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Does group size matter in preschool teacher's work? The skills teachers emphasise for children in preschool groups of different size

Pia Williams [a], Sonja Sheridan [b], Heidi Harju-Luukkainen [c], Ingrid Pramling Samuelsson[d]

[a] *University of Gothenburg, pia.williams@gu.se*
[b] *University of Gothenburg*
[c] *University of Gothenburg, University of Jyväskylä, University of Helsinki*
[d] *University of Gothenburg*

ABSTRACT: In recent years there has been a debate in the Nordic countries about group size in preschool and how it affects preschool teachers' work and children's wellbeing and learning. The aim of this article is to analyse and discuss how preschool teachers' working with child groups of different sizes view the conditions for children's learning and development related to different abilities and skills. The survey data consists of preschool teachers' (N=698) responses to a questionnaire. The results indicated no statistically significant differences between preschool teachers' views and emphases in groups of different sizes as regards the type of abilities in children's learning. In all group categories, preschool teachers seem to emphasise a similar set of characteristics and social skills in children's personal development; to be collaborative, to have respect, to have empathy and a good self-esteem or understanding of oneself.

Keywords: *Preschool, group size*

Introduction

This article aims to analyse and discuss how preschool teachers working with groups of different sizes view the conditions for preschool children's learning and development related to different abilities and skills.

Important factors for creating good learning conditions are well known through research. Teacher competence is one of the main factors influencing the quality of preschool education and, consequently, the quality of children's learning (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2010). Preschools of high quality can significantly benefit children in terms of academic achievement, self-esteem and attitudes towards lifelong learning (Burchinal et al., 2002; NICHD, 2005; Schweinhart, Barnes & Weikart, 1993; Sheridan, Pramling Samuelsson & Johansson, 2009). The overall curriculum and objectives for preschool are vital (Munton et al., 2002). Important are also structural factors, such as socio-economic area, staff/child ratio, number of children and the composition of the group of children (OECD, 2012) as well as physical space in preschool (de Jong, 2010).

In recent years there has been an ongoing debate in the Nordic context about group size in kindergarten and preschool settings (ages one to five), (Seland, 2009; Sheridan, Williams & Pramling Samuelsson, 2014). According to the Swedish National Agency for Education (2014), the number of children enrolled in preschool has increased during the last ten years, while group sizes have remained somewhat stable during this time period. In spite of this, some researchers have expressed concern about the increasing number of children in the preschool groups (Barnett, 2011; Broberg, Hagström & Broberg, 2012; Camilli, Vargas, Ryan, & Barnett, 2010). Smaller groups of children are also preferred over the larger ones in public talk. This is in line with research evidence, which indicates that smaller group sizes are often associated with higher quality and better conditions for learning (Burchinal, Cryer & Clifford, 2002; De Schipper, Riksen-Walraven & Geurts, 2006; Munton et.al., 2002; OECD, 2012). Smaller groups are especially important for younger children (Asplund Carlsson, Pramling Samuelsson & Kärrby, 2001; De Schipper et al., 2006; Eek Brandlistuen et.al., 2015). For example, Seland (2011) has pointed out that more children per adult means less space and time for each child as well as multiple interactions and contacts for the children to relate to.

In Sweden preschool constitutes the first step of the educational system and embraces 84 per cent of the children between the ages of one to five years (Swedish National Agency for Education, 2014). Preschool should offer an enjoyable, secure and rich learning environment, aiming to give children a good start in life by applying a holistic approach to promoting their lifelong learning and development (Swedish National Agency for Education, 2011). Thus, education starts early and is a question of laying a broad foundation for children's life in terms of wellbeing, values, attitudes, play, learning and creativity. The Swedish preschool curriculum was revised in 2010 and is composed of goals within a broad range of content areas, in which children's social and cognitive learning are integrated and viewed as of equal importance (op.cit.). It means, for example, that children are expected to develop social competences, acquire knowledge of

mathematics and science and learn how to play and cooperate with peers. This has affected the preschool teacher education and their perspective on, for example, which abilities are of importance for children and their development.

