Polish parents' views on mathematics activities at home and in Swedish preschools

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This article describes the results of a digital survey of 41 Polish immigrant parents' views on mathematics activities at home and at preschool as parents' views potentially provide a range of perspectives on mathematics activities for young children. Parents were asked to describe and justify their views about how children engage with mathematical ideas and nominate activities that children engage in at home and at preschool. When parents justified their views about young children and mathematics, they tended to align themselves with the norms and values of the Swedish preschool curriculum. The findings suggest that parents, like children, are socialised into Swedish preschools. However, this alignment could limit possibilities for broadening perspectives about mathematics education in preschool, which could be available by incorporating input from immigrant parents' different cultural and linguistic backgrounds.

It is often stated in research that parents and families play a role in children's learning and development (Melhuish et al., 2008) and that children's mathematics can be supported through families and preschool teachers working together. For example, in a study in Germany, parents could borrow books and games from preschools so that they could engage with their children in mathematics activities at home (Streit-Lehmann, 2017). In the Swedish preschool curriculum (Skolverket, 2016, p. 4), it states, "the task of the preschool means working in co-operation with parents so that each child receives the opportunity of developing in accordance with their potential". Later it stated, "parents should have the opportunity within the framework of the national goals to be involved and influence activities in the preschool" (p. 13). These comments suggest that a partnership between parents and preschools would contribute to a shared responsibility for children's education.

While it is important to consider how preschools can support parents to engage in mathematics activities at home, it is also important to value

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the mathematical activities children do outside of preschool (Brenner, 1998). As the first "educators" of young children, parents often have a range of opportunities and resources to engage in children's learning (Phillipson, Gervasoni & Sullivan, 2017), which could contribute to broadening what could be offered at preschools.

With increasing migration in Europe, immigrant parents represent a diversity of languages and cultures. As Van Laere and Vandenbroeck (2017) stressed inclusion of minority groups' perspectives can reveal and confront similarities and differences between teachers and parents about early childhood education. In this way, immigrant parents could contribute to research and political debates, which might in turn might broaden perspective on children's mathematics activities.

However, parents' views are rarely considered as possibilities for broadening perspectives on mathematics activities at preschools, particularly when the parents come from a different cultural background. For example, Lunneblad and Johansson (2012) suggested that parents' engagement in early learning in Sweden is related to their fluency in the Swedish language and knowledge about the educational system. If for example, parents have little awareness that they can contribute, then they are unlikely to identify possibilities for engaging with their children's preschools.

It is therefore not surprising that there has been little research into the impact of immigrant parents' influence on pedagogical practices in preschools. Consequently, my aim in this article is to present immigrant Polish parents' views and ideas about mathematics activities for young children in Swedish preschool as a basis for a later study considering how preschools could benefit from these views. In 2011, Polish citizens were the third largest group of immigrants in Sweden (Statistics Sweden, 2012). As such, their perspectives have the potential to give detailed insights into learning mathematics in a new country.

My research question is: What insights do immigrant parents' views about mathematics in Swedish preschools and at home provide about socialization processes? In the next section, I describe the socialisation processes of creating/recreating valued practices, including mathematical practices, in society. Thereafter, previous research on immigrant parents' views about mathematics of young children is described. Finally, I present the analysis of the data from a digital survey.

Socialisation process and parents' engagement in preschool

Socialisation is the theoretical lens for this research as preschools and homes can be thought of as settings into which children are acculturated

as active, knowledgeable and skilled individuals, while at the same time becoming enculturated into institutional norms and values. Norms are sets of and expected behaviours that are held by members of society and which are adopted through the socialisation process (Lee, 2001; Prout, 2011). Consequently, socialisation is about how people create meaning through their experiences, interests and views, as they engage in society, and includes the creation and recreation of norms and values and skills and knowledge (James, Jenks & Prout, 1998; Lee, 2001). Socialisation can result in creating a variety of norms and values in different societies, cultures and social groups, as people, who inhabit a society, create it (Ebrahim, 2011). This can be considered as contributing to the framing of the processes of learning (Lee, 2001).

