in the home. Brand developed the *Home Musical Environment Scale* (HOMES) as a self-reporting measure for parents of 7-year old elementary school children. *HOMES* was comprised of four principal factors: (1) attitudes toward musical involvement; (2) concert attendance; (3) ownership/use of pre-recorded music; and (4) use of music instruments. Recently, Chordes, Grolig, and Schroeder (2019) investigated the development and training of music competencies among 202 5-year old children; that study attempted to disentangle the effects of formal music training once the child entered elementary school versus past informal home-based musical experiences. Cohrdes et al used *HOMES*, albeit they employed a revised shortened 12-item version (Cronbach's $\alpha = .75$) that was previously adapted by Aherne (2011). Zdzinski (1992) investigated the relationships between parental involvement, music aptitudes, music achievements, and performance achievements of instrumental music students among early adolescents aged 10–12 years old. To measure parental involvement, he developed a self-report questionnaire called the *Parental Involvement Measure* (PIM). Accordingly, *PIM* adapted portions of Doan (1973) and Brand (1985). *PIM* is a 15-item questionnaire measuring the degree to which parents engage in certain music activities. Although Zdzinski used the term 'parental involvement', the truth is that he seems to be referring to 'home music environment'. In another study, Mallett (2000) established *The Parent/Caregiver Survey Regarding Preschool Music* (PSRPM), which incorporated (in entirety) *HOMES* and

Audie (Gordon, 1989). *PSRPM* is a specific tool for measuring the relationship between the attitudes of parents or caregivers of preschool children towards music instruction and the home music environment, and to determine if select factors predict music potential among young children. Moreover, Custodero et al. (2003) examined parents' self-reported singing/playing of music for under three years old children. They found: (1) 60% sang or played recorded music for their children daily; (2) musical activities were more likely to occur with mothers (especially with children younger than two years old); and (3) musical engagement was more prevalent with firstborns than latter-born children. Further still, de Vries (2009) conducted a survey focusing on parental musical behaviour at home with under five-year-old children. Accordingly, parents reported they lacked the time for musical engagement with their children at home, and considered pre-school educational settings as more equipped to provide musical experiences. By separating 'singing' from 'playing pre-recorded materials' de Vries found that 18% reported that their main mode of daily music engagement in the home was playing CDs and DVDs, and that only 9% of parents sang with their children on a daily basis. Finally, Lamont (2008) collected data by telephone interviews with parents. Her results confirmed earlier findings by Custodero, Britto, and Brooks-Gunn reporting that mothers took a more dominant role in music engagement than fathers. Lamont also reported that mothers claimed to use pre-recorded calming music or singing during bedtime; and that from age three-and-a-half most children not only enjoyed music-making (more so than when they were younger) but were capable of making choices about the kind of music they wanted to hear at home. In addition, Lamont noted that TV programmes and computer games reflected a third (33%) of all children's musical experiences in the home.

One of the most authenticated measures developed thus far to target music experiences in the home is Valerio, Reynolds, Grego, Yap, and McNair (2011) and Valerio, Reynolds, Morgan, and McNair (2012); the *Children's Music-Related Behaviour Questionnaire* (CMRBQ) was designed for parents to document observed music behaviours of their younger than 5-year-old child, as well as to document their own parent-initiated activities. The questionnaire requires parents to provide information about occurrences during the previous month. Valerio et al demonstrated high construct validity and reliability among 616 participating parents. The research team found that parents who reported higher frequencies of music-related activities with their children also reported the most observed music-related behaviours. In general, the older the child, the more parents documented music-related behaviour. *CMRBQ* has been used as the 'Gold Standard' to validate a host of other measures including *The Parent/Guardian Survey Regarding Kindergarten Music* (PSRKM) (Romanik, 2016), and *Music@Home* (Politimou et al., 2018). *PSRKM* was used to investigate the relationship between home music environment and kindergarten children's musical aptitude. *Music@Home* attempted to tease-out 12 different aspects of musical experience in the home, including parental beliefs, child engagement, parental initiation of musical activity, and breadth of musical exposure. There is a 60-item version for infants aged 0–2 years, and a 67-item version for pre-schoolers aged 2–5 years. Recently, Beck (2018) employed a revised version of *CMRBQ* known as *CMBI* (2015, see below) to explore how knowledge of children's music behaviour and the viewing of music class video recordings influenced parental perceptions and understanding of their three-year-old children's music behaviours.

We point out here that although Valerio et al. (2012) demonstrated strong psychometric properties for the *Children's Music-Related Behaviour Questionnaire*, their sample may have been compromised by either *social desirability response bias* (participants

responding in a perceived appropriate way rather than based on truthfulness), *acquiescence bias* (participants responding in agreement to the items of the questionnaire), or *demand characteristic bias* (participants responding in ways that satisfy the wants/needs of the recruiter/researcher). In Valerio et al.'s case, the respondents were not only personally recruited by the administrator of their own child's day-care centre ('... childcare center directors invite[d] parents to participate', p. 190), but were conscious of financial incentives for each centre to receive completed questionnaires (i.e. '... with a cap of 40 questionnaires ($200 credit) per center, toward the purchase of music-related products', p 190), and were also aware that each director would personally inspect their returned question (if for no other reason than to check for completeness, while at the same time eyeballing responses to items of interest). Given this background, we wondered what results might surface from a sample of the general population, without any further motivations, interests, incentives, or biases. To this end, we proposed to recruit 300 parents, whose ethnic backgrounds originated from over 25 countries across North and South America, Africa, Asia, Central Europe, Russia, and the Middle East. With this in mind, we sought permission to translate the *Children's Music-Related Behaviour Questionnaire* (Valerio et al., 2012) into the Hebrew language. The authors sent us their newly revised questionnaire, titled *Children's Music Behaviour Inventory* (Valerio & Reynolds, 2015). To our knowledge, *CMBI* is identical to *CMRBQ* with the exception of a new title, one less item in the 'Affect and Emotion' subscale (Part I), and with upgraded graphic layout. Permission to translate *CMBI* was granted to WB in 2016. A slightly adapted version, hereafter referred to as *CMBI (V.972)* for both Hebrew and English languages, was employed in the current study; '972' is the international dialling country code for Israel.