Preschool teachers perceive that large child groups make it harder to engage in close interaction and communication with the children. They also find it hard to be attentive to individual children in everyday learning situations and implement the curricular goals for different content areas such as language, science, mathematics and art (Pramling Samuelsson, Williams, Sheridan & Hellman, 2015). Thus, the quality of a preschool, with reference to the conditions created for children's learning for different contents, is dependent on several factors, wherein group size, preschool teachers' competence and how they work with the curricular goals are among the most important ones.

From these premises we have formulated the following research question: What impact does group size have on the conditions for preschool children's learning and development with regard to different skills and abilities? To answer this question, data were collected by a survey as part of a larger research project "The impact of group size on children's affordance in preschool", launched in 2011 at the University of Gothenburg in Sweden. This article focuses on the questionnaire data. So far, relatively little research has been conducted in Sweden on how group size affects the conditions for children's learning and development in preschool in terms of their different abilities. Therefore, this article gives a well-needed outlook on the issue of group sizes.

Children's learning of contents and skills in preschool

In modern society, children need to develop a wide range of competences, skills and abilities, since a general premise of democracy is that individuals make their own decisions as informed citizens (European Parliament, 1996; 2006). The learning and development goals are associated with so-called key competences. These correspond to various skills and abilities such as cooperation skills, responsibility, initiative, flexibility, reflectivity, active approach, communicative skills, problem solving, critical stance, creativity, as well as learning to learn. These different skills and abilities form a central dimension in preparing the children of today for the society of tomorrow (European Parliament, 1996; 2006; Williams, Sheridan & Sandberg, 2014). Other fundamental learning objectives relate to children's abilities to make sense of the world around them, including various subject areas such as culture, natural science, technology, reading and writing, mathematics etc. Hence, preschool can be considered as a community where children should learn to live with other people outside the family (Tallberg Broman & Pramling Samuelsson, 2013). In the Swedish preschool curriculum, learning is outlined as follows:

> *"The preschool should promote learning, which presupposes active discussion in the work team on the contents of what constitutes learning and knowledge. Knowledge is a complex concept, which can be expressed in a variety of forms – as facts, understanding, skills, familiarity and experience – all of which presuppose and interact with each other. The starting point for the preschool is the experience children have already gained, their interests, motivation and their drive to acquire knowledge. Children search for knowledge and develop it through play, social interaction, exploration and creativity, as well as through observation, discussion and reflection. A theme- oriented approach can broaden and enrich the child's learning.*"
>
> (Swedish National Agency for Education, 2011, p. 6)

Preschool education has traditionally differed from school education, focusing on the child's personality and development. Learning of different subject matters used to be more specifically a mission for schools, while learning of social aspects were basically associated with the preschool context. Halldén (2014) points out that preschool should bridge the social gap in society, which also entails building a bridge between social work and preschool pedagogy. Group activities in preschool often become a question of social (-pedagogical) values like feeling at ease in the group (Pramling Samuelsson, Wallerstedt & Pramling, 2014; Williams, Sheridan & Sandberg, 2014).

The key notions of theories relative to children's preschool learning in the 21th century include communication and interaction (Pramling & Pramling Samuelsson, 2011; Vygotsky, 1978). Preschool teachers seem to be generally aware of the importance of communication, but there are differences as to how they organise learning according to the curriculum and notions of early literacy (Gjems & Sheridan, submitted). Hence, the teachers' competence is an important aspect of preschool quality in this regard. It was shown in the study by Sheridan, Pramling Samuelsson and Johansson (2009) that the quality of preschool influenced young children's learning: higher quality showed in the early literacy and mathematics skills of children as young as three years. Also preschool teachers' competence and motives to organise the children in smaller groups vary, even if this would be essential for engaging in, listening to and having dialogues with children (Sheridan, et al., 2014).

Another aspect is that learning seems to have become more individualised. Preschool teachers aim to communicate with each child individually instead of trying to handle the group of children, which can be regarded as a misinterpretation of how children learn (Pramling Samuelsson, Wallerstedt & Pramling, 2014). Research shows that if children get access to a richer repertoire of ideas and can talk about these differences and similarities, it supports their learning (Pramling, 1994). Finding variation in experiences and perceptions makes it possible to realise both that there are various ways to

understand something, and that everybody do not see things in the same way. Thus, communication in a group could be the actual source for children's learning in preschool. Even if the preschool teachers seem to be aware of the importance of communication, they focus on teacher – child communication, instead of using the group as a base for communication (Pramling Samuelsson, Wallerstedt & Pramling, 2014; Williams, Sheridan & Sandberg, 2014).

