

# **Gender associations and musical instruments: Understanding the responses of nursery-aged children**

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# Abstract

**Background:** Society remains gender-differentiated, and the development of inappropriate stereotypical attitudes appears to be one factor preventing many individuals from achieving their true potential. A significant level of attention has been given to challenging inappropriate stereotypes in older children. However, previous research suggests that many gender stereotypes already exist by the age of three. Therefore, it could be the case that well-established stereotypes are being challenged too late and in inappropriate ways, due to a lack of understanding as to how experiences impact on complex development.

**Purpose:** This small scale, in-depth study explored the links which nursery children made between the sound of a musical instrument and notions of gender. More specifically, the research focused on the thought process whereby that link is made.

**Methodology:** A total of 83 children from five nurseries in England participated in a bespoke activity in which they were played a series of musical excerpts and asked to attribute these to a cartoon image. Recorded data were transcribed and a three-level qualitative analysis was carried out, using a 'ways of power' conceptual framework.

**Findings:** Our analysis suggested that the children's decisions were influenced by a number of 'ways of power', regardless of whether they had 'direct' or 'indirect' knowledge of the instrument. Even the youngest children seemed able to draw on a wide range of experiences that enabled them to construct a range of meanings about themselves, gender, and the roles they play in the various contexts in which they live.

**Conclusions:** The study draws attention to how very young children are able to reason, evaluate and think in complex ways which go well beyond simply adopting and enacting the attitudes of those around them. Schools, and nurseries in particular, should be fully aware of the level of thought that young children appear to bring to the experiences they gain on a daily basis.

**Keywords:** nursery; early years; stereotyping, gender, musical instruments, ways of power

# Introduction

The term ‘gender stereotype’, relates to the beliefs that individuals hold about the characteristics which belong to a particular gender (Biernat and Kobrynowicz, 1999). The precise age at which children begin to develop ideas about gender roles and gender stereotypes, the pattern by which these stereotypical attitudes develop, and the facets of a society around which stereotypes form, have received varied levels of attention. For example, the development of stereotypical attitudes towards toys has received very high levels of interest (Cherney and Dempsey, 2010; Dinella & Weisgram, 2018), whereas research that directly explores how very young children think about, and rationalise, their decisions about gender stereotypes is relatively unknown (Blakemore, Bernbaum & Liben, 2013). However, regardless of the ages and the stages through which stereotypes develop, there is an increasing acceptance of the fact that understanding how such beliefs develop in early childhood is of particular importance for a number of reasons. First, it has been argued that stereotypes in very young children can have a major impact not only on the development of particular skills, (Dinella & Weisgram, 2018; Jirout, & Newcombe, 2015) but also on the decisions and choices that young children make in later life by limiting choices to those which they see as being gender appropriate (Blakemore & Centers, 2005). Second, children’s life chances appear to be heavily predicted by their development and the learning that takes place in the first five years of life (Field, 2010), and it is these *‘opportunities for learning and development in those crucial years that together determine whether their potential is realised in adult life’*

Globally, society remains gender differentiated and, in particular, the contribution to economic growth and development to be gained from enabling males and females to achieve their full potential is often not acknowledged (Cooray & Potrafke, 2011; Haines, Deaux, & Lofaro, 2016). Inappropriate gender norms still seem to exist in all levels of society (Unicef, 2020), and the development of inappropriate stereotypes that directly or indirectly limit expectations and aspirations appears to be one factor preventing many individuals from achieving their true potential (Bian et al., 2017; Marcus, 2019). Certainly, given the inequalities that can stem from inappropriate stereotypical attitudes, an increased understanding of the development of potentially limiting gender stereotypes in the early years must surely be a crucial element to be addressed further with schools and, in particular, early years educators clearly have an important role to play (Dodge et al., 2017; Lynch, 2015; Maccoby, 2002; Mulvey & Killen, 2015). In spite of numerous key actions, UNESCO (2020) reports that females represent a tiny percentage of students studying science and technology subjects in Higher Education, are significantly under-represented in the cultural and creative industries and, of the children globally who will never attend school, the majority are female.

Whilst a significant level of attention has been given to challenging inappropriate stereotypes in older children (Childhood Education, 2019), previous research suggests that many gender stereotypes

already exist by the age of three (MacNaughton, 2009; Martin et al., 2012; Marshall & Shibazaki, 2011). Therefore, it may well be that well-established stereotypes are being challenged too late and in inappropriate ways, due to a lack of understanding as to what precise experiences impact on complex development and how to challenge them effectively (Emilson, Folkesson & Lindberg, 2016). Indeed, specific work on challenging the formation of gender stereotypes has suggested that schools are still not able to do this in a way that is effective, and a significant gap exists in our knowledge of what experiences impact on their development (Mulvey & Killen, 2015). For example, Horn and Sinno (2014) found that pushing some children towards non-stereotypical activities could be the cause of some children becoming socially isolated, socially excluded (Lee & Troop-Gordon, 2011) and experiencing victimisation (Aspenlieder et al., 2009).

