Peer mediated learning in inclusive education:
A systematic literature review on the strategies and their effects on children

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ABSTRACT

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During the past few years, mainstream education has become more and more inclusive all over the world. This fact calls for effective teaching methods, supporting the participation and learning of all the students in a class. Such methods are the ones that occupy peer-mediated learning and methods related to them. This study aims to investigate strategies of interventions involving peer-mediated learning between children in need of special educational support and typically developing children 3-12 years of age and their effects on them. In order to achieve that, a systematic literature review was conducted, for which five databases were researched. Eight articles came up, each describing a different strategy occupying peer-mediated learning or a strategy related to it, which had multiple benefits for the participating children on engagement, social and cognitive level. Further research is needed, though, to address the gaps in literature.

Keywords: peer mediated learning, peer tutoring, special needs, inclusion, interventions, strategies, primary school, preschool

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1 Introduction

During the past few years, mainstream education has become more and more inclusive all over the world (McLeskey, Henry, & Hodges, 1998). This means that children with special educational needs and typically developing children go to the same schools and are educated in the same classrooms. As a consequence, mainstream classes in all educational levels, have larger numbers of students on all academic levels under the supervision of only one teacher per class. This fact calls for effective teaching methods, supporting the participation and learning, to the extent needed of all the students in a class. Such methods are the ones that occupy peer-mediated learning and methods related to them. This study aims to investigate strategies of interventions involving peer-mediated learning between children in need of special educational support and typically developing children 3 -12 years of age.

2 Background

2.1 Establishing educational rights

2.1.1 Rights of all children
In 1989 the Convention of the Rights of the Child was first introduced. It was then stated clearly, by the United Nations (UN), that education should be a guaranteed and an undeniable right of all children, with no exceptions. More extensively, it was mentioned that all States Parties of the UN agreed to have primary education available and free to all, as well as to encourage the transition to secondary education. The education being given, should develop every child's personality, talents and physical abilities to the fullest, as well as pass on the feelings of respect for other people's freedom and rights, for their own and other people's cultures and for equality and friendship (United Nations, 1989).

2.1.2 Children with special educational needs
Later on, in 1994 the Salamanca Statement and Framework for action was established by Unesco, introducing us with the term “special educational needs”. It is a term that describes all those children and youth whose needs arise from disabilities or learning difficulties (Unesco, 1994, p. 4). According to this definition, a lot of children could be considered children with special educational needs, but in reality the majority of these children remain unidentified and are not addressed for additional support in educational context in most countries (Lillvist &
Granlund, 2010). For the purposes of this study, children with special educational needs are considered only those who have an official diagnosis.

2.1.3 Rights of children with special needs

Deriving from the Salamanca Statement definition (Unesco, 1994) for children with special needs, the need for an equal education without discriminations for all children also emerged. This lead to the merging of education for typically developing children and special education for children with special needs, and the “inclusive education” to be introduced. For the simplicity of this study, from now on children with special educational needs will be referred to as children with special needs.

In 2006 another convention was agreed upon, the one establishing the Rights of the Persons with Disabilities. In article 24 particularly, the right of children with special needs to education was highlighted, in an effort to eliminate discriminations and promote equality on all levels of education. The UN aimed at enabling children with special needs to effectively participate in every aspect of their lives to the fullest, including education. Accordingly the UNCRC, matters of free and of good quality primary education and secondary education equal to all are considered. Effective support in all aspects of education is also raised as an issue, in order to promote their full inclusion (United Nations, 2006).

2.2 Inclusive education

2.2.1 Inclusion in education

Inclusive education is an important part of promoting the rights of children with special needs. The fundamental principle of inclusive education is that all children should learn together, wherever possible, regardless of any diversity or restriction they may have. Inclusive schools are capable of providing quality education for all children, aiming at the same time towards a change of attitudes and practices that discriminate people. Ultimate goal of this is to reach, at some point, a society that is inclusive and welcoming towards all people regardless of their religion, origin, socio-economic status and, of their physical or mental characteristics. Solidarity and trust are being built between children (Unesco, 1994).