Socialisation situates society members as recreating relevant knowledge, in order to reproduce cultural values from one generation to another (James et al., 1998; James & Prout, 2001; Qvortrup, 1994). For example in the Swedish preschool curriculum (Skolverket, 2016), democratic citizenship, subject learning and respecting children's own interests are to be passed on to children as the most relevant norms and values of the Swedish society. What is included in the curriculum in turn influences how activities are implemented and children are then socialised. Interactions, both planned and spontaneous, in Swedish preschools are likely to recreate these norms and values.

As children and their families are situated within a social, political and historical context, James et al.'s (1998) theory of socialisation describes childhood as being structured by society, in which children are regarded as social actors. In studies of childhood (Corsaro, 2005; James et al., 1998; Prout, 2011), children are seen as human beings in their own right and as such their lived experiences in different environments should be taken into consideration. Through socialisation, children are socially constructed and become active participants in constructing their own cultures and contributing to society. However, as socialisation is a social process, the role of others, such as adults and peers, in children's learning is important (Prout, 2011). Therefore, there are possibilities for parents to contribute to determining, both through creation and recreation, the norms and values which should be valued in preschools.

Nevertheless, it is generally expected that newcomers will adopt the societal norms, values and perspectives, rather than the society take on the norms and values of the newcomers (Lunneblad & Johansson, 2012). Swedish preschools are built on the belief that if all children receive the same socialisation, they will share the same core values and perceptions (Jönsson, Sandell & Tallberg-Broman, 2012). However, this perspective views societal norms and values as static, with existing norms being

sustained over time. In contrast, immigrant families' views could contribute to the creation of new norms and values that recognises the changing nature of that society.

In this study, I analyse Polish immigrant parents' explanations and justifications, about mathematics activities that their children do at home and at preschool, to identify whether they are valuing norms and values from Polish or Swedish culture or creating new ones by merging norms and values in new ways. As such, parents' views provides insights into the socialisation processes that are affecting them.

Socialisation and children's mathematics activities

As places of socialisation, preschools and homes are involved in the construction of childhood through interaction with others (Prout, 2011), around activities including mathematical activities. In homes and preschools, children engage in mathematics activities from an early age so that they come to see the relevance of using mathematics in everyday life and exploring mathematical terms. For example, they learn about direction, by pointing at objects (Björklund & Pramling, 2017) and how to describe where things are, including themselves.

Preschool is a place where children's social contexts and experiences are formed and so mathematics activities are framed by its norms and values (Lembrér, 2015), connected to the goals and guidelines prescribed in the curriculum. The curriculum indicates that preschools need to ensure that each child "develops their understanding of space, shapes, location and direction, and the basic properties of sets, quantity, order and number concepts, also for measurement, time and change" (Skolverket, 2016, p. 10). The curriculum also sets out that children's interests and experiences are useful starting points for achieving all the goals and guidelines (Skolverket, 2016). As Prout (2011) stressed, it becomes important to understand children's engagement in different environments. Therefore, it could be possible for mathematics activities to be driven by experiences from both preschool and home that children are interested in.

Research has shown that children acquire understanding, skills and awareness of different mathematical concepts from experiences outside educational institutions (Bottle, 1999; Brenner, 1998; Carruthers, 2006). Aubrey, Bottle and Godfrey (2003) suggested that children's early experiences of numeracy at home, such as cooking or playing card games, are important for understanding how numeracy develops during later schooling. They found that parents and children shared many common activities, such as counting snacks, reading, number games or building

toys, which provided opportunities for parents to incorporate numbers into their children's everyday routines. The results gave insights into the complexity of how children's knowledge is influenced by the home environment and their dialogues with parents and illustrates how socialisation processes operate (Prout, 2005).

Home experiences provide children with the possibility to link their interests and experiences with mathematical knowledge and skills that are presented in preschool activities (see for example, Edo, Planas & Badillo, 2009; Lembrér & Meaney, 2015). However, when preschool teachers plan mathematics activities for children, Wager and Whyte (2013) suggested that they used children's home mathematical experiences in two ways. The first involves only recognizing home activities, that were already familiar to the preschool teachers. The second involves integrating children's home experiences that were initially unknown to preschool teachers into planned activities. It may be that immigrant parents' views about mathematics activities would not be recognised as valuable, depending on their familiarity to teachers. As Hawighorst (2005) stressed, parents' views on mathematics education can provide knowledge about childhood and broaden perspectives on mathematics and learning of mathematics, only if those views are recognised as legitimate.