To date, pedagogical initiatives aimed at challenging the development of inappropriate stereotypes in schools have had limited results for a whole range of reasons (Chisamya et al., 2012; Jaboneta, 2018). Wingrave (2018), for example, identified issues of ‘gender blindness’ amongst pre-school practitioners who believed that gender was either biological and innate, or mainly learned from families. As such, they argued that teachers had no role to play in a child’s gender development. Gullberg et al. (2017) found similar views amongst student teachers carrying out a placement in preschool science classes highlighting how ‘gender-unaware pedagogy has consequences at subject level’ (p.711). Although the Norwegian government places gender equality as a core value, and the Norwegian Kindergarten Act requires all teachers to promote equality, Meland and Kaltvedt (2017), still found that Norwegian kindergarten teachers frequently related differently to girls and boys, which, in turn, they argue, contributed towards the upholding of traditional stereotypes. This finding prompted them to conclude that:

*‘Kindergartens must continually analyse their own actions so that stereotypical gender roles can be counteracted in order to break ongoing gender role practices and thereby facilitate change within education and kindergarten practice’ (p.101)*

It is within this context that we position the current study.

## **Background**

### ***Gender associations, and stereotypes***

The complex issue of how and why different societies group specific behaviours and practices together and attribute them to one gender or another has been well debated, with a number of competing theoretical perspectives with biological, socio-cultural and social cognitive theories tending to dominate the arguments (Ruble et al. 2006). Full theoretical and conceptual discussion does not lie within the scope of the current paper; however, here we present a brief summary for the

purpose of providing some background and context relevant to our study. Those adhering to the first perspective argue that men and women are biologically different, (Baron-Cohen, 2004; Browne, 2013) and therefore any emerging gender differences are the result of innate and/or biological differences. In contrast, socialisation theories argue that gender differences arise when children adopt and enact attitudes and behaviours learned through interactions with society. For example, differential treatment by parents and family members can either positively or negatively reinforce specific attitudes (Halpern & Perry-Jenkins, 2016), whilst frequently experienced images from a range of media (Bakir & Palan, 2010; Otnes & Tuncay-Zayer, 2012) can either reinforce or deter particular behaviours (Bandura, 1977; Ruble et al., 2006). However, authors such as Kohlberg (1966) have argued that ‘... *our approach to the problems of sexual development starts directly with neither biology nor culture, but with cognition*’ (p.82). Hence, this perspective argues against children simply absorbing and learning what they experience, and then subsequently modelling their own gender stereotypes based on these experiences. The cognitive approach argues that the formation of gender stereotypes is influenced and shaped by significant levels of reason and logic (Bussey and Bandura, 1999). In this paper, we explore this area by investigating the extent to which very young children (age 3 and 4 years old) make use of significant levels of logic and reasoning to fulfil the task of assigning gender to a musical instrument.

Martin et al., (1995) argue that two forms of association, vertical and horizontal, take place when young children are faced with the need to identify a particular gender associated with a cultural product - for example, a cultural object, activity or value. Young children quickly learn which toy, dress code or behaviour link to a particular gender. Therefore, vertical associations occur first, when children draw on their direct knowledge to link a particular gender with a particular product of their cultural context. Horizontal associations occur when a child makes a gender association through inference. That is, a child may have no direct knowledge or experience of a gender associated with a particular object, but may be able to infer such an association by identifying and linking the gender attributes of a known object, with similar attributes to the unknown object. For example, a boy may have no direct gender associations for a toy hovercraft, but may infer a masculine association based on their direct knowledge of either their own preferences for toys, or having seen boys playing with cars and boats. The current research both adopts *and* adapts this vertical/horizontal model as a way of carrying out an initial analysis of the data.

Following on from this idea, this current study will also draw on theory relating to concepts of power. Foucault described ‘power’ as being any entity that caused an individual to act in one way rather than another (Rabinow, 1991). Taking this idea further, MacNaughton, (2009) identified and describing four conditions (or ‘powers’) that ‘... impact on how children construct meaning and therefore how children learn’ (p.56). This approach argues that, as each of these four conditions are experienced, the meaning that a child constructs carries with it an understanding of the ‘power’ that accompanies the

experience. That is, all artefactual elements arising within a particular culture do not exist within a neutral space but automatically carry with them an associated power. In other words, a child who observes a behaviour, or experiences a specific attitude, will learn not only the behaviour, but also the ‘power’ associated with reproducing that behaviour.