The study

Methodology

Translation

CMBI was translated by a professional translator (English to Hebrew). The translation was reviewed and edited for specific music-related content (by WB & MH). Then, an early childhood music education expert (IS) was contracted as an independent objective critical reviewer who was blind to the goals of the study; IS joined the research team only after completing the task. The revised translated version was checked for inconsistencies, with each item receiving a score on a 4-level Likert scale (1 = 'Poor'; 4 = 'Best'). The overall score of the first revised version was *good* ($M = 3.21$, $SD = 0.34$). Subsequently, all items were adjusted again and again, with second and third revisions judged until the highest overall scores for translation were given (i.e. all $Ms = 4$). Thereafter, *CMBI (V.972)* was deemed a reliable Hebrew-language translation, meeting local cultural differences that were not reflected in the original American version. Both Hebrew and English versions were produced. There are five main differences between *CMBI* versus *CMBI (V.972)*: (1) titles of American children's songs/rhymes were replaced with titles of local Hebrew songs/rhymes; (2) racial descriptors used for the American sample were replaced by markers of Israeli ethnicity; (3) the income groupings used for the American sample were reformatted to those more common in Israel; (4) the four music subtypes familiar to American parents were reduced to two music

subtypes more common among Israeli parents; and (5) the left-to-right text of the original questionnaire for English language readers was reformatted as a mirror-image to a right-to-left graphic presentation for Hebrew language readers – graphic changes included all aspects of the inventory including the direction of Likert response scales.

Participants

Initially *CMBI (V.972)* was completed by 310 parents. During data analyses 54 cases were dropped: 23 cases account for children who were over 60 months of age; 12 cases account for children who were not born as a singleton (i.e. twins or triplets); 15 questionnaires were completed by a non-compliant parent (e.g. responses were unreliable with abundant missing data); and two questionnaires were completed by respondents identified as not a parent (i.e. an aunt and grandmother). The final sample (N = 256) was comprised of 196 (77%) mothers and 60 (23%) fathers; they were roughly 36 years old (SD = 6.17, Range = 22–58). 210 (82%) of the respondents had earned a university degree. 212 (83%) were born in Israel, while the other 44 (17%) were born in 20 other countries, (including: Europe, Middle East, Russia, South Africa, UK., and USA.). Although the latter group of parents immigrated to Israel, they had already resided in Israel for an average 23 years (SD = 10.54, Range = 4–49) before completing the questionnaire. The parent respondents self-reported to belong to a mid-to-upper middleclass: 61 (24%) earned an average household income of $2800 per month, 87 (34%) an average $4500 per month, and 64 (25%) above $5500 per month. An estimation of socioeconomic status (SES) was borne out by calculating education (four categories) and income (five categories) and then combining them into a newly formulated value (i.e. $\left(\frac{\text{education+income}}{2}\right)$ to produce an *SES Scale* (Range = .05–4.5). The average *SES* of the current sample was far above the midline (M = 3.46, SD = 0.68). Finally, the respondents reported that on average two adults lived under their roof in the same house/apartment (but we note Range = 0– 7), with an average of two children under the age of 18 (but we note Range = 0–7).

The target children (N = 256) were comprised of 133 (52%) female and 120 (46%) male babies, infants, toddlers, and young children, who were roughly 2–3 years old (M_{months} = 33, SD = 16.24, Range = 1–60 months), and were born between years 2012–2017 (about 20% per year of birth). For the most part, there were 123 (48%) firstborn children, albeit 60 (23%) second borns, 54 (21%) third-borns, 14 (6%) fourth-borns, and five (2%) fifth+ borns. All of the children were singletons.

Measure

CMBI (V.972) is an 11-page booklet (with a parallel Hebrew and English version). It is slightly adapted from the American *CMBI* (2015, previously known as *CMRBQ* by Valerio et al., 2012). The inventory consists of eight parts (i.e. subscales). Parts I-VII outline child-initiated music activity as recalled by the parent-respondent; Part VIII assesses the frequency of parent-initiated musical activities. Romanik (2016) claimed that Parts I-VII are comprised of items highlighting many behaviours and variables that have not yet been investigated in the home music environment literature. Parts I-VII require a response on a 4-level Likert Scale (1 = 'Never'; 4 = 'Frequently'), however we note that there is a fifth option to mark 0 = 'I don't know'. Part VIII requires a response on a 4-level Likert Scale (1 = 'Never'; 4 = 'Frequently'). The eight parts of *CMBI (V.972)* are:

- *Part I Affect & Emotion*, 7-item subscale, items 1–7, Cronbach's α = 0.90 (*CMRBQ*: Cronbach's α = 0.77).
- *Part II Vocalizations*, 10-item subscale, items 8–17, Cronbach's α = .85 (*CMRBQ*: Cronbach's α = .83).
- *Part III Moving*, 10-item subscale, items 8–27, Cronbach's α = .89 (*CMRBQ*: Cronbach's α = .83).
- *Part IV Daily Routines*, 10-item subscale, items 28–37, Cronbach's α = .73 (*CMRBQ*: Cronbach's α = .83).
- *Part V Requests*, 12-item subscale, items 38–49, Cronbach's α = .91 (*CMRBQ*: Cronbach's α = .90).
- *Part VI Taking Turns*, 11-item subscale, items 50–60, Cronbach's α = .85 (*CMRBQ*: Cronbach's α = .88).
- *Part VII Creativity*, 8-item subscale, items 61–68, Cronbach's α = .86 (*CMRBQ*: Cronbach's α = .89).
- *Part VIII Parent Musical Activities*, 29-item subscale, items 1–29, Cronbach's α = .91 (*CMRBQ*: Cronbach's α = .97).

It should be noted that Cronbach's internal consistency and reliability scores (i.e. α) for a set of items such as a subscale is considered *excellent* when α > .90, *good* when α = .80–.89, and *acceptable* when α = .70–.79.

Procedure

Prior to the onset, the study was approved by a university review board for ethical treatment of human subjects. Initially, a 'Call For Participation' was sent via email to 300 undergraduate students in six courses at four academic institutions located in the three largest cities in Israel. One hundred students (33% response rate) volunteered for the study; they were 80% female, between 21–27 years of age, and received extra credit course points. Each student recruited three parents of children aged 0–5 years old to complete the questionnaire. The students underwent a one-time 60-minute in-house training session to learn a standardized procedure for recruiting parents and procedures for completing the questionnaire. Each parent was briefed verbally, read through an information letter, and signed an 'Informed Consent' form. Data collection ended within one calendar month; the intake totalled 310 respondents. Every student wrote a short report documenting parental impressions of the questionnaire, and provided a succinct summary of verbal comments made during the debriefing procedure.