Inclusive educational systems are based on the idea of inclusion. The basic issue of inclusion, is meeting the educational needs of all children with no exceptions and to eliminate discriminations on all educational levels, from preschool to secondary education. It can be realized through building an inclusive community, promoting the active participation of all
children introducing multiple ways of learning and cooperating, building stable basis of peer relationships and friendships and providing enjoyable chances for learning within school context (Lim & Ireland, 2001). This is why inclusive education has become a trend in the western societies and is being extensively implemented (McLeskey, J., Henry, D., & Hodges, 1998).

In order to have successful inclusion of every child within the respective educational system, the child itself and the teacher are not the only ones who have responsibility. Parents, families, other professionals and, as mentioned before, peers have to help in order to achieve the targeted goals of inclusion (Unesco, 1994).

2.2.2 The child ecology in inclusive education

Bronfenbrenner (1979) proposed a framework concerning the ecology of human development. He suggested that human development is a process through which the person is affected by his/her environment on different ecological levels, in such a way as to interact with it and affect it back in different forms and levels. The environment, within which these processes take place, consists of different levels.

The most general level is that of the culture of the society where the developing person lives - the macro level (Bronfenbrenner, 1979). It consists of all the ideas the culture is made up of, the general beliefs and ideologies. In inclusive education context, it is referring to the general culture around, the ideologies and the laws and regulations considering children with special needs and how they should be educated.

Right beneath, the exo level (Bronfenbrenner, 1979) affects or is affected by the settings which involve the person, but not the person itself. In inclusive education context, examples of exo systems are the principals of the school, or the legislative organs that consider inclusive education and modifications needed.

The next level is the meso level (Bronfenbrenner, 1979) and it involves the relations between the different settings that involve the developing person. An example of a meso level in inclusive education, is the relations between the child's teacher and the child's family - how they recognise the child's needs and how they collaborate in satisfying the needs. The meso level is a system of micro systems.

The level closest to the person is the micro level (Bronfenbrenner, 1979) on every setting, in which the child is an active participant. Micro levels in inclusive education are
the school, the class, and the child's peer groups within the school. There is communication throughout the system - between the different levels, and changes on one level can directly or indirectly, bring changes to the rest of the levels. All levels are considered, although, for the purposes of this study, the micro level of the class is the main focus.

2.2.3 Inclusion but not integration
Western educational systems passed through the stage of integration before starting to move towards inclusive education. The integrative educational practices tended to 'normalize' the children involved. Children with special educational needs would plainly be placed within mainstream education and would be expected to adapt into a school environment with no adjustments. The children were physically there, but their needs were not always recognised or accounted for (Avramidis & Norwich, 2002).

Following that movement, inclusion in education was introduced. Inclusive education suggested reconstructing the mainstream education in order to accommodate the special educational needs of every child and ensuring that they all belong to the context (Avramidis & Norwich, 2002; Rodriguez & Garro-Gil, 2015).

2.2.4 Participation and learning in inclusive education
Bornman and Rose (2010) support that inclusion is realized in an educational system, where all children can equally participate and not be discriminated. But what is implied by the word 'participate'?

A definition given by the World Health Organisation is that participation means "involvement in a life situation" (WHO, 2007, xvi). This definition is very broad, and not very helpful when we want to understand the importance of participation in inclusive education. According to Pettersson (2015), participation can involve the idea of empowerment of the children. Empowerment as being able to influence decisions that affect them directly and indirectly.

Falkmer, Granlund, Nilholm and Falkmer (2012) explain that participation consists of two different dimensions for every child:

The first dimension is 'being there'. In the case of educational context this means that the child attends school and has the chance to be in class with other children. In the case of children with special educational needs, this requires being given the opportunity to attend
school together with typically developing children on an equal basis and to attend alongside typically developing children.