MacNaughton (2009) argued that four main ways of power existed, namely:

*The power of pre-existing cultural imagery and cultural meaning.* Within this condition are cultural and traditional meanings that are experienced through imagery and practices.

*The power of expectations.* Within this condition are the social and political structures that express examples of what is and what is not expected; how individuals should think and act.

*The power of positions.* Within this condition are those contexts in which children have experienced the ‘power’ gained through adopting a particular stance - for example, adopting a behaviour favoured by a teacher.

*The power of the marketplace.* Within this condition sit meanings extracted from advertising and commodities.

MacNaughton (2009) takes this one step further by arguing that very young children not only construct their own ideas about what a specific artefact, value or behaviour means but they also learn to manipulate these meanings according to the particular context in which they are situated. As part of the analysis of our data, these four ways of power will be adopted as a template to help in understanding more clearly why young children perhaps make specific gendered nominations and to explore further the extent to which these are manipulated.

### ***Gender and Musical Instruments***

The link between particular musical instruments and a specific gender is well documented. Over forty years ago, Abeles and Porter (1978) found clear associations between gender and some musical instruments. However, more than 30 years later, Abeles’ (2009) study of the instruments actually being played by males and females suggested the intervening decades had produced limited changes, causing the author to again argue that “... gender associations with musical instruments have far-reaching consequences beyond the music classroom and may restrict the vocational aspirations of both female and male musicians” (p.138). More recently, Wrape et al. (2016) also “... found evidence that instrument gender stereotypes remain entrenched and pose a persisting problem facing music educators” (p.40). Certainly, regardless of the numerous variations in methodology utilised by a range of previous studies, the flute, the violin and the clarinet consistently appear to be associated with females, whilst brass, guitar and percussion have tended to be more associated with males. Whilst

historically, a number of musical instruments have been deemed to be either appropriate, or inappropriate for males and females, due to a specific form of symbolism or inappropriate association (Leppert, 1993), the precise reasoning behind why some musical instruments should be currently associated with a particular gender is not well understood.

A number of previous studies have suggested a range of factors that may or may not contribute to such associations. For example, Fortney, Boyle and DeCarbo (1993) argued that siblings, family and instrument timbre made significant contributions towards any gender association an individual may have with a particular instrument; whereas Sinsel, Dixon and Blades-Zeller (1997) suggested that associations developed as a result of an individual's psychosocial identity. O'Neill and Boulton (1996) argued that 'like and dislike of the sound', and 'too difficult for male/female to play' were the main reasons for assigning an instrument to a particular gender. What is relatively clear is that many of the historical patterns of gender associations with musical instruments are currently still in evidence, with pupils most frequently opting to learn what are considered to be the most gender appropriate instruments at all stages of education. In studies of kindergarten aged children, (Marshall & Shibzaki, 2011) strong stereotypical attitudes were identified amongst three and four year old children not only towards individual musical instruments, but also towards a number of musical styles. Further, work by McKeage (2004) found that, amongst college students, the gender associated with certain instruments tended to be the main reason females chose not to participate in jazz ensembles. Reasons cited included the idea that jazz ensembles tended to be male dominated communities, the lack of female role models and a range of institutional obstacles that "narrowed participation options" (p.343). Hence, musical style and the communities of instrumentalists they either require or attract, also appear to carry a range of gender labels that may limit the choices and experiences that individuals see as being available to them.

A number of studies have suggested that females are more willing than males to play gender-inconsistent musical instruments (Cramer, Million & Perreault, 2002). Harrison and O'Neill, (2000) found females to be more tolerant than males of musicians playing gender-inconsistent instruments, and therefore in this sense, females could be said to be less restricted by gender associations. Additional support for the idea that males may face more limitations as a result of gendered attitudes towards musical instruments has also been put forward by Conway, (2000). This is a finding that also chimes with previous work with gendered toys (Frey & Ruble, 1992), which, similarly, found that females were far more willing to play with gender-inconsistent and gender-neutral toys than boys.