Factors affecting conditions for children's learning in preschool

There are several factors affecting children's learning in preschool. The significance of these factors varies depending on how they interact with one another and on how they are weighted in different situations or by the chosen perspective Two factors affecting learning in preschool are group size and preschool teachers' competence (Sheridan, et al., 2009; Sheridan, Williams & Pramling Samuelsson, 2015).

In Sweden, there is no recommendation for the number of children in preschool groups. The average group size is 16.9 children, but this can vary between municipalities (mean range 12.6-25.6), (Swedish National Agency for Education, 2014). Also the staff-child ratios and the number of adults vary. An average is 5.3 children per adult. Thus, Sweden has one of the lowest staff-child ratios in the OECD countries (OECD, 2013). However, in Sweden the number of children in a preschool group can vary from approximately 11 to 50 children, as preschools are free to combine groups into flexible open preschool groups, which is also common in Norway (Skalická, Belsky, Stenseng & Wichstrøm, 2015). The variation in group size brings about different conditions for children's learning and also for teaching.

According to Seland (2011), the more children there are in a group, the less time and space each child gets with teachers. Similar findings were reported by Pramling Samuelsson, Williams and Sheridan (2015). Their research shows that preschool teachers found it difficult to communicate and have a dialogue with all children if there were too many children in the group. Seland (2011) highlights that even a few more children in a group can largely affect the conditions for individual children's learning and wellbeing and also for the preschool teachers' work. From the preschool teachers' point of view, in larger child groups the practical work is affected in terms of stronger structures and clearer division of children into smaller groups within the large one (Seland, 2009). Similarly, in the study by Pramling Samuelsson, Williams and Sheridan (2015) the preschool teachers expressed that they adapted their work according to the group size and excluded certain content areas if they experienced that they had too many children in the group. From children's perspective it can be demanding to have to relate to a large group of peers and maintain these relations.

In previous research, teacher's competence is seen as the main quality factor (Sylva et al., 2010) and as more crucial than the actual number of children (Gustafsson & Myrberg, 2009). Variations in preschool teachers' competence can be described in terms of pedagogical intentions, the uses of material resources, contents, activities, teachers' didactical learning strategies, approaches, communication and interplay with children, documentation and evaluation (Sheridan et al., 2009; Sheridan, Sandberg, Williams & Vuorinen, 2011). The demands for preschool teachers have also increased in recent years, and especially with the revised curriculum in Sweden. The revised curriculum is more learning-oriented with a stronger emphasis on early literacy, mathematics, science and technology, and previously trained preschool teachers may be less competent in these content areas. When the demands for documenting, evaluating and developing the quality of preschool are added with the pressures pertaining to growing group sizes, it might feel like a heavy burden (Emilson & Pramling Samuelsson, 2014). It is therefore important to highlight preschool teacher's competence and group size as important factors strongly affecting the quality of preschool in terms of the conditions for children's learning.

Theoretical frame

This article is based on interactionist and ecological system theories (Bronfenbrenner, 1979; 1986), as extended by Garbarino (1992) and by Miller, Dalli, and Urban (2012), who advocate a critical ecology of the profession of early childhood education. Through Bronfenbrenner's ecological system theory, we analyse how preschool teachers working with child groups of different sizes view the conditions for preschool children's learning and development related to different abilities and skills. Social policy operates at the macro level by reflecting societal intentions and ideologies related to the educational system (Ball, 2006). Thus, the macro system provides information about the overall goals for preschool and indicates how these goals ought to be implemented in practice in terms of values, contents, skills and abilities. The ecological perspective contributes also to the understanding of social policy issues affecting structural factors in preschool, such as staff/child ratios and group size, for example. Through the ecological system approach, the teachers' work and children's learning practices in preschool are examined at different interrelated system levels, namely at the macro-, exo-, meso-, micro- and chrono levels. In our study, the macro system is seen as contextualising the structural conditions for children's learning in preschool. It is at the micro level that the teachers' own views and competence in developing children's learning become visible in their interaction and communication with children.

