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Swedish teachers' perspectives on parental involvement in children's early learning of number

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In this paper, we present results of an interview study of Swedish teachers' views on parental involvement in year one children's learning of number. Interview transcripts were subjected to a data-driven inductive analysis that identified two broad categories of parental involvement which, according to teachers, may have influence on children's learning of number. Firstly, there were indirect involvements concerning the ways in which parents convey messages, both positive and negative, about school and mathematics in general. Secondly, there were direct number-related practices, falling into two broad categories. The first of these concerned formal activities, such as homework, which tended to dichotomise teachers. The second, largely hypothetical, concerned the exploitation of everyday informal situations and number-related games with the potential to facilitate children becoming friends with numbers.

Keywords: Swedish year one pupils, parental involvement, teacher interviews, number.

Introduction

This paper draws on an interview study of ten Swedish teachers' perspectives on parental involvement in year one children's learning of early number. Undertaken as part of the Swedish Research Council-funded Foundational Number Sense (FoNS) project, which is focused on understanding how different adults support year one children's learning of those number-related competences essential for later mathematical success (Andrews & Sayers, 2015), interviews have been undertaken with teachers in both England and Sweden. In this paper we report on how Swedish teachers construe the ways in which their pupils' parents, where parents refers to all carers, support their children's FoNS-related development.

There is general agreement that parental involvement in children's learning has a positive influence on achievement (Steinberg et al., 1992), particularly with respect to children' literacy skills (LeFevre, Skwarchuk, Smith-Chant, Fast, Kamawar & Bisanz, 2009). However, the limited research with respect to the influence of the home on mathematics achievement is inconclusive (Skwarchuk, Sowinski & LeFevre, 2014). Moreover, what cannot be ignored is evidence showing that parental involvement is culturally determined (Cheung & Pomerantz, 2011). In this respect, studies of parental involvement in Sweden, particularly from the perspectives of the teacher, are largely unknown. This omission is significant in a culture that has, over the last quarter century, shifted from a centralised system in which parental involvement was largely discouraged because the school was the place where equity gaps were addressed to a decentralised system in which parental responsibility and involvement with schools are now expected (Dahlstedt, 2009).

Parental involvement in children's education

Parental involvement in children's education has been categorised according to two broad themes: involvement practices and involvement beliefs (von Otter, 2014). The former capture explicit mechanisms created by school or parents such as involvement with homework, supervision, engaging in home activities, attending school events and meetings, volunteering classroom support, communication with school (both school and home initiated) (Domina, 2005). The latter, typically mediated by cultural traditions, capture parental behaviours and beliefs, which manifest themselves in the general home environment, parental control, expectations and aspirations as well as beliefs in children's capabilities and parenting styles (Fan & Williams, 2010; von Otter, 2014).

With respect to children's learning of number, parental involvement has been categorised as either *formal* or *informal* (LeFevre et al., 2009; Huntsinger, Jose, & Luo, 2016). Formal activities include those that explicitly aim to develop children's number skills (such as counting objects, practising number names and writing number symbols), whereas informal activities are primarily intended to serve other purposes during which learning about number, quantity and arithmetic may occur indirectly (such as playing board games, cooking, carpentry or crafts). Research indicates that different types of number-related experiences at home may predict different outcomes. For example, children's participation in formal mathematical activities associate positively with performance (Huntsinger et al., 2016), specifically predicting counting and number naming (LeFevre, Clarke & Stringer, 2002) and symbolic number knowledge (Skwarchuk et al., 2014). Similarly, positive associations have been reported between informal activities and children's number fluency (LeFevre et al., 2002). However, with respect to the impact of homework on young children's learning, some studies report positive effects (Fan & Chen, 2001) and others negative (Bronstein, Ginsburg & Herrera, 2005). Finally, previous studies suggest that culturally different home environments, as reflected in parents' mathematics attitudes and beliefs, impact differently on children's number-related performance (LeFevre et al., 2002; Skwarchuk et al., 2014). Such matters prompted the investigation reported in this paper of how Swedish teachers perceive parental involvement in year one children's number development.