Results

The *Attention & Emotion* subscale (Part I) indicates that parents in the sample engaged their children by singing. See Table 1. Accordingly, their babies, infants, toddlers, and pre-school children *sometimes* to *frequently* turned their heads, stared, listened, moved closer, paid attention, smiled, showed approval, and were calmed down – when the parent sang.

The *Vocalization* subscale (Part II) indicates that parents in the sample engaged their children by singing. Accordingly, their babies, infants, toddlers, and pre-school children *sometimes* to *frequently* initiated vocal play sounds, babbled, rhymed, and banged-out rhythms – both when alone and when the parent sang to them. See Table 2. Further, the children *sometimes* filled in missing words, notes, or rhythms when they were intentionally left out. But, the children only *rarely* to *sometimes* performed recognizable songs when alone or when with the parent – and then, only *sometimes* performed accurately.

The *Moving* subscale (Part III) indicates that in addition to singing, parents also engaged their children by playing pre-recorded music (CDs and DVDs). Consequently,

Table 1 Part I Attention & Emotion Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
1.	**Turns his/her head** toward me when I sing songs/rhymes	3.53	0.94
2.	**Stares** at me when I sing songs/rhymes	3.03	1.08
3.	**Pauses activities to listen** to me when I sing songs/rhymes	3.10	1.03
4.	**Is calmed** when I sing/rhymes to him/her if he/she is anxious or upset	3.07	1.06
5.	**Moves closer** to me if I sing songs/rhymes for him/her	3.02	1.11
6.	**Shows approval** (such as smiles, laughs, claps) when I sing songs/rhymes for him/her	3.43	0.93
7.	**Pays attention to me** if I sing songs/rhymes for him/her to **change his/her behaviour**	3.05	1.14
	Attention & Emotion Subscale (CMBI V.972)	3.18	0.82
	Attention & Emotion Subscale (CMRBQ)	3.56	0.47
	***t* = 8.598, *df* = 870, *SE* = 0.044, *p* < 0.0001, 95% *CI* = 0.380 (0.293–0.467)**		

Source: CMBI Part I (Valerio & Reynolds, 2015).

Table 2 Part II: Vocalization Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
8.	**Makes** different types of **vocal play sounds** (for example: glissandos, raspberries, shouts, screams, shrieks, lip smacks, tongue clicks)	3.17	1.13
9.	Vocally babbles **when** I am singing songs/rhymes to him/her	2.87	1.14
10.	Vocally babbles **after** I sing songs/rhymes to him/her	2.76	1.20
11.	**Vocally babbles** in a musical way (sounds like singing) while playing alone	3.07	1.10
12.	**Tries** to 'fill in' or approximate parts of songs/rhymes if I intentionally leave out a note, word, or phrase	2.83	1.33
13.	**Accurately** 'fills in' parts of songs/rhymes if I intentionally leave out a note, word, or phrase	2.75	1.33
14.	**Performs** recognizable songs/rhymes **alone, but not quite accurately**	2.49	1.16
15.	**Accurately performs** recognizable songs/rhymes **alone**	2.42	1.22
16.	**Performs** recognizable songs/rhymes **with me, but not quite accurately**	2.48	1.12
17.	**Accurately performs** recognizable songs/rhymes **with me**	2.48	1.25
	Vocalizations Subscale (CMBI V.972)	2.73	0.79
	Vocalizations Subscale (CMRBQ)	3.24	0.64
	***t* = 9.978, *df* = 870, *SE* = 0.051, *p* < 0.0001, 95% *CI* = 0.510 (0.410–0.610)**		

Source: CMBI Part II (Valerio & Reynolds, 2015).

when hearing music or singing, their babies, infants, toddlers, and pre-school children *sometimes* to *frequently* moved their upper body, lower body, and whole body, while remaining in one place as well as moving around the room, and in synchrony to the pace/tempo of the music. See Table 3. However, the children only *rarely* to *sometimes* used blocks/sticks/toys to play rhythms and keep the beat, or performed movements to songs sung by others or themselves – and then, only *sometimes* these movements were performed accurately.

The *Daily Routines* subscale (Part IV) indicates that in addition to singing and moving, parents often engaged their children by playing pre-recorded music. Accordingly, their babies, infants, toddlers, and pre-school children *sometimes* to *frequently* listened to music while riding in the car, but only *rarely* to *sometimes* heard music when going to sleep – as they more often listened to their parents singing when going to sleep. See Table 4. In addition, the babies, infants, toddlers, and pre-school children only *rarely* to *sometimes* sang to themselves when cleaning up, while taking a bath or dressing, when going to sleep, or while lying in the crib after waking.

The *Requests* subscale (Part V) indicates that babies, infants, toddlers, and pre-school children *sometimes* to *frequently* asked their parents to play recordings of their favourite songs, music, and videos. See Table 5. Moreover, they *sometimes* asked them to continue singing, rhyming, or dancing – and *sometimes* babies and infants used babbling, vocalizing, or body movement to initiate such requests. But, they *never* to *rarely* asked them to refrain from, or to stop, music activities.