Socialisation will also affect parents' views of the kinds of mathematics their children should engage in as socialisation affects all members as participants and contributors to the society (Corsaro, 2005; James et al., 1998; Prout, 2011). Immigrant parents, like their children, are in the process of socialisation as soon as they begin to settle in the new society. I argue that parents' views on mathematics activities are embedded in socialisation processes, drawing as they do on both understandings from the previous and new societies that they have engaged with. When analysing parents' views, it is possible to identify their creation and recreation of societal norms and values. Immigrant parents' views can provide insights into how the socialisation process affects their views about their children's mathematics activities. Knowing how socialisation operates can provide possibilities for both parents and preschool teachers to discuss similarities and differences between their views and to build a common understanding about how to collaborate around children's mathematics activities.

Data Collection

In order to determine how Polish parents, as representatives of immigrant parents in Sweden, viewed mathematics for their young children, I designed a digital survey to gain a general impression of their views.

Cohen, Manion and Morrison (2000) stated that a survey should focus on views or opinions from a group of the population, rather than individuals. If an individual is of interest, then a semi-structured interview is more suitable (Cohen et al., 2000). The survey ensured that each participant responded to the same set of questions and their participation was taken as an active choice to participate. The digital survey allowed participants to answer questions at their convenience, withdraw from participation any time and to read their answers on the computer screen as they responded. This was not something which could be achieved with a semi-structured interview where it is more difficult to revisit answers and change them.

The survey was open on 29th of June and closed 30th of November 2016 and was provided in Polish and Swedish. Answers were translated into English.

The participants were contacted through a snowballing approach (Cohen et al., 2000). An invitation to participate in the digital survey was published as a URL link on a website for a Polish organisation and an internet forum for Polish citizens living in Sweden. It included an invitation to share the URL link with others. Due to the manner in which the participants were contacted, the data formed a convenience sample and thus is not representative of the whole population of Polish parents in Sweden. As such, the survey results give information from participants who chose to explain their views and were willing to answer a survey (Coyne, 1997).

There were 41 participants (2 males, 39 females), aged between 22 and 58 years, who had lived in Sweden between 2 and 40 years. 31 of 41 parents had attended preschool in Poland. 39 parents had children attending preschool in Sweden, whilst 2 participants had children who attended preschools in Poland.

No data which could identify individual participants were collected. In the results section, participants are described as P1 to P41.

The survey

The digital survey consisted of 16 questions and was divided into four parts. In the first part (Questions 1–5), participants were asked to give gender; age; number of years living in Sweden; and respond to the questions "Did you attend preschool in Poland?" and "Do you have children who are attending (or attended) preschool in Sweden? These questions were asked to ensure that the Polish parents had experiences of Swedish preschools.

In the second part of the survey (Questions 6–10), the participants were asked to answer questions and describe mathematics activities. Participants were asked to describe their own experiences of learning mathematics in Polish preschools, plus their views on the kinds of activities that their children engaged in at home and at preschool. These questions were adapted to the contexts of Polish and Swedish preschools.

The third part of the survey, questions 11 and 12, required participants to nominate the mathematics activities children did at home and at preschool. The multiple choice questions were based on activities identified in previous research. Studies such as those by Aubrey et al., (2003) and Bottle (1999) identified a set of everyday activities and experiences of young children, initiated by both children and by adults, which could be connected to mathematics learning. The mathematics activities that Bottle (1999) observed in homes were: number and counting; doing puzzles; making towers; putting things in and taking them out again; and quantities like full, empty and half full. Aubrey et al., (2003) also observed counting rhymes and reading stories that focused on number. A similar choice of examples were provided in two multi-choice questions, determining whether the parents considered that they happened at home and/or at preschool. The five activities were: counting rhymes; jigsaw puzzles; counting things; playing with sand and water; and building with blocks. "Counting rhymes" and "counting things" indicate that the children were using numbers to label something or to give it a numerical value (e.g. five is always before six and after four, registration plate on a car). "Jigsaw puzzles" is about visualizing shapes in various ways. "Playing with sand and water" and "building with blocks" are activities where children compare objects, describe where things are positioned, copy, represent or arrange things. Participants could choose more than one activity from five activities presented in multi–choice questions.