Method

Ten semi-structured interviews, based on questions broadly defined and agreed by the research team, were conducted with teachers who teach mathematics to grade one children in Sweden. Questions specifically addressed whether or not teachers saw parents playing a role in children's learning of number and, if so, their perception of the nature of such involvement. With the aim to reach a representative sample of participants, a purposive sampling strategy (Robinson, 2014) was employed. Teachers in diverse schools in different geographical locations, representing a range of professional experiences, were approached and amongst those, ten volunteered to participate. All interviews were undertaken at teachers' own schools and, after obtaining appropriate consents, video-recorded by means of a computer webcam. The interviews were transcribed in their entirety and episodes in which teachers allude to any form of parental involvement in their children's number-related learning identified for analysis. These data were then subjected to the following inductive analytical process: 1) Data were read and re-read individually by members of the project

team and tentative codes identified. 2) The codes were discussed among team members and a final set of codes agreed. 3) Agreed codes were categorised into the broad themes presented below. 4) Excerpts selected for inclusion in the report were translated into English, a process that included transforming Swedish idioms into forms recognisable to an English-speaker without losing the speaker's intended meaning (Kvale & Brinkmann, 2009). Pseudonyms have been used throughout.

Results

All teachers believe that good relationships with parents benefit children. They see schools and homes as complements and argue that establishing communication between parents and teachers facilitates mutual interest and understanding, which ultimately create favourable conditions for children's learning. Wilma, for example, commented that "the home is so incredibly important and, in my experience, we are really working together, in the vast majority of cases", before adding that "communication is smoother when they [parents] know what we are doing, it is a matter of building a pre-understanding, so to say". With regards to teachers' views on parental involvement in children's learning of number, the analysis identified two major themes of response, one of which comprised two sub-themes. On the one hand, teachers seemed convinced that parents play an important role by demonstrating an interest in school and mathematics in general. On the other hand, they seemed more hesitant and uncertain about whether or not parents are involved in actual practices to stimulate their children's early learning of number. Thus, while teachers appeared to have strong opinions about *indirect involvement*, their thoughts about and experiences of *direct involvement* seemed to be less well-articulated. That being said, a closer analysis of the transcripts revealed that within the broad category of direct involvement could be seen a distinction between *formal* and *informal* practices. These matters frame the following.

Children's learning of number: Indirect parental involvement

As indicated above, teachers seemed to have strong opinions on, or concrete experiences of, *indirect* parental involvements. In particular, they agreed that the most important way in which parents can influence children's learning of number is through displaying positive attitudes towards school in general and mathematics in particular. For example, Matilda commented that:

> above all, I feel that the *attitude* towards mathematics is the most important, that [the children] have positive experiences from mathematics […] I think it's always important, therefore, what support you can get from home and if maths is something that is fun.

Parents can also contribute to their children's familiarity with numbers by increasing children's awareness that mathematics is present not only in school but in everyday life. This can help children gain a sense not only of its relevance but also make connections to what they have learnt in school. Susanne explained that "it is also about their [parents'] own views of what mathematics is, their attitude to the subject. That maths doesn't happen only in school, but also at home".

However, some teachers expressed concerns that parents' negative perceptions and difficulties with mathematics may be transferred to their children. In this respect, Julia commented that "if I [parent] have difficulties with maths myself, I cannot help with homework. Their [parents'] own difficulties, I believe, will be a disadvantage for the children. They [children] may hear it and then it becomes a

negative spiral." Such behaviours, whether explicit or implicit, were not well received by teachers, as expressed by Matilda, who suggested that if parents "have a negative image [they should] not transfer it to their own children but let them form their own opinion. It is inappropriate to go in with the attitude that this will just be bad". Furthermore, there was a view that negative parental attitudes may sanction corresponding feelings in their children, preventing them from forming their own opinions about the subject. Matilda continued by saying that:

> If you [parent] sit in front of the child in a meeting and say: 'Well, you know - mathematics, I have *never* understood it, it's so difficult' […] Children who think that mathematics is so boring, and then you meet the parents and realise 'aha, okay', because parents pass their ideas and thoughts on to their child.

Similarly, arguing that she would prefer parents to be more constructive by looking for solutions rather than talking to their children about their own difficulties, Marita commented that "instead of saying 'I was not good at math', well [they should] withhold it […] More: 'what can we do? How can we work with this at home?". Encouraging such a constructive approach among parents seemed to be a responsibility taken by some of the teachers. Julia, for example, described how she attaches great importance to gaining the trust of parents and how she wants to facilitate a more positive dialogue around mathematics:

> Maybe I [the parent] have transferred [the feeling of mathematics as being difficult] to the child, and when you [as a teacher] begin to investigate this a little, you have to try to turn it around to get this positive spiral. I think that is important.