The *Taking Turns, Initiating, & Sharing* subscale (Part VI) indicates that babies, infants, toddlers, and preschool children *sometimes* to *frequently* joined others when singing or dancing, and enthusiastically encouraged others to perform (singing, dancing, or rhyming). See Table 6. Yet, the babies, infants, and toddlers only

Table 3 Part III: Moving Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
18.	Moves/dances his/her **upper body** when hearing music	3.18	1.00
19.	Moves/dances his/her **lower body** when hearing music	2.97	0.10
20.	Moves/dances his/her whole body in response to music while remaining **in one place**	2.66	1.03
21.	Moves/dances **around the room** in response to music	2.83	1.12
22.	Moves/dances while singing songs or performing rhymes by **himself/herself**	2.57	1.13
23.	Moves/dances **while I sing** songs or perform rhymes for him/her	2.80	0.98
24.	**Changes speed** of moving/dancing to match the speed/tempo of music	2.63	1.32
25.	Uses blocks, sticks, toys, or kitchen utensils **to play rhythms or keep the beat of music recordings or music performed by others**	2.24	1.15
26.	**Performs** traditional movements to traditional songs/rhymes such as Na'ad Ned or Bo Ali Parpar Nechmad, etc., **but not quite accurately**	2.47	1.13
27.	**Accurately** performs traditional movements to traditional songs/rhymes such as Na'ad Ned or Bo Ali Parpar Nechmad, etc.	2.41	1.22
	Moving Subscale (CMBI V.972)	2.68	0.79
	Moving Subscale (CMRBQ)	3.26	0.62
	***t* = 11.568, *df* = 870, *SE* = 0.050, *p* < 0.0001, 95% *CI* = 0.580 (0.482–0.679).**		

Source: CMBI Part III (Valerio & Reynolds, 2015).

Table 4 Part IV: Daily Routines Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
28.	Listens to **recorded music** while riding in the car	3.45	0.87
29.	Listens to **recorded music** while he/she is going to sleep	1.97	1.20
30.	Listens to **me or another adult** singing songs/rhymes while he/she is going to sleep	2.67	2.83
31.	Sings songs/rhymes **alone while going to sleep**	1.82	1.02
32.	Sings songs/rhymes **with me before going to sleep**	1.94	1.31
33.	Sings songs/rhymes **alone while in crib or bed after waking**	1.75	1.14
34.	Sings songs/rhymes **alone while bathing or dressing**	2.28	1.09
35.	Sings songs/rhymes **with me while bathing or dressing**	2.50	1.20
36.	Sings songs/rhymes **alone while cleaning up play area, room, etc.**	2.04	1.14
37.	Sings songs/rhymes **with me while cleaning up play area, room, etc.**	2.14	1.12
	Daily Routines Subscale (CMBI V.972)	2.26	0.75
	Daily Routines Subscale (CMRBQ)	2.67	0.68
	$t = 7.863$, $df = 870$, $SE = 0.052$, $p < 0.0001$, 95% $CI = 0.410$ (0.308–0.513).		

Source: CMBI Part IV (Valerio & Reynolds, 2015).

Table 5 Part V: Requests Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
38.	**Gets me to continue** singing songs/rhymes by **moving or dancing** when I pause or stop my singing	2.43	1.09
39.	**Gets me to continue** singing songs/rhymes by **vocalizing (babbling)** for more when I pause or stop my singing	2.38	1.09
40.	**Gets me to continue** singing songs/rhymes by **asking for 'more' or for me to continue** when I pause or stop my singing	2.69	1.18
41.	**Asks** for favourite songs/rhymes to be performed	2.88	1.23
42.	**Asks** for favourite **recordings/CDs** to be played	2.80	1.27
43.	**Asks** for favourite **music videos/DVDs** to be played	2.70	1.31
44.	**Asks** me to sing or perform rhymes **for** him/her	2.48	1.18
45.	**Asks** me to sing or perform rhymes **with** him/her	2.33	1.15
46.	**Asks** me to dance **with** him/her	2.50	1.13
47.	**Asks** me to sing or perform rhymes and dance **simultaneously with** him/her	2.24	1.09
48.	**Asks me to stop** singing songs/rhymes	1.99	0.99
49.	**Asks me to listen** to him/her singing songs/rhymes	2.25	1.19
	Requests Subscale (CMBI V.972)	2.46	0.82
	Requests Subscale (CMRBQ)	2.67	0.76
	$t = 3.630$, $df = 870$, $SE = 0.058$, $p < 0.0003$, 95% $CI = 0.210$ (0.096–0.324).		

Source: CMBI Part V (Valerio & Reynolds, 2015).

sometimes took turns in games involving babbling, vocalizing, or beating rhythmic patterns, but *rarely* to *sometimes* initiated music conversations using their voice or music instruments.

The *Creativity* subscale indicates that toddlers and preschool children *rarely* to *sometimes* sang original spontaneous songs, improvised new words on well-known

Table 6 Part VI: Taking Turns, Initiating, & Sharing Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
50.	Takes turns with me by **babbling,** using **coos, raspberries, ahs, bahs, mahs,** or making other vocal sounds	2.06	1.48
51.	Takes turns with me by **patting/beating rhythms**	2.27	2.28
52.	Takes turns making music conversations with me **using pitches and/or rhythms and nonsense syllables**	1.81	1.34
53.	Takes turns making music conversations with me **using pitches and/or rhythms and words**	1.90	1.31
54.	Joins in **singing with others** when they are singing songs/rhymes	2.79	1.21
55.	Joins in **singing and dancing** with others when they are singing and dancing	2.88	1.15
56.	**Gets children and/or adults, including me,** to sing or perform rhymes	2.59	1.18
57.	**Gets children and/or adults, including me,** to move/dance	2.50	1.15
58.	**Gets children and/or adults, including me,** to sing or perform rhymes and move/dance simultaneously	2.38	1.15
59.	Initiates/starts music conversations with me **using pitches and/or rhythms and nonsense syllables**	1.67	1.17
60.	Initiates/starts music conversations with me **using pitches and/or rhythms and words**	1.82	1.21
	Taking Turns, Initiating, & Sharing Subscale (CMBI V.972)	2.24	0.87
	Taking Turns, Initiating, & Sharing Subscale (CMRBQ)	2.90	0.98
	$t = 9.352$, $df = 870$, $SE = 0.071$, $p < 0.0001$, 95% $CI = 0.660$ (0.521–0.799).		

Source: CMBI Part VI (Valerio & Reynolds, 2015).

Table 7 Part VII: Creativity Subscale

Item #	*MY CHILD ...*	*MN*	*SD*
61.	**Creates** songs or rhymes **by himself/herself**	2.28	1.20
62.	**Creates** songs or rhymes **with me**	2.18	1.11
63.	Uses **nonsense syllables** when creating songs or rhymes	1.90	1.68
64.	Uses **words** when creating songs or rhymes	2.36	1.26
65.	**Sings or performs original or different words** to familiar songs or rhymes	2.53	1.36
66.	Uses blocks, sticks, toys, or kitchen utensils **to create rhythm patterns or beats**	2.19	1.21
67.	**Creates** songs or musical patterns on a xylophone, piano, or other musical instrument	1.95	1.14
68.	**Pretends to play** an instrument like a trumpet, clarinet, or piano	2.07	1.12
	Creativity Subscale (CMBI V.972)	**2.18**	**0.84**
	Creativity Subscale (CMRBQ)	2.76	0.81
	$t = 9.512$, $df = 870$, $SE = 0.061$, $p < 0.0001$, 95% $CI = 0.580$ (0.460–0.700).		