Method

A survey was conducted for preschool teachers across Sweden. The sampling process of municipalities and preschools is based on statistics from the Swedish National Agency for Education (2012), on the grounds of which we chose municipalities with both large and small numbers of children in preschool groups. After receiving both verbal and written information about the study and questionnaire, the assigned teachers were sent the questionnaire along with a cover letter to all preschools in the municipality.

The survey was conducted at the end of 2012 and at the beginning of 2013. The questionnaire included 46 likert-type items about preschool teachers' approach to children's competences and abilities and also about the grounds for dividing children into groups. Other questions in the survey were fixed-format or open-ended questions. Altogether 698 preschool teachers from 46 municipalities across Sweden answered the questionnaire (see Figure 1), representing thus approximately 16 per cent of the Swedish municipalities. According to Figure 1, the geographical distribution of responses was not even, however, as one third of the responses came from the two largest cities: Stockholm and Gothenburg. From 16 municipalities the data were received from one respondent only. The study follows the Swedish research council guidelines and ethical rules in social science research.

FIGURE 1 Municipalities involved in the research

Results

According to the Swedish National Agency for Education (2014), the percentage of male preschool teachers is approximately 4-5.8% - depending on whether the preschool is

private or municipal. In this research data 97.7% of the responses came from women and only 1.6% from men, while approximately 0.7% of the respondents did not identify their gender. This means that female teachers are overrepresented in this data compared to the actual situation in the field. The mean age of the respondents was 44 years, and most of them (approx. 64%) had been working in preschool more than ten years. This means that the respondents of this study represent a group of preschool teachers well familiar with the fieldwork.

According to the Swedish National Agency for Education (2013, 2014), there have been no large differences in the average group sizes in preschool in recent years, even though the demand of preschool places has increased. In fall 2012, the average group size in Sweden was 16.9 children. In this research the mean group size was a bit larger, 20.3 children per group. This was due to the fact that in this study the smaller groups were underrepresented and larger groups were overrepresented, compared to the actual national statistics of the Swedish Agency for Education (2014). The group sizes varied in this study from 7 to 57 children per group. One of the most important quality factors in preschools is the number of children per adult. The average in this study was 5.13 children per adult, which is quite close to the ratio in 2012 reported by the Swedish National Agency for Education (2014), which was 5.08 children per adult.

A five-point Likert-type rating scale was used to measure the preschool teacher's level of agreement or disagreement on the 18 statements concerning their work with children. These items are displayed in Table 1. Here the respondents marked, for each 18 ability items, to what degree these were emphasised in their daily work in order for the children to learn (1= lowly emphasised, 5= highly emphasised). The Cronbach's alpha coefficient for internal consistency of these items was 0.92. This value indicates that the items in the set are closely related with each other and the internal consistencies of these items are very high.

In the questionnaire the preschool teachers also reported how many children were enrolled in their groups. To examine how the different group sizes were possibly reflected in the teachers' views on the items, the data was divided into three teacher categories; those working with small, medium-sized or large preschool groups. How to define the different teacher categories is somewhat problematic. This is due to the fact that there is no previous research concerning preschool group size in Sweden, and therefore there is neither any previous reference on this aspect. Neither are there any legislation or other steering documents specifying the size of a small, medium-sized or large preschool group in Sweden. Hence, we had to outline the categories according to the data and relying on the national mean range statistics for preschool group sizes. In Sweden, the average group size is 16.9 children, but this can vary considerably between municipalities, while the

mean range is 12.6-25.6 children per group (Swedish National Agency for Education, 2014). For this paper we first decided to use the national mean range (12.6-25.6) as the guiding framework and set the smallest group category to a maximum of 12 children and the largest category to above 27 children. However, due to the fact that in this assessment the mean group size was somewhat larger than the mean group size in national statistics, and also to make the largest and the smallest group categories equally large, we decided to adjust the largest group to 28 or more children. Therefore the respondents were distributed across the three categories as follows: 5% of the preschool teachers were working with small groups (max. 12 children in the group), 90% were working with medium-sized groups, and the rest 5% with large groups (28 children or more in the group).