Studies that have explored effective ways to challenge, or change, gendered attitudes towards particular musical instruments have, however, produced mixed results. Pickering and Repacholi (2001), found that the gender preferences of young children could be influenced through experiencing video images of instruments played by 'gender inappropriate musicians' e.g. a male playing a flute

and a female playing a drum. Walker (2004) argued that as students tend to identify more strongly with individuals of their own sex, the positive role models of both male and female musicians playing both gender-consistent / inconsistent instruments should be employed at every opportunity. However, Killian and Satrom (2014) found that pictures of what were considered to be gender inappropriate musicians produced no significant impact on pupils' choices of the instruments they themselves wished to learn. Harrison and O'Neill (2000 & 2003) explored the extent to which the gender preferences for a particular instrument amongst 9-11 year old children could be modified by exposure to male and female musicians playing what were considered to be gender typical / atypical instruments. Findings suggested that both males and females most strongly identified with same-gender role models playing gender typical instruments, and gender atypical instruments tended only to be selected when played by a same-gender musician. However, as the authors pointed out, this could mean that preferences for atypical gender instruments could be modified by exposure to same-gender musicians. However, what is equally possible, is that preferences for gender typical instruments could be affected in a negative way by exposure to role models in which gender typical instruments are played by non-same gender musicians.

It can be seen that a range of previous studies have clearly highlighted the link between individual musical instruments and a particular gender. What gender is actually associated with which particular instrument, and precisely how this choice or preference is operationalised are issues that have been discussed elsewhere (Abeles et al., 2014; Wych, 2012). However, the precise reasons why a specific gender is assigned to, or associated with, an individual instrument is less well reported; and this is especially the case as regards the perceptions of very young children. Previous research studies exploring the rationale for stating preferences, or deciding on the gender associated with an instrument, have tended to contain limited information. For example, Fortney, Boyle and DeCarbo (1993) suggested that factors including the attitudes of teachers, parents and friends, impacted on the preferences of middle school children, in terms of the instruments they opted to learn. Elsewhere, O'Neill and Boulton (1996) suggested that 'physical' (size/weight) aspects of the instrument, previous experience of seeing the instrument played and the volume, pitch and timbre of an instrument were all possible reasons. However, we have found very limited work that has explored, in detail, not only the possible reasons behind gender associations with instruments, but the cognitive process through which such decisions are made.

### ***Purpose***

This research presents the results of a study carried out in nursery schools in England in which the responses of very young children towards a number of 'gendered' musical instruments were obtained. Our main aim was to better understand the process by which very young children made those



responses. Given that many previous studies have explored ‘what’ children nominate as being associated with a particular gender, we wanted to focus, in depth, on the narratives and processes that ultimately lead to that nomination. We wish to further argue here that an increased understanding of how young children make their gendered decisions can also increase our understanding of what factors impact on their formation and how they can be more effectively challenged.

As such, our research questions were:

- i. *How do 3-4 year-old children decide on the gender associated with a musical instrument?*
- ii. *What factors influence their decision?*

## **Methodology**

Our previous work (Marshall & Shibazaki, 2011, 2013) with nursery-aged children utilised a bespoke task designed specifically to remove the need for children to give any form of verbal response. In order to complete the task, children were required to use only a ‘pointing finger’ to indicate the gender of the cartoon character they perceived to be responsible for the music they were hearing. However, one noticeable side effect of this research was to observe the significant number of children who clearly wished to talk, sometimes quite extensively, about the decision they were making. As a consequence, on this occasion, the same task was used as in the previous quantitative study, with the one exception that ample opportunity and encouragement was given for children to discuss the reasoning behind the nominations they made.

### ***Ethical Considerations***

Ethical approval was applied for prior to data being collected, and granted by the university in which the author(s) were based; the research was carried out in accordance with the ethical code of conduct as set down by the British Psychological Society. Additional consents were gained from the headteacher and nursery teachers within each school. All parents/primary care givers received an information sheet detailing their right to confidentiality and anonymity, and also their right to withdraw at any point without reason. Although consent for children to take part was gained through ‘opt-in’ consent forms returned by parents, the final consent to take part was given by each individual child. No child took part unless they confirmed they were willing to do so. Additionally, we adhered throughout to the idea of *continuous informed consent*; in that each child’s willingness to take part was verified with appropriate comments and questions throughout the data collecting activity. All collected data was anonymised by removing all personal and identifying information and it was stored on password protected media. Pseudonyms are used in reporting of data.