Children's learning of number: Direct formal parental involvement

While teachers appeared to have only a vague awareness of the number-related practices that occur in children's homes, they mentioned particular matters in which direct parental involvement was evident. In particular, when children struggle with mathematics, parental involvement becomes necessary and direct contact between school and home initiated, as explained by Julia, who commented that, "because some children who are struggling need extra support… it's important to make parents understand this". This awareness on the part of teachers includes a range of specific tasks to be undertaken at home. For example, Lena argued that "when you have a pupil who has difficulties with something, you *must* contact the parents and give them things to practice at home". In similar vein, Irene drew a clear distinction between providing all parents with home tasks for their children and children who are falling behind; "I don't say to parents: work with this at home. Unless it's for children who need it, to ensure they can catch up. Otherwise I don't do it".

In contrast to providing support for struggling children, teachers recognised the difficulties that can develop when parents, typically too eager to make sure their children are challenged, encourage them to do extra work at home. These parents evoked mixed feelings amongst teachers. On the one hand, teachers expressed frustration about parents wanting to push children forward irrespective of any awareness that laying a good foundation takes time, as seen in Irene's comment:

> The problem is, I think, when [parents] are like: 'What can we work with at home? What can we do?' And then I most often say: No, you shouldn't do anything. 'But can we move on? Can [my

child] work with multiplication? We have started doing multiplication at home.' It's so *forced*, because [parents believe that] the more you practice at home the better you become.

On the other hand, cautious not to convey negative attitudes about eager parents in front of their children, teachers seemed willing to turn such parental engagement into something positive. For example, Lena, reflecting the comments of others, said "When they do maths at home, parents write problems for them to solve, that's what they say sometimes: 'My dad does calculations with me, at home'", explaining that she responds to this in an encouraging manner: "Well, great, you can practice even more, higher number and so, that's what I tell them".

An issue that prompted varying opinions concerned homework, a practice both supported and resisted by teachers. From a positive perspective, as noted by Julia, homework is a means to "make parents see what we are doing in school" and to encourage cooperation at home. In similar vein, Lena commented that homework is important because children "get a chance to sit down with their parents". However, schools' responsibility to compensate for different home conditions by ensuring the same opportunities for all children was presented by most teachers as the primary reason for their reluctance to place expectations on parents to become more actively involved in homework. This viewpoint was expressed by Julia, who said that while "it is supposed to be equal, we should all be given the same opportunities, and therefore we cannot put this on the homes". However, others acknowledged that schools cannot fully compensate for the diversity of family backgrounds, as reflected in Ellinor's view that "it should not matter what you do at home, but it does. And we can never, within the school's context, weigh up for what children get at home".

In line with this caution, and with few exceptions, teachers agreed that homework should be designed not to be dependent on parental support, but be about repetition and the practising of skills that children can manage to complete without parental explanations. According to Wilma, this is agreed upon between teachers at her school:

> We don't send home things that need to be explained, because it's we who teach, not the parents. And it's not that we don't believe the parents would be able to, if we asked them. But we don't want to put that responsibility [on the homes]. It's our responsibility.

Children's learning of number: Direct informal parental involvement

Teachers seemed clear that parents can support their children's learning of number through a variety of everyday activities that implicitly involve mathematics. For example, Mona spoke about the "stuff you do in everyday life, without thinking that it's about number sense […] 'Can you set the table?' and then [the child] can count. Simple things like that". By engaging in activities such as baking, setting the table, noticing house numbers, telling the time, building with Lego and using money, children are able to practise number skills. In this respect Matilda's comment was typical:

> If you have counted how many teeth you have lost, if you have talked about the different numbers on houses, everyday maths like this, you go to the store and have a notion about money, that you pay and get change in return.