The means and variance for each questionnaire item are presented in Table 1. The most highly emphasised items are marked with red. Overall, the analysis of variance (one-way ANOVA) showed no significant differences between the different items at significance level set to 0.05. We also conducted a factor analysis with maximum likelihood and varimax rotation in order to find possible underlying unobservable variables. However, we were unable to find a simple structure due to the fact that all variables loaded highly onto one factor.

The variance also tells about how the teachers responded to the items in general (Table 1). A large variance indicates that the teachers' responses are more spread out around the mean. Correspondingly, a lower variance indicates that the values in teacher responses are more identical. In all of the highly emphasised items the variance was low. Therefore the teachers had responded to the items quite similarly. In two of the items the variance was somewhat larger, above 0.8 across all categories. These were the items called "to be observant" and to "think critically". The item "To have self-control" had also somewhat high variance values in the categories of small and medium-sized groups.

TABLE 1 Means and variance of teacher responses in different group size categories

ITEM	CATEGORY	Variance	Variance	Mean	Variance

	Mean **Small size group** **N=43**		Mean **Medium-size group** **N=617**		**Large size group** **N=36**	
To take responsibility	4.419	0.44	4.29	0.578	4.472	0.542
To take initiative	4.209	0.503	4.158	0.626	4.194	0.675
To be expressive	4.047	0.617	3.866	0.763	3.972	0.656
To collaborate	4.698	0.311	4.652	0.425	4.75	0.193
To be flexible	3.791	0.693	3.73	0.797	3.917	0.707
To learn	4.535	0.445	4.396	0.597	4.457	0.55
To be reflective	4.093	0.801	4.168	0.796	4.389	0.644
To be communicative	4.628	0.382	4.537	0.519	4.639	0.352
To think critically	3.628	0.858	3.638	0.97	3.75	1.221
To be curious	4.767	0.23	4.597	0.508	4.583	0.364
To have respect	4.698	0.359	4.708	0.425	4.806	0.161
To solve problems	4.302	0.692	4.249	0.664	4.361	0.809
To have empathy	4.767	0.326	4.741	0.387	4.829	0.146
To have self-control	3.86	0.885	3.828	0.875	4.056	0.511
To be observant	3.419	0.773	3.398	0.883	3.444	1.168
To be playful	4.571	0.446	4.543	0.549	4.694	0.447
To be creative	4.558	0.681	4.503	0.59	4.694	0.333
To have an understanding of oneself/self-esteem	4.767	0.516	4.726	0.456	4.944	0.054

The most highly emphasized items
High variance

As a summary of the findings, Figure 2 presents six abilities in each group size category that were most highly emphasized by the teachers in order for the children to learn in preschool. The stated emphases are mostly similar in all the three teacher categories (no statistically significant differences). Regardless of the group category, the preschool teachers ranked highest the same items: to be collaborative, to have respect, to have empathy and to have a good self-esteem or understanding of oneself. What was distinctive of the small-group category was the emphasis placed on communicativeness, while in the large-group category teachers put more emphasis on creativeness. However, it must be

kept in mind that there were no statistically significant differences between the different group size categories as a whole. Abilities that were not emphasised in the same sense included, for instance, such as learning, critical thinking and being observant – qualities that are much needed in children's everyday life later on. In fact these two items had the largest variance concerning teacher responses.