### ***Participants, procedure and data collection***

The participants were 83 children, aged between 38 months and 54 months, who attended one of five nursery schools in the south east of England, UK. There were 47 females and 36 males. As mentioned above, the same task was used as in our previous research (Marshall & Shibazaki, 2011) so that the children did not need to make any form of verbal response in order to participate. In this task, individual children were played a series of short musical excerpts accompanied by a cartoon image of a male and a female child. In total, seven short extracts were played, each of 10 seconds in duration and each featuring one of seven different musical instruments, all of which had demonstrated an association with a particular gender in a range of previous studies. Two visits to each nursery took place prior to the research being carried out, in order to ensure that the researchers were known to the participants. Initially participants were told, “*We are all going to listen to some music together and we want you to help us remember who is playing this instrument? – who plays this music?*” When required, short prompts were given, for example, “*Who plays this music – is it this one or this one – who do you think?*” All responses were treated as being correct and followed by the sentence, “*Can you tell me why?*” Where children felt sufficiently comfortable in talking about their decision, they were allowed to do so for as long as they wished. At appropriate points they were asked, “*Shall we do the next one?*” In instances where children did not feel inclined to give verbal responses or gave neutral responses such as ‘*because it is*’, they were simply invited to point to their nominated character. Whatever response was received, all participants were then encouraged and praised before the researcher moved to the next instrument. Nominations for each instrument were recorded on a summative sheet (male / female or both) whilst qualitative data was collected via audio recording.

Throughout the research, the concept of continued, informed consent was adopted in that children were continually asked if they were happy to continue. All children took part in the research on an individual basis within a quiet area of the nursery. Children had sight of a familiar adult at all times. The activity took approximately ten to fifteen minutes per child, with the actual musical examples lasting for a total of three minutes. Recordings were of a high digital quality and reproduced in stereo through two good quality speakers.

### ***Musical excerpts***

The seven chosen instruments were those which previous research generally agreed had an association with a particular gender (Abeles et al., 1978; Harrison et al., 2000, 2003). Therefore, flute, violin and clarinet were selected to represent female associated instruments; guitar, drums and trumpet were selected to represent male associated instruments, while piano was chosen as a gender-neutral instrument. Participants heard the seven excerpts of music in random order. All musical samples consisted of a short excerpt featuring the main instrument playing in a prominent way. No

excerpt featured the beginning or the ending of a musical piece and every effort was made to avoid substantial differences in tempo.

### *Data analysis*

All recorded data was initially fully transcribed onto summative sheets. After this, three levels of analysis were systematically carried out. Our first analysis involved simple frequency counts of the gender nominations made for each instrument. Next, we conducted our second level of analysis, which involved colour coding comments and assigning them to an analysis approach based on one of the two conceptual frameworks we selected to use: namely, (i) the vertical/horizontal decisions where responses were made according to the similarity of the instrument to another object or sound (Martin et al., 1995), and (ii) the 'ways of power', as set down by MacNaughton, (2009). This approach, underpinned by the conceptual frameworks, not only enabled us to categorise the comments but also, by using each conceptual framework as a lens, allowed us to attempt an interpretation from a given perspective. Categorisation of responses was, first of all, carried out independently by both researchers. Initially, agreement was achieved in all but seven cases. Further discussion took place to reach consensus and ensure a good level of consistency.

## **Findings and discussion**

Our results revealed that, overall, children in our study tended to continue to assign the same gender to each instrument as had been demonstrated in previous work (Abeles, 2009, Delzell & Leppla, 1992). Out of 83 responses, 68 children assigned the violin to the female character and 76 of the 83 responses attributed the flute music to the female character. In contrast, the drum was assigned to the male character in 52 of the 83 nominations, whilst the guitar was nominated 64 times as being male. The trumpet received 59 of the nominations for the male character. The clarinet and piano gained more mixed nominations, with the clarinet being assigned to the male in 41 of the nominations and the piano was assigned to the female in 44 of the nominations. In general, then, the nominations tended to follow well established patterns achieved by previous studies. However, our intention on this occasion was not to confirm the pattern of gender nominations towards individual instruments but rather to generate qualitative data which may enable us to better understand more of the *process* which children followed in order to decide on their nomination.

As expected, not all participants were willing to respond with any significant level of detail. For example, seven children preferred simply to point out their nomination without commentary. Similarly, 11 children tended to provide limited information or gave restricted responses such as, '*I know it is*' or '*because they do*'. However, the remaining 74 participants provided a wide range of

responses, which gave a relatively clear indication as to the reasoning behind their nomination. For example, responses to flute belonging to the female included explanations such as:

*“... because it sounds like a bird and I think she looks after it”*

*“... because I have seen the lady playing it for us”*

However, a significant number of responses were highly complex and, initially, the context and process were difficult to follow.

For example,

*“... you blow that...I saw lady playing it and her face was like this (puffs out cheeks) ... she was not pretty and I didn't want to play that...”*

As a consequence, it was felt necessary to use a more detailed form of analysis, possibly through which a more considered understanding of the process leading to each nomination could be achieved.