Physical presence in school does not necessarily mean participation (Falkmer et al., 2012). The second dimension of participation is 'being engaged'. It is described as the subjective feeling of participating. The individual being involved in the educational process each time, can best perceive and rate the level of engagement they experience. Due to the fact that it is subjective, it is very difficult to be observed and even more difficult to be measured.

There is also one third component that affects the concept of participation, which is the context in which the individual is being involved. Does the individual find him/herself in a context that stimulates his/her interest? Is the context supportive and accepting towards him/her? Context plays a very important role in participation. In order to understand the nature of participation in a better way, several “different environmental or social contextual units” have to be studied (King, 2013, 466).

Looking at another model that was proposed to describe participation, the environmental dimensions of participation (the 5 A's) are introduced. The 5 A’s describe the environmental dimensions of participation as follows: Availability (whether resources are provided to the children in order to help them engaged), Accessibility (whether the children can perceive or access the situation), Affordability (describes how much effort - time and energy is needed in order for the child to engage in the situation), Adaptability (or Accomodability- describes whether the situation can be adapted to the needs of the child) and Acceptability (whether the child itself accepts the situation and the children around it accept the child itself) (Maxwell, Alves and Granlund, 2012).

2.3 On interventions

In order to achieve better outcomes for each child, interventions are necessary. Participation can be promoted on various levels, depending on what we intervene, and hopefully better life styles can be promoted as well (Sameroff & Fiese, 1990). It is always important to keep in mind that children with disabilities are, as all children, developing organisms, so the intervention goals set and the method used to reach them have to be developed sufficiently through the child's personal, as well as environmental unique characteristics (Rosenbaum & Gorter, 2012). On Bronfenbrenner levels, the micro systems involve the settings closest to the
developing person, so they are the systems on which interventions have the most direct outcomes (Balli, Demo & Wedman, 1998). For the purposes of this paper, interventions are defined as the combining of knowledge and insights of the people included and implementing it as an effort for positive future outcomes (Meisels & Shonkoff, 1990).

2.4 Peer Mediated Learning

Concerning interventions in educational micro-systems (school, class, peer group), one of the possible methods is Peer Mediated Learning. This an umbrella term, which describes a procedure, during which one student/tutor provides to another student/tutee a learning experience, under teacher supervision (Mitchell, 2008). It can also be referred to as peer-mediated instruction, peer-assisted learning strategies (PALS), class-wide peer tutoring, buddy programmes, paired reading and peer support (Mitchell, 2008, p.52). As a teaching strategy, it can be traced back through centuries, but in the past 20 years there has been an increased interest in how it can optimally be used in educational contexts and its benefits on the students, who are involved (Fuchs et al., 2001).

The procedures taking place during peer mediated learning can be used across subject areas (Mitchell, 2008) and can vary a lot. For instance, a high achieving student can assist low performing peer, or children within a class being divided in pairs to provide assistance to each other. Pairing may take place between same-age students, or as cross-age peer tutoring, a younger student–tutee is assisted by an older student-tutor (Grubbs, 2009).

As far as children with special needs are concerned, they can be benefited both academically and in self-esteem matters, when acting as tutors, especially in the early years of their education (Mitchell, 2008). Benefits from peer mediated learning on the academic and cognitive progress of children have been evaluated through research more than on the social benefits (Ladd, Herald-Brown & Kochel, 2009).

A well-designed and well-coordinated peer mediated learning teaching process can benefit the tutees, who get individual attention by their tutor, immediate feedback and repetitive instruction. There are positive outcomes for the tutors to gain by repeating and improving their skills, and enhancing their self-esteem and sensitivity towards others. Finally the teachers are profited as they promote a cooperative environment for their class and gain more time in the learning processes with each child (Mitchell, 2008). This means even in bigger classes they can share their time accordingly and assist to every child's needs.
2.4.1 **Popular peer mediated learning intervention strategies**