Ellinor spoke of how such activities help children become familiar with important concepts, saying that if "you and I share an apple. Well, how can we share it? Look, we got a *half* each. […] And

now we are three sharing, how should we do that? […] Then we get a *third* each". Indeed, teachers seemed convinced that everyday conversations about mathematics can contribute to children's understanding of the subject's relevance, as seen in Marianne's comment that "I think parents should keep in mind to tell their children: 'Look, how good it was to know mathematics in this situation' […] That children understand how much is maths in their lives". At the same time, teachers tended to emphasise that being involved in children's early learning of number at home does not necessarily involve high demands on parents, as seen in Ellinor's comment that "it is about everyday life […] I mean, it doesn't have to be more complicated than that". Similarly, with the aim of creating enjoyable ways for children to experience mathematics, having opportunities to play cards, board and dice games are seen as effective ways to help children build a strong sense of number. In this respect, Mona's comments reflect those of others:

> Play a lot of games, board games. I don't mean computer games now, but Yahtzee and little things like that, because it is so incredibly rewarding. […] It's a nice moment, when you are sitting down to play a game at home. It doesn't have to be linked to school.

Discussion

In this paper, based on semi-structured interviews with ten Swedish teachers of year one children, we have attempted to elicit teachers' perspectives on the nature of parental involvement in children's coming to understand number. In broad terms the analyses identified a positive view of parental involvement, with teachers seeing as important the setting up and maintaining of channels of communication between the school and home. More particularly, however, the analyses identified three broad themes; one focussed on indirect parental involvements and two focussed on different manifestation of direct involvements, one formal and one informal (LeFevre et al., 2009; Huntsinger et al, 2016). These we discuss in turn.

In terms of indirect parental involvement in children's learning of number, that is, involvement beliefs (von Otter, 2014), teachers were clear as to the importance of parents encouraging their children to acquire positive attitudes towards mathematics, typically through the presentation of positive attitudes themselves and the manner in which everyday household activities encourage children to feel "at home" with number. Moreover, as seen in the comments of Julia and Matilda, there were clear indications of teachers' being worried about parents who transfer negative values onto their children. Such perspectives accord with earlier research highlighting the importance of parents in the construction of children's attitudes towards learning (Christenson & Sheridan, 2001) and confirm that such matters may be more important than concrete actions (Jeynes, 2016).

With respect to direct formal parental involvement in children's learning of number, three issues emerged, each related to different forms of involvement practices (von Otter, 2014). The first concerned supporting children who had been identified as having difficulties with mathematics. Here, teachers were clear not only of their obligation to communicate with the home but also of the need for parents to become involved in supporting their children through number-related practices at home. The second, however, highlighted a tension between teachers who advocate, and those who do not, the use of formal homework for all children, not just those with difficulties. Moreover, even among those teachers who advocated homework, different perspectives could be discerned.

There were those who saw homework as a means of communication between school and home and an opportunity for parents to sit with their children and share a mathematics-related activity, views commensurate with earlier research on the effectiveness of such activities (Domina, 2005). However, there were also those who believed that homework should be completed independently of parental involvement; otherwise it would be a breach of the teacher's responsibility or it would undermine the equity teachers believed was important. Those who argued against homework saw it as a compromise of the educational equity they saw as an inbuilt characteristic of Swedish schools (Dahlstedt, 2009), particularly as differences in parental attitude and competence would impact on children differently. The third, also construed as an issue of equity, was a broad consensus that parents who accelerate their children's learning by providing additional material were problematic.

The third category concerned direct informal parental involvement in children's learning of number, which we see as a juxtaposition of von Otter's (2014) involvement beliefs and involvement practices. Here teachers spoke of specific activities with the potential for supporting the development of both positive attitudes and number-related competence. However, they did not discuss such things as actualities but possibilities, being largely uncertain as to what the parents of their pupils actually do. That said, teachers' perspectives on the creation of number-aware home environments accord with earlier studies on successful home interventions (LeFevre et al., 2009).

In closing we note that the act of asking Swedish teachers to discuss parental involvement in year one children's number-related development seemed to create tensions, not least because the issue was something to which they had rarely paid attention. These tensions we construe as being a consequence of two important characteristics of Swedish education. The first is that Swedish teachers are not constrained by the systematised home-school structures found in other countries that lengthen the school day by expecting parents to work as de facto teachers at home. The second is because any encouragement of work at home compromises the deep-seated belief that equity can only be guaranteed if the school takes all responsibility for children's learning. These findings suggest a need for further studies, exploring parents' perspectives on their role in their children's learning of number, whether formal or informal.

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