### ***Findings from analysis one***

Looking at the data overall, we found evidence suggesting that, in a number of cases, children made their nominations through some form of vertical association (Martin et al.,1995). That is, we obtained evidence of children basing their judgement on reasons or justifications related to direct experience of the particular instrument, or musical sound with a particular gender.

Examples of this type of decision-making included comments such as:

*“Boy ... because [name]'s brother plays that... I saw him and he let me do as well”*

*“... it's the girl - they play that in Mrs ... class and if you look through the window you can hear them.”*

In other words, nominations to a particular gender were made through some direct experience of the sound they were hearing in the excerpt.

On other occasions, there appeared to be evidence of horizontal associations. For example, in the case of one child with no vertical evidence of either a male or a female playing the drums, an association was made with one attribute that the child regarded as being common to both the drumming used in

the excerpt and with a behaviour he associated with boys: namely, 'loud volume'. This appeared to be subsequently linked horizontally to the issue of strength.

*“Boy” (why the boy?) “Because it’s loud - and you need to be strong to play loud – like that – so girls can’t do that”*

However, a number of responses were far more complex, with no apparent vertical or horizontal link. An example of this was the following response made to the excerpt of a trumpet playing:

*“Oh that’s boys...their music...because it’s loud and they make all the noise in the playground... girls are quiet ... that’s why the ladies like us... and we stay with them”*

As in the previous example, as a result of possibly having no vertical experience of the trumpet, the horizontal association was made between boys being noisy and the volume of the instrument.

What these examples appear to show is that the use of a vertical and horizontal experience can go some way towards providing an understanding of the way in which very young children produce a gender nomination when required to do so by an adult. In this example, the music and the sample share a common attribute: namely, 'noise'. Boys are perceived as noisy in the playground and therefore all things noisy are seen as being related to boys (Hellman, 2010). However, although this form of analysis can go some way towards increased understanding and appreciation of the decision making process, there is other meaningful evidence available which we needed to explore further in order to obtain a more complete understanding. Two further details were provided in the comments: namely, that the girls were preferred by the ladies on the playground and the girls stayed with the ladies. Therefore, in the next section, we will explore what further information we gleaned by applying the second level of analysis to the qualitative data we obtained.

### ***Findings from analysis two***

Analysis two builds on the notion of 'ways of power' (MacNaughton, 2009). Scrutiny of many of the responses we obtained suggested that there was some evidence that the children's decision-making could be seen as being influenced and shaped by one or more 'ways of power'. Here we give three examples from the analysis.

For the first example, we look again at the comment that had been made by Ellie (pseudonym) (3 years 2 months), on hearing the excerpt for drumming;

*“Oh that’s boys...their music...because it’s loud and they make all the noise in the playground... girls are quiet ... that’s why the ladies like us... and we stay with them”*

Further conversation with Ellie revealed how both the teacher and the adult supervisors on the playground reinforced the idea of the ‘noisy boys’, a consequence of which was that girls frequently gained favour with the adult assistants on the playground and frequently experienced the benefit of additional time in the playground as the boys were sent back into school first.

Thus, an analysis of this response could be argued to be as follows:

*“Oh that’s boys...their music...because it’s loud”*

Initially, there appears to be a vertical–horizontal association being made here. That is, we assume that an initial ‘vertical (direct)’ search of Ellie’s experiences reveals nothing. Therefore, having no direct experience of a gender associated with a drum, Ellie identifies a further attribute of the sound she is experiencing - namely, the volume of the instrument. She therefore associates the volume of noise horizontally, with the boys’ behaviour on the playground. This could also represent an aesthetic judgement in that volume is subsequently transformed into ‘noise’.

*“... they make all the noise in the playground... girls are quiet ... that’s why the ladies like us... and we stay with them”*

Here the vertical/horizontal association of volume is seemingly progressed and a knowledge of two possible powers could be impacting on how the gender decision is made. First, there is a possible association with the power of expectation. The comment ‘girls are quiet’, could relate to an understanding that behaving as ‘expected’ by people in, and with, power leads to obtaining benefit. However, the fact that Ellie then goes on to explain they are liked because of their quiet behaviour and this results in them staying with the ‘ladies’ suggests that perhaps they are more involved in positioning themselves along with the adults in the playground. That may represent one of those contexts in which children have experienced the ‘power’ gained through adopting a behaviour favoured by an adult or other person in power. There is an awareness that such positioning leads to a benefit -in this case, additional play. Of further interest is the possible assumption made by Ellie that by telling this story about her behaviour, and knowing that this positions her with one set of adults, for which she gains benefit, she might also be carrying out a form of ‘secondary positioning’. That is, through this story she positions herself in a beneficial way with the researcher, who, as an adult in the nursery, she regards as having additional ‘power’.