The last part of the survey (Questions 13–16), included questions about participants' views on learning of mathematics and language. Question 13 was linked to the previous two multi-choice questions, with participants being asked to justify why and how they viewed these activities as learning opportunities for their children. Question 14 and 15 was intended to find out about parents' views on language learning as an element of mathematics learning (e.g. Civil, Bratton & Quintos, 2005; Giovannini & Vezzali, 2011). Question 15 was linked to Question 14 and included three statements about learning of mathematics and learning the Swedish language. However, the participants' answers to Question 14 and 15 were minimal and did not provide any useful data. Question 16 provided an invitation to parents to share with preschool teachers something about their children's learning of mathematics. Participants

were also asked to express what was important for them based on their own experiences of mathematics. This provided longer responses.

Data analysis

The data were initially examined to identify how the parents' views about mathematics activities of their children were related to creation and recreation of the norms and values of their country of origin or the norms of Swedish society as recognised by the goals and guidelines prescribed in the Swedish preschool curriculum (Skolverket, 2016). Parents' views were considered to be about creating norms and values when they justified or explained children's mathematics activities as being shaped as something that combined established or adapted norms and values in new ways. Recreation was considered to be when parents' views seemed to be solely based on established societal norms and values from Polish or Swedish society. The norms and values that were recreated included aspects of mathematics knowledge and skills, described in the preschool curriculum (Skolverket, 2016).

In the next section, I describe the results of the multi-choice questions about mathematics activities children might engage with and a thematic analysis of the open-ended questions where the parents were able to elaborate their views on their children's mathematics activities.

Parents' views about mathematics activities

It became clear from the data in digital survey that the Polish parents' views mostly seemed to recreate the norms and values of the Swedish society. Many of the views were very similar to what was proposed in the guidelines and mathematics goals in the Swedish preschool curriculum (Skolverket, 2016).

Although not directly linked, the fact that parents considered that their children participated to a similar degree in activities at home and at preschool indicates that the parents did not see themselves as doing other things at home to what was done at preschool. This can be see in the results of the multiple choice question about the five mathematics activities, presented in figure 1.

Figure 1 shows that most of the Polish parents in the survey considered that their children engaged in mathematics through the same activities at home and at preschool. As some activities were chosen by different amounts of parents, it seems that parents could distinguish between the activities that children did. Therefore, as children's first mathematics educators (Phillipson et al., 2017), this awareness about the mathematics

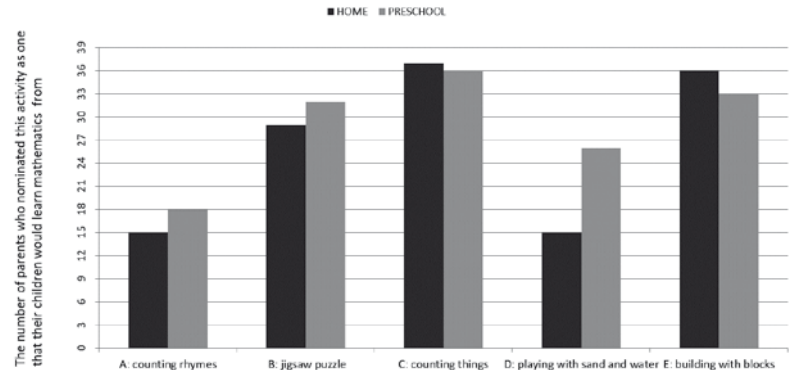

Figure 1. *Numerical frequency of home and preschool activities*

activities indicates that parents have information that could be used to discuss children's possibilities for engaging with mathematical ideas with preschool teachers and collaborate about the activities children do both at preschool and at home.