One of the most popular strategies that use peer mediated learning in interventions is Class Wide Peer Tutoring (CWPT). It is a strategy that requires no materials to be implemented and very little teaching when introduced in any subject. Normally CWPT is implemented 3 times per week, in 40-minute-sessions, supplementing the teacher instructions. Children are paired to practice the skills taught or pinpoint errors. The pair discusses, find solutions, trade roles and the activities are repeated (Fuchs et al. 2001). According to research, CWPT is a strategy that can improve academic performance, reduce disruptive behaviours and promote relations between classmates, whether these are typically developing children or children with special needs (Maheady & Gard, 2010). Another strategy that retrieves from CWPT, is the Peer Assisted Learning Strategies, which follow more or less the same organizing as CWPT but involve frequent and repeated feedback and discussions between the pairs (Fuchs et al. 2001). These strategies that occupy peer mediated learning do promote inclusion of all children, as the needs of every child are met individually through the peer tutor (Mitchell, 2008). The efficiency of such strategies implies that classes with bigger numbers of students (with special needs and typically developed) have the possibility to provide as good quality education as smaller classes. Therefore, it is necessary that they are studied and developed.

3 **AIM**

The aim of this study is to investigate strategies of interventions involving peer mediated learning between children with special needs and typically developing children, in preschool and primary school, in European and American countries.

1) What strategies, in interventions involving peer mediated learning, have been evaluated in research to aid children with special needs?

2) What impacts does peer mediated learning have on children (both the tutors and tutees)?

4 **METHOD**

4.1 **Search strategy**

For this literature review a database search was conducted in March 2016. The databases used were ERIC, PsycInfo, Scopus, Academic Search Elite and ScienceDirect (limited to the Arts and Humanities subject). These databases gather information from several fields, within
which are included the fields of Education and Health sciences. They contain articles aiming at children with special needs and peer assisted learning as a method for their education. ERIC, PsycInfo, Academic Search Elite and ScienceDirect have education, whereas Scopus has humanities and medicine as primary subjects.

4.2 Selection criteria

Criteria for inclusion of articles in this literature review are the following:

Articles which are peer reviewed are included, and published within the time period January 2000- March 2016. Each of the articles should include either an empirical study or a literature review. Articles should refer to peer mediated learning (or equivalent terms e.g. peer assisted learning, peer tutoring, class wide peer tutoring), between children with special needs that have a diagnosis, and between children with special needs that have a diagnosis and typically developing children, aged 3-12. The articles should refer to strategies for interventions taking place in preschool or elementary school. Lastly, articles that are published in the English language and full text available, requiring no extra fees will be included.

Table 4.1:

<table>
<thead>
<tr>
<th>Selection criteria</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>• age = 3-12 years old</td>
<td>• 3 &lt; Age &gt; 12</td>
</tr>
<tr>
<td></td>
<td>• students at preschool AND/OR primary school</td>
<td>• students in high school or university</td>
</tr>
<tr>
<td></td>
<td>• children with special needs- with a diagnosis (and optionally in combination with typically developing children)</td>
<td>• only typically developing children, or children with special needs without a diagnosis</td>
</tr>
<tr>
<td></td>
<td>• in European and American countries</td>
<td>• in non- European and American countries</td>
</tr>
<tr>
<td>Investigates</td>
<td>• interventions</td>
<td>• not interventions</td>
</tr>
<tr>
<td></td>
<td>• peer mediated learning (or equal terms)</td>
<td>• not peer mediated learning (or equal terms)</td>
</tr>
<tr>
<td>Design</td>
<td>• empirical studies</td>
<td>• book chapters and other documents</td>
</tr>
</tbody>
</table>
The criteria for the exclusion of articles in this literature review are the following.

Articles, which were published before 2000 and articles not peer reviewed will be excluded. Book chapters and documents that are not empirical studies or literature reviews, or not talking about peer mediated learning (or the equivalent terms). Articles concerning peer mediated learning but only between typically developing children, or children with special needs that do not have a diagnosis. Children younger than three or older that twelve, and articles that do not refer to strategies for interventions taking place in preschool or primary school context will be excluded. Lastly, articles that are not in English, not full text available or that have to be paid for will also be excluded.