For our second example, we look in detail at the comment which was given by Sophie (pseudonym) (3 years 8 months):

*“... you blow that ... I saw lady playing it and her face was like this (puffs out cheeks) ...she was not pretty and I didn’t want to play that ...”*

This comment was interesting in that it related to a particular event in the musical life of the school, in that a group of musicians from the local music service had given a free concert attended by the children in the nursery. The trumpet player was indeed a young lady and thus the comment about the puffed out cheeks relates to her playing technique. An analysis of this comment could, therefore, be as follows:

*“... you blow that...I saw lady playing it...”*

The nomination appears for the trumpet to be initially female, given that the vertical (direct) experience is of a female playing the instrument. As such, it could be expected that no horizontal association was needed. However, Sophie goes on to make a further, different, horizontal association as a result of the instrument being played by blowing, causing a distortion to the face and the way the player looks.

*“... and her face was like this (puffs out cheeks) ... she was not pretty...”*

This subsequent comment appears to suggest both the power of expectation and the power of cultural imagery - that is, culturally, girls are expected to be pretty and take care with their appearance. It also suggests that, perhaps, there is a hierarchy of powers which are evaluated according to the maximum benefit to be gained.

*“... and I didn't want to play that ...”*

As a result of such deliberations, the final nomination defied the vertical (direct) experience of having actually seen a female playing the trumpet, and opted for the trumpet being a male instrument, with the power of cultural imagery (i.e. that a girl must be pretty) and expectation (i.e. behaving as expecting acquires benefit), taking preference over what had been directly witnessed.

For our third example, we look at the comment made by Mark (pseudonym) (3 years 9 months):

Mark: *“That's the boy – the book had one in it (catalogue) and the boy had it (the guitar) and I told my mum I wanted it for my birthday”*

Researcher: *“What did your mum say?”*

Mark: *“She said I be on Top of the Pops”*

To start, Mark nominated the guitar as a male instrument. The initial decision was made according to a vertical (direct) experience of having seen a male pictured with the instrument in a catalogue. However, taking into account the subsequent comments, there is also some possible evidence of at least two possible ‘powers’ in action. First, it could be argued that the power of the marketplace is present, in that the child wishes to obtain the guitar as portrayed in the catalogue as a birthday present. However, it could also be an indication that he was aware of the power of expectation, because by aligning himself with what the marketplace illustrated to be a male activity, he acted according to the wishes of his mother and subsequently would gain a reward - namely, being famous on the television.

As we make clear above, the purpose of the current study was not to continue to find support for the way in which very young children perceive individual musical instruments to be associated with a particular gender. Rather, our argument here is that very young children between the ages of three and four years old were able, as Kohlberg (1966) argued, to apply significant levels of cognitive activity in order to decide on the gender of a musical instrument. Therefore, we argue that the use of musical sounds can be an effective way of producing meaningful data relating to how small children explain assigning a particular gender for a musical sound, thus generating useful insights.

It was also the case that, overall, the data revealed an impressive level of listening skills that appear to be present in young children, with many of them demonstrating an ability to identify the sound of the individual instruments. In addition, though not illustrated above, some were able to provide evidence of identifying a particular style of music and associate it with a particular place or person. Two further interesting issues related to the fact that, first, many children were able to generate explanations, arguments or rationales in support of their nominations, even in cases where they appeared to have no direct experience, or prior knowledge, of the instrument they heard being played. Second, it was interesting to note that, in most instances, responses were given almost immediately and frequently before the short excerpt had finished playing.

With respect to the excerpts played by instruments with which the participants had no previous or vertical experience, the data suggested that the children were able to discern a range of elements within the sample and to make further connections with an extensive choice of experiences in order to complete the task they were being asked to do. Many of these connections initially appeared to be unrelated. However, further prompting or questioning inevitably produced a reasoned ‘horizontal’ process. In addition, we found evidence of participants carrying out quite complex debates within themselves, in which direct experiences were subsequently over-ridden by additional knowledge.

Therefore, in response to our two main research questions, the data suggested that three to four year old children were able to decide on the gender associated with a musical instrument, regardless of the level of familiarity or knowledge they had. In those instances where children were able to incorporate



a personal, concrete knowledge of the instrument being played, then they did so. Yet, in instances where children did not have any concrete knowledge of the actual instrument, they were still able to identify some artefactual element within the sample that enabled them to complete the task in a reasoned way.