Thirty-seven out of forty-one participants identified *counting things* as something children would do at home and almost the same number, thirty-six out of forty-one, selected *counting things* as something done in preschool. The results in figure 1 suggest that these Polish parents valued these activities sufficiently to do them at home, in this way recreating a norm that situates counting things as a coherent basis for children's early knowledge about quantities. This would be in alignment with the view of researchers, such as Clements and Sarama (2007) who highlighted that counting activities, such as answering a question "How many?", develop children's understanding and skills that will be valuable for later mathematical learning.

These results are supported by comments made in the final question (16), in which parents could share something about their children's learning of mathematics. Many parents described everyday activities, such as: counting things; classifying objects; doing arithmetic; recognizing numerical symbols; playing with Duplo blocks. These comments reinforce the idea that parents considered counting to be valuable skill to be developed and something that they encouraged at home.

As well some of the parents gave examples of everyday activities in which mathematics could emerge. For example, playing shop is given as an example by P33 as a way of learning about quantities and amounts. P33 stated: "They learn mathematics when they play the "shop" – buying things (quantity, amount), and counting money". The parents also explained that they were viewing *counting activity*, as a common activity

in preschool. For example, P39 justified that children gained knowledge about counting when they engaged in activities in preschool (Question 16), "At the preschool children learn mathematics in everyday activities, such as counting fruit pieces or the amount of blocks on the tower." By stating that children, "learn mathematics in everyday activities", P39 reinforced the importance of counting activities. This suggests that many of the Polish parents had been socialised into accepting the importance of *counting* as their responses seemed to recreate norms and values about how it should be carried out.

The parents' views about counting are in alignment with a mathematical goal in the preschool curriculum (Skolverket, 2016), in which quantity, order and number concepts are highlighted. However, it is not clear whether the Polish parents, living in Sweden, would consider counting activities more more or less valuable than if they had been living in Poland. Further research is needed to determine if counting things is also highly valued as knowledge worthy of recreating by parents in Poland.

However, it is interesting to note that *counting rhymes*, was not seen by the parents as something their children did as often at home or at preschools as counting things. There are many traditional rhymes and verses related to basic numeracy in both Polish and Swedish. However, it seemed that *counting rhymes* were not something that parents considered that preschools would do or that they would do at home as mathematics activities with children. This finding is interesting in that it seems to indicate that counting rhymes was not considered to be a societal norm about valued mathematics which needed to be recreated at home and at preschool by as many parents, which is different to what was indicated in an earlier study situated in UK (Aubrey et al., 2003). However, further research is needed to determine whether it is that counting rhymes in themselves were not valued or if the connection between counting rhymes and mathematics was not valued.

The only activity where there was a large difference between what was considered as being done at preschool and home was the activity D: *playing with sand and water.* Just over a third of parents chose this activity, as something their children engaged in at home (15 out of 41), compared to 26 who saw it as something children did at preschool as a mathematical activity. P17 justify her/his view on this activity (Question 13) by writing:

> P17: I do not think that playing in a sandbox has a greater impact on mathematics, unless children count or work with some kind of toys and for example, can divide toys between each other.

For P17 and perhaps others who did not nominated this activity, *playing with sand or water* is not likely to contribute to children gaining or using

children's existing mathematical knowledge. The activity *playing in a sandbox* is not viewed as valuable because in of itself it is not mathematics. It is only mathematical if children count or work with some kind of toys that provide experiences the parents valued as mathematics. Although some parents did nominate this activity as something which could be considered as a mathematical activity as preschool and to a lesser extent at home, it is unclear whether this perspective is a result of their experiences from Poland or affected by having children attend Swedish preschools. More research is needed to see whether parents who did nominate it as a mathematical activity done at preschool did so because they saw it as creating new norms and values. However, it may be that a simple explanation for the differences between home and preschool is that parents did not have the facilities to play with sand and water at home.