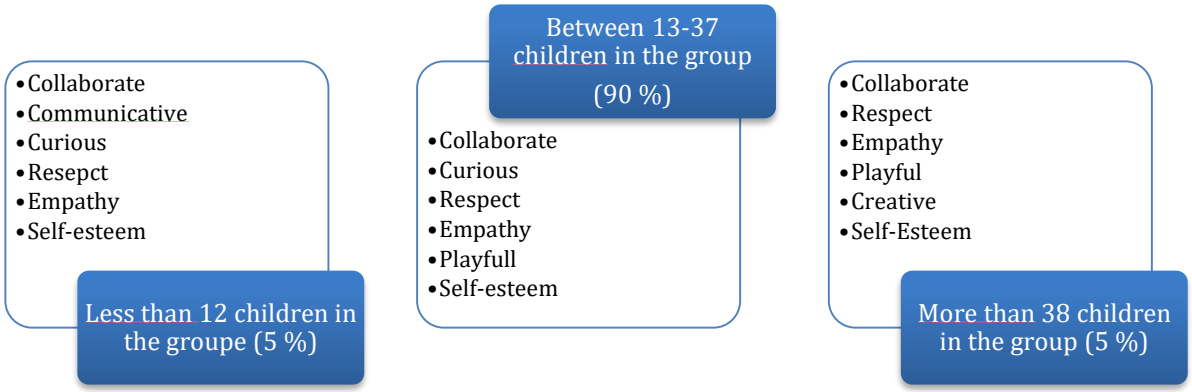

FIGURE 2 Skills and abilities emphasised by preschool teachers in relation to different group categories

Discussion

In this article we have analysed differences between preschool teacher responses to 18 questions concerning preschool children's learning and development with regard to different skills and abilities. The respondents (N=698) were divided into three categories according to the size of the preschool group they were working with. The results show that irrespective of group size, preschool teachers emphasise abilities that are connected to children's social development. Variance analysis revealed only small, statistically non-significant differences between teacher responses across the three group size categories. Teachers working with smaller groups tended to put more emphasis on communication while teachers working with larger groups seemed to put more emphasis on creativity. On the other hand, cognitive skills such as being critical and observant were less emphasised in the preschool teachers' answers. These two items had also the largest variation in the answers.

Siraj-Blatchford (2010) points out that it is important to combine children's cognitive and

social learning and to view them as complementary. This is also in line with the intentions in the revised Swedish preschool curriculum (Swedish National Agency for Education, 2011) as well as the key competencies emphasised as vital for children's early development (European Parliament, 2006), where the development of children's social, emotional and cognitive competences are integrated in a holistic approach (Williams, Sheridan & Sandberg, 2014). This study indicates that teachers value different abilities in different ways. Some aspects, like those connected to children's social development, are emphasised more than cognitive skills, for example. A holistic approach, where social, emotional and cognitive aspects are seen as equally important for children's development and learning is therefore not evident in this data.

In Sweden the curriculum for preschools was revised in 2010, where some goals were strengthened. Alongside with promoting play, creativity and enjoyment of learning, preschool should also focus on the child's interest in learning and gaining new experiences, skills and knowledge (Swedish National Agency for Education, 2011, p. 9). In the light of our results, despite all efforts in getting a more learning-oriented preschool with specific content areas, various social skills still seem to be the main focus in early childhood education, regardless of group size. Therefore, depending on preschool teachers' understanding of the intentions of the curriculum, preschool may or may not become an arena for children's learning of integrated social and cognitive competence.

Bronfenbrenner's ecological system theory explains how social policy operates at the macro level but is not yet integrated throughout the educational system. According to the preschool teachers' answers in this study, their work does not necessarily focus on cognitive abilities to any large extent, whereas social skills are emphasised as more fundamental to children's learning. Therefore, there are most likely also differences in how the preschool teachers understand and implement the curriculum. Further, this understanding might be related to the social pedagogic approach that has a long tradition in Swedish preschool education (Bennett, 2004).

These findings indicate the importance of training preschool teachers for such preschool pedagogy that embraces both the traditional characteristics of preschool (play, learning and care) and knowledge in different subject areas (Sheridan, Sandberg & Williams, 2015). Thus, the purpose is to guarantee a high quality and equal conditions for children's learning, development and wellbeing. This is based on the fact that teacher competence is one of the main factors impacting preschool quality and, furthermore, that the quality of preschool makes a difference to children's learning (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2010). Many Nordic countries have recently revised their curricula, where specific content areas are emphasised more than previously. Despite this shift of focus in the curricula, it may take a longer time to put the shift into practice in preschool

contexts.

Finally, in this study we asked whether preschool teachers' answers would differ across preschool groups of different sizes; small, medium-sized and large ones. According to the results, the teachers' answers were quite similar across these group categories and no statistically significant differences could be found. It seems, therefore, that the preschool teachers do not emphasise different abilities and skills depending on group size, nor are their views much affected by this factor.

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