Similarly, the responses provided further support for the ‘categories of power’ as proposed by MacNaughton (2009). Responses may be arrived at through very brief concrete and direct experiences but at times they also rely on secondary, but associated, experiences which are used in a reasoned way to navigate towards a required response. What the data do not indicate is whether or not the decisions made by the participating children were actual stereotypical attitudes, or whether these were momentary responses generated purely to fulfil the immediate task - which was to provide an answer to a question set by the ‘adult in the nursery’. Put simply, children make gender links by drawing on a wide range of direct and indirect, but related experiences.

Our second research question asked what influenced the decisions which children made. Again, the data suggested that children were able to draw on both their past experiences and to think both vertically and horizontally in order to fulfil the task the adult in the room was setting them. We argue that some evidence does exist for the influence of different powers. What we did not find was the power of merchandising, or media dominating their choices - as is often suspected (Golden & Jacoby, 2018, Kolbe, & Langefeld, 1993). In fact, we had a sense that children used all four ‘ways of power’ equally as they felt appropriate, with each power being regarded as equal in importance. In terms of the power of culture, we found evidence of influences from a number of different ‘cultural contexts’. For example, the cultural context of the family (home background), the culture of the school and the nursery. Similarly, the power of expectation appeared frequently in responses from both male and female participants, as did the expectation that this would change; or perhaps it is more accurate to say that it could be manipulated according to the context.

### ***Limitations of the study***

We accept the limitations inherent within this study. Certainly, we acknowledge that we have attributed intentions and meanings to comments made by very young children that may or not be there. The task was carried out within the ‘powerful space’ of a nursery by an adult - a context that would certainly have exerted significant impact. We accept that children gave a required response to an adult that may or may not be the basis of a strongly held belief. Essentially, the participants were forced to make a binary choice between the male and the female, and then to justify their decision. The design of the task did not allow for any other response, such as ‘both’ or ‘neither’, for example. Hence, we accept that perhaps the participants were forced to make a connection between an instrument and a gender that did not exist and was prompted by the task structure. Similarly, the use of musical excerpts as stimuli can introduce a plethora of uncontrollable influences that may impact

on the way an individual responds to music (Berlyne, 1971). Certainly, many previous studies have highlighted the large range of factors which impact on how individuals process and respond to music, including musical style, (reference withheld, 2013), gender and personality of the participant (Koelsch et al., 2003a; Koelsch et al., 2003b; Webster & Weir, 2005), tempo, mood and social setting (Bakagiannis & Tarrant, 2006; McPherson, 2015). We also acknowledge the social and culture influences which may influence gendered attitudes and accept that the geographical, social and cultural nature of our research sample represented a relatively homogenous population. However, we emphasise that our intention was not to claim generalisable results, and neither was it our aim simply to re-test the nominated genders that very young children appear to associate with musical instruments. From our perspective, the actual gender which children decided was associated with each instrument was of secondary importance; what was of great interest was the process by which children arrived at their decision and what, in addition, we could learn from a detailed analysis of that response.

## Conclusions

Overall, our findings suggested that even some of the youngest participants in our study were able to present us with a series of complex and reasoned responses to a task. They were able to draw on a wide range of experiences and knowledge that enabled them to begin to construct some meaning about themselves and their gender, and the roles they play in the various contexts in which they are required to live. All our participants displayed the ability to reason and to evaluate, and, in some cases, reject the premise that seeing an individual of a particular gender performing a particular task carries influence. This suggests that schools, and nurseries in particular, should be fully aware of the level of thought that very young children appear to bring to the experiences they gain on a daily basis. Challenging the development of inappropriate gender stereotypes requires far more than providing challenging experiences, but also requires the monitoring of how such experiences are experienced, processed and accommodated. From this perspective, we again concur with Meland and Kaltvedt (2017). However, it is not our intention in any way to cast doubt on the sincerity and intentions of early years practitioners, nor to negate the hard work which takes place on a daily basis in numerous early years settings. What we do suggest is that both the development of inappropriate stereotypes, and the way of challenging them, is a highly complex process. One important way of increasing our understanding is for more detailed research work to be carried out into the precise way in which children respond to, and process, information around gender. An equally valuable way forward is for kindergarten and early years practitioners to take note of the comment made by Meland and Kaltvedt (2017) and to:

‘.....continually analyse their own actions so that stereotypical gender roles can be counteracted in order to break ongoing gender role practices and thereby facilitate change within education and kindergarten practice’ (p.101)

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