Attendance at Polish preschools did affect parents' views. For example, in response to question 10, P11 wrote, "they (her children) attended Polish preschools and learnt exactly the same ways as I did at their age". P11's view was that Polish preschools practices had not changed in the generation since she had attended preschool. This suggests that she considered Polish preschools to be sites for recreating norms and values across time and this was perhaps not appropriate. However, given that there were few comments about Polish preschools, more research is needed to follow up on how these experiences affected parents' views.

Some of the parents explained how mathematics activities were transferred from preschool to home, where the norms and values of these activities were recreated. P2 gave example of an activity (Question 9) where her child asked about the names of different shapes and used this knowledge in different situations.

> P2: Children learn basic shapes while playing. Shapes are used in different situations and aspects. My child comes home and continues to ask us about different shapes "which is a shape of"?

P2 seemed to have accepted that knowing shapes is valuable knowledge for children, and as a parent she should contribute to recreating the norms and values that reinforce how this knowledge should be taught. For example, dialogues with adults seemed to be accepted as contributing to children gaining appropriate mathematical knowledge and that mathematics activities done at preschool can be transferred to home. As James et al. (1998) explained, active recreation of societal norms lead to a construction of childhood where children through participation in activities have the support of adults who are in alignment on what knowledge and skills should be transferred and how.

Views about mathematics activities in the Swedish preschool

In the previous section, it did seem that parents considered that existing norms and values were being recreated both at preschool and at home but it was not always clear whether views of these norms and values had arisen from experiences in the Swedish or Polish culture. In this section, the parents' views reinforcing the recreation of certain norms and values similar to the goals and guidelines in the Swedish preschool curriculum (Skolverket, 2016) are discussed, particularly in regard to the pedagogical practices used to support children to gain important mathematical knowledge.

When it came to the views about pedagogical practices in preschool, the parents emphasised the value of children's participation in activities designed or adapted by preschool teachers (Skolverket, 2016). P26 wrote, "Everything depends on the methods the preschool teacher chooses. In addition, how the teacher will use the available material" (Question 8). As well, some parents were clear that leadership and creativity were needed by a preschool teacher for interactions with children to result in mathematics learning. For example, P31 wrote "children learn mathematics activities in all situations, when the preschool teacher can lead them". P20 suggested, "everything is in the hands of a creative teacher". In these quotes, a similarity can be seen with how teachers' responsibilities for developing activities are situated in the curriculum, in that "The preschool should promote play, creativity and enjoyment of learning, as well as focus on and strengthen the child's interest in learning and capturing new experiences, knowledge and skills" (Skolverket, 2016, p. 9). Thus, the parents seemed to be in alignment with the curriculum in recreating this norm about appropriate pedagogical practices. The parents' views indicate that they are aware of the norms for accepted pedagogical practices, and emphasise them rather than other aspects of learning mathematics in preschool.

Aspects of the mathematics goals in the Swedish preschool curriculum (Skolverket, 2016) seemed to be reflected in some of the parents' views. For example, P11 emphasised the value of learning mathematical terms and problem solving.

> P11: Learning mathematics, vocabulary and mathematical concepts is necessary for children. They develop their abstract thinking, analysing, reasoning and decision-making processes. (Response to question 16)

P11's view about what is important in mathematics mirrors the goal in the curriculum, which states that preschools were responsible for children to "develop their ability to distinguish, express, examine and use mathematical concepts and their interrelationships; develop their mathematical skill in putting forward and following reasoning" (Skolverket,

2016, p. 10). By echoing what was in the Swedish preschool curriculum, P11 seemed to have accepted the need to recreate in children these aspects of mathematics through interactions in preschools. This suggests that at least some of these Polish parents seemed to have been socialised into the need for children to gain valued knowledge about mathematics, recreating accepted societal norms and values of Swedish preschools.

The value of play as a way to learn mathematics also seemed to be accepted by many of the Polish parents. Play-activities, such as, a pretended play with toys and engaging in games with other peers, were justified by the parents as being highly valued in Swedish preschools. P29 and P13 viewed play as an approach for learning mathematics. When responding to question 16 and sharing their views on how children could learn mathematics, they stated:

P29: In preschool, play is the main form of learning. Children are enthusiastic and learn about the world around them through play. They should receive many interesting incentives in order to actively gain knowledge about the world in general, as well as the mathematical world.