Source: CMBI Part VII (Valerio & Reynolds, 2015).

tunes, created songs and rhymes by themselves or with their parents, used blocks and kitchen utensils to bang-out newly created rhythmic patterns, or pretended to play an instrument. See Table 7. In addition, they *never* to *rarely* used educational music instruments or nonsense syllables to create new songs or rhymes.

The *Parent Musical Activity* subscale (Part VIII) is the only *CMBI* part that does not require parents to recall observation of their young children's musical behaviour, but rather denotes the self-reported frequency of their own parent-initiated musical activities. See Table 8. The Table indicates that the parents reported they *frequently* noticed when their baby, infant, or toddler makes sounds that are either rhythmic in nature or song-like vocalizations. Further, they *frequently* performed songs and rhymes, played

Table 8 Part VIII: Parent Musical Activity Subscale

Item #	*I ...*	*MN*	*SD*
1.	Sing songs or perform rhythms/rhymes **for** my child	3.44	0.78
2.	Make up songs or rhythms/rhymes **using words for** my child to listen to	3.00	0.98
3.	Make up songs or rhythms/rhymes **using words with** my child	2.43	1.10
4.	Make up songs or rhythms/rhymes **using nonsense syllables for** my child to listen to	2.24	1.08
5.	Make up songs or rhythms/rhymes **using nonsense syllables with** my child	2.07	1.18
6.	Sing songs or rhymes **for** my child to listen to during daily routines such as bathing, dressing, cleaning up toys, getting ready to go somewhere	3.21	0.96
8.	Sing songs or rhymes and **leave out a note or phrase** to see what my child does	2.76	1.09
9.	Sing songs or perform rhymes **when my child asks me by using verbal or non-verbal communication**	2.64	1.08
10.	**Encourage** my child **to make up** his/her own songs/rhymes	2.43	2.20
11.	**Compliment** my child's made-up songs/rhymes	2.94	1.19
12.	Play recorded music **for** my child in the house or car when he/she is **awake**	3.45	0.83
13.	**Sing along** with recorded music while my child is listening	3.39	0.87
14.	**Encourage** my child to sing along with recorded music	3.08	1.06
15.	Dance around with my child **while playing music CDs or music DVDs**	3.12	0.82
16.	Dance around with my child **while I** sing songs or perform rhymes **for** my child	3.00	0.80
17.	Dance around with my child **while he/she** sings songs or performs rhymes	2.54	0.99
18.	Dance around with my child **while we** sing songs/rhymes **together**	2.68	0.97
19.	Notice that my child's musical vocalizing **sounds rhythmic, but not like singing**	2.52	1.00
20.	Notice that my child's musical vocalizing **sounds like singing**	2.83	1.02
21.	Play toy instruments **for** my child to listen to/observe	2.60	0.99
22.	Play toy instruments **with** my child	2.73	0.96
23.	Read **books** that have a **music theme** to my child	2.25	1.15
24.	Attend **early childhood music classes** with my child	1.84	1.10
25.	Attend **music concerts, ballets, or musicals** with my child	1.85	0.97
26.	Play a musical instrument **by itself while my child listens**	1.80	1.05
27.	**Accompany myself** on a musical instrument **while I sing** for my child	1.59	0.91
28.	Play songs on a musical instrument **while my child sings along**	1.56	1.05
29.	**Invite my child** to play my musical instrument	1.90	1.18
	Parent Musical Activity Subscale (CMBI V.972)	2.59	0.57
	Parent Musical Activity Subscale (CMRBQ)	2.80	0.58
	$t = 4.894$, $df = 870$, $SE = 0.043$, $p < 0.0001$, 95% $CI = 0.210$ (0.126–0.294).		

Source: CMBI Part VIII (Valerio & Reynolds, 2015).

pre-recorded music, sang along to pre-recorded music (encouraging the child to sing also), danced to pre-recorded music as well as danced while singing, and spontaneously created songs using words familiar to the child. Moreover, the parents reported that they *sometimes* created songs/rhymes for their children using words and/or nonsense syllables, and *sometimes* they did so with the child participating and creating songs/rhymes too. They reported that they sang songs/rhymes during daily routines (*sometimes* upon the child's request), engaged in singing games (*sometimes* while dancing), played educational musical instruments (*sometimes* with the child playing also), and read books with a musical theme. However, the parents reported that they seldom (*rarely* to *sometimes*) took their children to childhood music classes or to concerts, nor did they accompany themselves on a musical instrument for the child to listen to or sing along with.

It is interesting to note that Romanik (2016) also employed the *Parent Music Activity* subscale within his *PSRKM* study with 207 parents of kindergarten children. We point out that Romanik's *Parent Music Activity* subscale score ($M = 2.79$, $SD = 0.74$, Cronbach's $\alpha = .90$) was no different than Valerio et al.'s (2012) *CMRBQ* subscale: $t = 0.200$, $df = 822$, $SE = 0.050$, $p = 0.842$, 95% CI = 0.010 (−0.088–0.108). However, the *Parent Music Activity* subscale score from *CMBI (V.972)* was significantly lower than Romanik's published subscale score: $t = 3.288$, $df = 462$, $SE = 0.061$, $p = 0.0011$, 95% $CI = 0.200$ (0.085–0.320).

Correlation analysis was carried out between *Parent Musical Activity* (Part VIII) and all other *CMBI (V.972)* subscales – as well as with other descriptive variables. See Table 9. The current findings confirm previous reports (e.g. Valerio et al., 2011, 2012) demonstrating that parents who reported higher frequencies of parent-initiated music activities (Part VIII) also reported increased observed music-related behaviours among their children for other subscales (i.e. Parts I-VII). The findings also confirm additional results of Valerio et al such as indicating that as the age of the child increased parents reported increased observed music-related behaviours. Albeit, we point out that there was a near-significant *negative* association between the child's age and the *Attention & Emotion* subscale (Part I); perhaps this indicates that parents tended to report higher scores in Part I for babies and infants versus toddlers and preschoolers, and that may simply reflect the nature of the items as more relevant for children 0–2 years-old than children 3–5 years-old.