4.3 Data extraction

When starting the thesaurus in the ERIC database was used and it gave the following words: peer tutoring AND elementary school OR preschool AND intervention* AND special need*. This search string was used for all the databases used, adding the extra terms (peer tutoring OR) peer-mediated learning (...), and (...elementary school OR) primary school (...), in case the original search words were not valid for the rest of the databases. In order not to make the search results too broad, only two of the terms for peer-mediated learning were used: “peer-mediated learning” and “peer tutoring”.

The final search string, used in all of the databases, was:

Peer mediated learning OR peer tutoring AND primary school OR elementary school OR preschool AND intervention* AND special need*

Followed by the databases' selections: +Peer-reviewed articles +English language +2000-2016.
The results that came up concerning their titles were filtered, in order to discard those that had nothing to do with education or peer-mediated learning, combined with a basic screening of the abstracts to discard the ones that could be relevant to the topic, but had titles that did not provide much information. At this point, all the articles retrieved from Scopus and ScienceDirect were discarded, as they were judged irrelevant to the subject.

An abstract protocol (Appendix A) was used, based on the inclusion-exclusion criteria for a more detailed screening of the remaining abstracts. Most of the articles during this procedure (36 articles out of the 47) were excluded due to the fact that, even though they concerned peer-mediated learning teaching methods in pre-school or elementary school, their population consisted only of typically developing children.
A second protocol (Appendix B) was used for the full text review of the rest of the articles, again based on the inclusion-exclusion criteria, but concerning more details for each article. The articles with no full-text access were discarded here.

Before applying the protocol, a screening through the full texts was done. Some articles were excluded here, since although referring to peer mediated learning, their focus was to compare methods: One of the articles compared peer mediated learning to computer assisted learning and another to a teacher assisted method. Another article was discarded in this phase, because it did not concern children with special needs rather low achieving students. Finally one article was discarded because it was mainly focusing on the effects of family contribution to the results of peer assisted methods.

Applying the full-text protocol to the rest of the articles, two more article were discarded. They mentioned including children with special needs, without neither specifying the characteristics of the children with special needs nor presenting conclusions connected to the children with special needs. The whole process is pictured in the flow chart above (figure 4.1).

4.4 Quality assessment
A quality protocol (table 5.5) was used on the articles included to determine the quality of the articles. Inspired by the Gustafsson et al. (2010) literature review on “School, Learning and Mental Health”, the quality protocol that was used here, was constructed according its design. Low quality articles were to be discarded, but no such articles occurred.

5 Results
As pictured in the flow chart, data were extracted from eight articles that remained from the followed procedure. Characteristics of the included studies are presented in table 5.1.