P13: I like it here (in Sweden), that children have a lot of freedom in choosing and directing their play activities.

A particular aspect of play that P13 highlighted was that children could make their own decisions, situating them as active participants in the activities. This was an aspect of Swedish preschools that P13 valued, which recreated the norms about learning mathematics through play that were in the Swedish preschool curriculum (Skolverket, 2016). In the curriculum, it is stated that preschools should "promote play as well as focus on and strengthen the child's interest in learning" (Skolverket, 2016, p. 9).

In several examples, children's engagement in play was acknowledged as important for their learning. P37 wrote: "Learning through play is important". The Swedish preschool curriculum (Skolverket, 2016) provides an elaboration of why play is important, "play and enjoyment in learning in all their various forms stimulate the imagination, insight, communication and the ability to think symbolically, as well as the ability to co-operate and solve problems" (p. 6). The curriculum indicates that children should use their interests and experiences when acquiring mathematical knowledge and skills in play activities. It can be assumed, that the parents' views, such as P29 and P11, are influenced by their experiences of having children attending preschool in Sweden. Thus, the Swedish preschool, as an institution, contributes to parents and families recreating the accepted norms and values about how mathematics should be learnt valued in the curriculum.

In summary, socialisation process includes recognition of norms and values, which members of a society learn to interpret (James et al., 1998; Prout, 2011). The Polish parents' views about mathematics activities of their children at preschool and at home show that they have recognised and come to value norms and values around mathematical activities presented in Swedish preschool. These parents exemplified preschool activities based on play as a valuable contribution to children's learning. The views of these parents shows an agreement with the norms and values without any expectations that their children would have opportunities to engage in a different variety of mathematics activities at preschool.

Conclusion

In this article, I have presented the views of 41 Polish parents about their children's mathematics activities, at home and in Swedish preschools. This was done to provide insights into the socialization processes. The analysis shows that generally parents recreated norms and values about mathematics knowledge that the young children should learn which appear to be universal, at least in Europe, whereas expectations about how children learn seemed to be connected to Swedish preschool.

The results in figure 1 show that parents considered that similar activities are done at home and at preschool to provide children with opportunities to learn mathematics. 31 of 41 parents had attended preschool in Poland, so it may be that parents held these views of mathematics activities before coming to Sweden. This view is reinforced by these activities being valued in research from families in other countries (Aubrey et al., 2003; Bottle, 1999). More research is needed to clarify how parents' perspectives on mathematics activities develop.

Swedish preschools seemed to have influenced Polish parents' views about how learning mathematics should occur, particularly in regard to pedagogical practices such as through a play-based approach. Therefore, the parent's accounts of the mathematics knowledge that children gain in preschool and at home suggest that they have been socialised into recreating the norms and values expressed in the Swedish preschool curriculum's goals and guidelines.

This recreation of values and norms indicates that socialisation may have become restricted in that there did not seem to be any possibilities for new norms and values to be created, either by combining or adapting norms and values that parents had gained from living in two countries. The socialisation process could have been restricted by a range of factors. One of these could have been the influence of the curriculum on what preschool teachers offered as mathematical activities. Another

factor could be linked to research about the gaps and struggles in regard to immigrant parents' involvement with educational institutions (Civil et al., 2005; Giovannini & Vezzali, 2011). If the opportunities offered by preschools focus on integrating into the existing views of mathematics education, then opportunities will be lost for a diversity of norms to be recognized and for the creation of new norms. In this way the experiences of parents as first educators could be excluded when developing children's mathematics activities in both environments. Therefore, I suggest that dialogues between preschool teachers and immigrant parents, together with children, could provide possibilities for the creation of new knowledge, which incorporates the parents' cultural and linguistic backgrounds. Given that Scandinavian societies are confronting diversity of culture, language and perspectives about mathematics education such dialogues are essential.

This study indicates that further research is needed into parents' and preschool teachers' own definitions of mathematics for young children. This could be a starting point for discussions about similiarities and differences which could be the basis for creating new norms and values.

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