Table 9 Correlation Matrix Of CMBI Subscales With Descriptive Variables

	Part I Affect & Emotion	*Part II Vocalization*	*Part III Moving*	*Part IV Daily Routines*	*Part V Requests*	*Part VI Taking Turns, Initiating, & Sharing*	*Part VII Creativity*	*Part VIII Parent Musical Activity*
Parent Music Activity	$r = .45$ $p < 0.0001$	$r = .50$ $p < 0.0001$	$r = .54$ $p < 0.0001$	$r = .49$ $p < 0.0001$	$r = .59$ $p < 0.0001$	$r = .51$ $p < 0.0001$	$r = .56$ $p < 0.0001$	
Child's Age	$r = -.12$ $p = 0.06$	$r = .42$ $p < 0.0001$	$r = .28$ $p < 0.0001$	$r = .23$ $p < 0.003$	$r = .50$ $p < 0.0001$	$r = .20$ $p < 0.002$	$r = .45$ $p < 0.0001$	$r = .02$ $p = 0.67$
Birth Order	$r = -.04$ $p = 0.49$	$r = .04$ $p = 0.52$	$r = .005$ $p = 0.94$	$r = -.11$ $p = 0.10$	$r = .09$ $p = 0.15$	$r = .03$ $p = 0.62$	$r = .03$ $p = 0.63$	$r = -.03$ $p = 0.64$

As can be seen in Table 9, there was no association between the child's age and parent-initiated music activities (Part VIII); this finding may indicate that parents engage in musical activity with their children to the same extent and intensity regardless of age or developmental stage. Moreover, as can be seen in Table 9, observed music-related behaviours were not more prevalent among firstborns compared to children born into families with other siblings; this finding also contradicts previously published reports (e.g. Custodero et al., 2003). We also conducted an analysis of variance (ANOVA) for parent-initiated music activities (Part VIII) subscale scores with children's sex (gender) as a covariate; the results indicate no differences of parental engagement for children of one sex over the other (i.e. boy versus girl or visa versa): $F_{(1, 251)} = .498$, $MSe = .325$, $p = .481$. Further, parent-initiated music activities (Part VIII) were not found to be more prevalent among parents with higher levels of education, monthly income, or SES. See Table 10. These latter results also contradict previously published reports (e.g. Custodero et al., 2003) that suggest higher educational levels are associated with a higher frequency of parental singing. Most specifically, the results are also not in line with Ilari (2005) who claimed that professional mothers with increased income,

Table 10 Correlation Matrix Of Parent Music Activity With Descriptive Variables.

	Parent's Level of Formal Education	*Parent's Self-Report Monthly Income*	*Socio-Economic Status (SES)*
Parent Music Activity	$r = .11$ $p = 0.11$	$r = .004$ $p = 0.94$	$r = .07$ $p = 0.28$

Table 11 CMBI (V.972) Subscale Scores By Gender Of Parent Respondent (Mothers vs. Fathers)

	*Mothers**		*Fathers**		
Subscale	*M*	*SD*	*M*	*SD*	*Sig*
Part I Attention & Emotion	3.25	0.75	2.93	0.98	$F_{(1, 254)} = 7.25$, $MSe = .655$, $p = .008$, $n_p^2 = 0.028$
Part II Vocalization	2.80	0.72	2.50	0.93	$F_{(1, 254)} = 7.26$, $MSe = .603$, $p = .008$, $n_p^2 = 0.028$
Part III Movement	3.77	0.69	2.36	1.00	$F_{(1, 254)} = 13.26$, $MSe = .596$, $p = .000$, $n_p^2 = 0.05$
Part IV Daily Routines	2.32	0.77	2.05	0.64	$F_{(1, 254)} = 6.11$, $MSe = .551$, $p = .014$, $n_p^2 = 0.024$
Part V Requests	2.54	0.78	2.25	0.90	$F_{(1, 254)} = 5.99$, $MSe = .660$, $p = .015$, $n_p^2 = 0.023$
Part VI Taking Turns, Initiating, & Sharing	2,34	0.86	1.93	0.83	$F_{(1, 254)} = 10.66$, $MSe = .724$, $p = .001$, $n_p^2 = 0.040$
Pat VII Creativity	2.24	0.82	1.99	0.91	$F_{(1, 254)} = 4.16$, $MSe = .702$, $p = .042$, $n_p^2 = 0.016$
Part VIII Parent Musical Activity	2.68	0.53	2.29	0.60	$F_{(1, 254)} = 22.86$, $MSe = .299$, $p = .000$, $n_p^2 = 0.083$

* Note: Mothers = 77% ($n = 196$); Fathers = 23% ($n = 60$).

sing more often to their babies than mothers classifying themselves as housewives or students; accordingly, professional women who reportedly spent considerably less time with their infants over-compensate for their absence by singing with babies more frequently.

Finally, the current study confirms findings by Custodero et al. (2003) as well as by Lamont (2008) indicating that mothers tend to be more observant and engaged in music activity than fathers. See Table 11. As can be seen in the Table, the mother-respondents reported significantly more observed music-related behaviours (Parts I, II, III, VI) and reported increased parent-initiated music activities (Part VIII) than the father-respondents.

Discussion

The current study attempted to explore *Parent Musical Engagement* (PME) among everyday families from the general population. To advance this goal, the *Children's Music Behaviour Inventory* (Valerio & Reynolds, 2015) underwent a successful process of translation from English to Hebrew. Such efforts necessitated few cultural and musical adaptations specifically targeting Israeli culture. We were challenged to graphically reposition the text as a mirror image without diminishing previously demonstrated reliability properties of the questionnaire. Foremost, the current study found that none of the 97 items listed among the eight parts of *CMBI* were scored near naught (i.e. *never*). The lowest mean score for observed music-related behaviour (item #59) was 1.67, while the lowest mean score for parent-initiated music activity (item #27) was 1.56. This finding demonstrates that *CMBI* as developed by Valerio et al (previously known as *CMRBQ*) is a valid *culture-free* inventory of children's musical behaviour that can be observed by parents without specific training. In addition, *CMBI* provides parents an inventory of musical activities that they can recognize as familiar and similar to their own self-initiated engagement with their children.

We cannot but notice that *CMBI (V.972)* subscales scores were consistently statistically significantly lower than *CMRBQ* subscale scores as reported by Valerio et al. (2012) for each and every subscale. See Tables 1–8. Albeit, reliability analyses indicated that not only each and every subscale score was comparable to the American sample, but that as a set of scores, these were highly reliable for the Israeli sample ($M_{\text{Cronbach's}}$ $\alpha = 0.86$, $SD = 0.06$, Range =.73–.91) and identical to the American sample ($M_{\text{Cronbach's}}$ $\alpha = 0.86$, $SD = 0.06$, Range = .77–.97). It is important to point out that when looking at the differences that surfaced, we can only consider average subscale mean scores as Valerio et al never published raw scores for *CMRBQ* items. As a side bar, we also note that Valerio et al never published all *CMBI* items, but rather only selected items (e.g. Valerio et al., 2012). On the other hand, Romanik (2016) did list items of Part VIII (with item raw scores in an appendix of his unpublished thesis). Hence, the current article is perhaps the first-time publication of the complete inventory. Subsequently, we can only speculate a few notions for the differences between *CMRBQ* and *CMBI (V.972)* that surfaced:

1. Cultural Differences. Israeli parents may be more conservative in their self-response ratings compared to American parents. That is, Israeli parent-respondents more often marked their children's behaviour as *sometimes* rather than *frequently* (as was among American parents). Or, perhaps Israeli parents spend

less leisure time at home than American parents, and consequently initiate less musical activity with fewer observations concerning musical behaviour of their children (than American parents). This explanation accounts for the fact the standard work week in Israel begins on Sunday with a 6-day work-week versus the 5-day work-week practiced in America. In addition, there is but one day for the weekend rather than a two-day weekend.

2. Technological Advancements. There have been vast technological changes that have occurred since Valerio et al collected their data in 2009. Namely, home environments nearing the year 2020 are quite different as a result of today's media saturated environment. Perhaps, there is less parental musical engagement in the family nowadays, and such circumstances are far more general having less to do with parents in Israel. For example, today's lifestyle has brought digital devices and media access to every household including various screens (such as tablets and smartphones) that are often used to support childrearing tasks and help parents in the challenging reality of managing family routines. Unfortunately, technological advancement may have subsequently reduced musical activity with infants, babies, toddlers, and preschoolers than was practiced a decade ago.
3. Sample Bias. As we pointed out above, differences between *CMRBQ* and *CMBI (V.972)* may reflect the sample recruited by Valerio et al. (2012). That is, perhaps the American sample was compromised by motivations, incentives, and personal interests, causing inflated responses and increased subscale scores. Valerio et al's respondents were personally recruited by the administrator of their own child's day-care centre, were conscious of financial incentives for each centre to receive completed questionnaires toward the purchase of music-related products, and were aware that their childcare center director would personally inspect their returned questionnaire. *CMBI (V.972)*, then, perhaps employed a more ecologically effective sample providing a much more reliable set of norms for musical engagement in the family than was published for *CMRBQ*.

The findings of the current study demonstrate that in the home environment, children vocalize, reproduce declamation rhymes, sing songs, move and dance, clap rhythms, listen to pre-recorded musics, make requests to hear singing and instrumental performance, take turns, initiate, and share with others during musical activity involving musical games, and creatively make up words and melodies. Further, the findings demonstrate that parents initiate musical activity including singing, reproducing declamation rhymes, moving and dancing, and playing pre-recorded musics; these musical activities are then embedded in their daily routines. However, for the most part, at least in Israel, parents do not often go with their children to childhood music classes or concert venues. Unfortunately, we found that parents seem less apt to accompany themselves on a music instrument when they sing to their children (than had been reported in past surveys), and because children may be far less exposed to instrumental performance they are far less observed as pretending to play an instrument.

On a final note, *CMBI* provides an opportunity for parents to take stock in their own behaviour. In the debriefing procedure, parents often reported that they had not been aware of *how* or *why* they engaged with music among their very young children. But, by reading through the items of *CMBI*, they gained insight about the value of music engagement for children under five years of age. It is interesting to note that Beck (2018) also echoed similar sentiments in his study employing *CMBI*: 'If parents

have an awareness and knowledge of music responses ... they may be guided to understand how to encourage and foster their child's music development and learning' (p. 6). After reading through the items of the *Children's Music Behaviour Inventory*, and having recalled the observed music-related behaviours of their own child, our parent-respondents reported to more clearly understand how music does in fact accompany family daily routines, and how music engagement is an essential component within the parent–child relationship.

Annotation by Warren Brodsky

Like most other undergraduate students in music education programs in the 1970s, I was not aware of the field of music development as a foundation of general music education. Students were exposed to a host of pedagogical manifestos with methodological applications including those of Emile Jacques-Dalcroze, Carl Orff, Zoltán Kodály, Shinichi Suzuki, Rudolf von Laban, R. Murray Schafer, John Paynter, Barbara Andress, Francis Weber Aaronoff, etc. The field of music development was then primarily treated as unique from other aspects of human development, and for the most part was associated to the investigation of talented children – a *have-or-have-not* art form rather than an overriding aspect of human behaviour. But then in the early 1980s, during my advanced training as a music psychotherapist at Hahnemann Medical College in Philadelphia, I was introduced to 'Normal Musical Development' by Cynthia A. Briggs – director of the program and a national leader in the field of Music Therapy. Akin to other music therapists, Briggs viewed normal musical development as the basis for understanding human development; a prerequisite to implementing therapeutic interventions for under-developed and maladaptive children. Although there were already many investigators who furthered the field of normal musical development with observation, research efforts, and published materials (e.g., Cass-Beggs, 1978, 1986; Michel, 1973; Moog, 1968; Nash, 1974; Shuter-Dyson & Gabriel, 1968/1981; Van Zee, 1976; Zimmerman, 1971), in my mind none were as comprehensive (or user-friendly) as Marvin Greenberg's (1979) book, titled *Your Children Need Music, A Guide For Parents And Teachers Of Young Children*. This book included an 80-page section on the foundations of musical growth and the musical experience of children between ages 0 and 5, with tables illustrating children's development through typical response behaviours for motor, social-emotional, intellectual, and language/verbal/musical domains.

Yet, no one thus far had successfully tackled the challenge of integrating normal musical development with the other accepted stage-models of cognitive and/or psychosexual human development, such as those established and advanced by Freud, Piaget, Erickson, Kegan, Mahler, Stern, etc. Throughout the early 1980s, Briggs and Bruscia (1985) developed models for understanding normal musical development. Subsequently, Briggs (1991) outlined a four-phased model from birth to age six, with milestones in each phase (referred to as: Reflex, Intention, Control, and Integration) corresponding to four areas of musical development (auditory, vocal/tonal, rhythmic, and intellectual [i.e., perceptual and reasoning] domains). Briggs foresaw the need to develop valid tasks so that the skills within each phase could be reliably assessed in order to generate norms of musical development, based on the assessment of normal children.

During the period of time leading up to the millennium, and thus far for the last two decades post-millennium, the main thrust of empirical efforts in the field of music

psychology has focused on investigating the human brain – the neuroscience of music. These studies target the effects of musical training and music expertise on the brain, and forward the notion that such studies will uniquely provide a new frontier with which to examine and explain differences in human development. Hence, in the mainstream, studies compare brain anatomy and neural function (i.e., responsiveness) between musicians versus non-musicians – both among children and adults. Some of this research also targets the utility of genetics (i.e., nature versus nurture). Nonetheless, it is truly unfortunate, that normal musical development has long been eclipsed by music scientists, and that the music-neuroscience field has left a supreme imprint and overwhelming impression on future researchers that efforts investigating implicit normative musical behaviours solely fit an agenda of yesteryear.

Sometime towards the end of 2015, I came across a paper, titled: "Construct Validity of the Children's Music-Related Behavior Questionnaire" (Valerio, Reynolds, Morgan, & McNair, 2012). It should be pointed out that both Wendy Valerio and Alison Reynolds were associates of Edwin E. Gordon at Temple University (Philadelphia, USA). The *CMRBQ* impressed me as being perhaps *the* most significant catalogue of behaviours (from what I could remember at the time of my first reading) describing normal musical development. The items were transparent and easy to grasp. The questionnaire was designed to mirror musical behaviours as observed by untrained parents of young children between 0 and 5 years of age in their natural home environment, as well as to evaluate parent-initiated musical engagement. It was of course so very exciting to realize, that perhaps there was no longer any need to cultivate valid music tasks that echo skills and abilities fitting specific ages of maturation in order to reliably generate norms of normal musical development (a requirement outlined by Briggs). Three years after the first publication of the questionnaire, Valerio and Reynolds re-released *CMRBQ* under the title *Children's Music Behavior Inventory* (CMBI). The intentions of the current study described in Chapter 7 were: (a) to translate *CMBI* to the Hebrew language; (b) to collect data from a wide-spread general population in Israel; (c) to provide findings indicating levels of cross-cultural validity; and (d) provide a set of norms for normal musical development as based on in-home musical behaviours of young children aged 0–5. The findings demonstrated that *CMBI* is culture free, and presented an updated set of norms reflecting normal musical development. The Israeli sample of children was not so different from the American sample of children. We note that in a debriefing procedure almost all Israeli parents portrayed themselves as having gained insight about the value of music engagement for their young children just by completing the survey (i.e., thinking about the questions), and when reflecting on their children's behaviour, they perceived that they are now more so appreciative of music engagement as an essential component within the parent-child relationship, than previously.

We cannot at this time estimate the impact of the current article (Chapter 7) on the field. Nonetheless, in an interesting development, we (Brodsky & Sulkin, 2018) continued to employ *CMBI* with another sample of the population – one that would not necessarily be considered to reflect the general population – namely, Religious Orthodox and Ultra-Religious Orthodox Jews in Israel. This population is considered a cultural group different from secular Western liberal-minded Israelis. They live in distinct detached and isolated communities, according to strict beliefs in religious commandments that dictate specific behaviours and in-home traditions. This pilot study aimed at exploring *if* and *when* these parents engage in music activities during

the everyday care of their infants and toddlers. We wondered if music activity is similar among this community compared to the general population (as found in our study as presented in the Chapter). Although most parents of secular-based Western industrialized societies believe that the use of music with their young children has developmental value in accelerating emotional, sensorimotor, and cognitive maturity, as well as in encouraging social bonding, we were interested to explore if such beliefs and parental-initiated music engagement exists among the religious orthodox and ultra-religious orthodox population in Israel.

The pilot study recruited 66 parents of young children (two groups each of 33). The sample included only singletons (i.e., no twins), with only parents as respondents (i.e., no grandparents, aunts, etc.). The children of both samples (Orthodox *versus* general population) were matched by age, sex, and the parent respondent (moms or dads). The final sample consisted of children between 1 and 54 months of age (with an average age of 25 months), 44% girls, as observed by 44 moms and 22 dads. We note that there was a significant socioeconomic status (SES) difference between the subgroups; families from the general population reported significantly higher SES. The pilot study found that music engagement and children's music behaviour was very similar for both subgroups. Namely, there were no statistically significant differences for any of the seven subscales involving observable musical behaviour of children (i.e., Affect & Emotion, Vocalizations, Moving, Daily Routines, Requests, Taking Turns, and Creativity), nor for self-reported Parent Music Activity. In general mothers rated their children and themselves higher than did fathers. But, Orthodox fathers rated their children's music behaviour, as well as their own parent-initiated music engagement, higher than did secular fathers of the general population.

At this very early venture, we have come to view the use of *CMBI* as a set of parent observable items (i.e., tasks) reflecting normal musical development, that more than anything else, may be indicative of biologically innate human behaviours, which certainly reflect a common denominator uniting all people despite differences of socioeconomic level, cultural outlook, religious custom, and political beliefs. Namely, the similarities that seem to have surfaced in this pilot, may simply imply (and to some measure reveal) a more natural evolutionary origin of music: parent-initiated music engagement is an intuitive platform that supports early child development and solidifies bonding among familial members.

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Part II

Musical Development