The children being involved in the studies were mostly male. Female also participated but in smaller numbers. In total, out of the studies that refer to the gender of their participants, 60 boys with special needs participated as opposed to 21 girls. Furthermore, the special needs referred to in these studies were ADHD (Plumer & Stoner, 2005), learning disabilities (Fuchs, Fuchs, Yazdian & Powell, 2002; Davenport, Arnold & Lassmann, 2004), variety of developmental delays (Stanton-Chapman & Snell. 2011; Fuchs, Fuchs, Yazdian & Powell, 2002; Mills,
<table>
<thead>
<tr>
<th>Article</th>
<th>Country</th>
<th>Aim</th>
<th>Study Design</th>
<th>Population (school, age, gender, special needs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumer, P. J., &amp; Stoner, G. (2005). The relative effects of classwide peer tutoring and peer coaching on the positive social behaviors of children with ADHD.</td>
<td>USA</td>
<td>Examine effects of 1) CWPT on the positive peer social behaviours of ADHD students at non instructional times 2) social problems peer-coaching intervention combined with CWPT on the social interactions of children with ADHD</td>
<td>Combined</td>
<td>Elementary school 9 to 10 y.o.* 2 f, 1 m 3 children with ADHD</td>
</tr>
<tr>
<td>Stanton-Chapman, T. L., &amp; Snell, M. E. (2011). Promoting turn-taking skills in preschool children with disabilities: The effects of a peer-based social communication intervention.</td>
<td>USA</td>
<td>Explore 1) effects of social communication intervention on initiative play/ conversation with peer 2) turn-taking skills 3) whether the effects of the intervention are generalizable</td>
<td>Combined</td>
<td>Preschool 4 to 5 y.o.* 1 f, 9 m 10 children with language delays, problem behaviour, or poor social skills</td>
</tr>
<tr>
<td>Garfinkle, A. N., &amp; Schwartz, I. S. (2002). Peer imitation increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms.</td>
<td>USA</td>
<td>To 1) evaluate the effects of a peer imitation intervention using protocols from previous research 2) measure the effectiveness of the intervention</td>
<td>Combined</td>
<td>4 children in Preschool 4 to 6 y.o.* all m autism</td>
</tr>
<tr>
<td>Fuchs, L. S., Fuchs, D., Yazdian, L., &amp; Powell, S. R. (2002). Enhancing first-grade children’s mathematical development with peer-assisted learning strategies.</td>
<td>USA</td>
<td>to examine the effects of peer-mediated treatment on mathematics achievement for relatively young children with varying achievement levels</td>
<td>Combined</td>
<td>Elementary school 6 to 8 y.o.* no info on gender 18 children with speech and language, learning dis., attention deficit dis.</td>
</tr>
<tr>
<td>Jones, V. (2007). ‘I felt like I did something good’—the impact on mainstream pupils of a peer tutoring programme for children with autism.</td>
<td>USA</td>
<td>to examine the impact of peer tutoring students with autism on the peer tutors themselves</td>
<td>Combined</td>
<td>Elementary school 4 to 10 CSN / 10 to 11 TDC no info on gender 12 children with autism</td>
</tr>
<tr>
<td>Klavina, A., Jerlinder, K., Kristén, L., Hammar, L., &amp; Soulie, T. (2014). Cooperative oriented learning in inclusive physical education.</td>
<td>SE</td>
<td>to increase social interactions and participation of students with moderate and mild disabilities in inclusive PE and explore the learning experiences through the reciprocal interaction between tutors and students with disabilities</td>
<td>Combined</td>
<td>Elementary school 7 to 10 y.o.* all m 4 children moderate physical dis. &amp; mild cognitive dis.</td>
</tr>
<tr>
<td>Davenport, S., Arnold, M., &amp; Lassmann, M. (2004). The impact of cross-age tutoring on reading attitudes and reading achievement.</td>
<td>USA</td>
<td>to measure the effects of cross-age peer tutoring on reading attitudes and reading achievement</td>
<td>Quantitative</td>
<td>Elementary school and preschool 6 TDC and 10 y.o. CSN 4 f, 6 m learning dis.</td>
</tr>
</tbody>
</table>

y.o. = years old, CSN = children with special needs, TDC = typically developing children, dev. = developmental, dis. = disabilities, exp. = experiments, m = male, f = female, *In the cases where only one age is mentioned, it is the same for CSN and TDC
<table>
<thead>
<tr>
<th>Article</th>
<th>Strategies using peer mediated learning</th>
<th>Effects on the children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumer &amp; Stoner (2005).</td>
<td>CWPT: scripted tutoring activities, CWPT &amp; peer coaching: scripted tutoring activities, goal setting &amp; feedback</td>
<td>CWPT: not generalizable results on social setting behaviours, CWPT &amp; peer coaching: positive effects on social setting behaviours</td>
</tr>
<tr>
<td>Stanton-Chapman &amp; Snell (2011).</td>
<td>Social Communication Intervention: dramatic play theme: plan, do &amp; review, play organizer: target words taught &amp; used, play session: free play, review session</td>
<td>successful reciprocal conversations, encouraging results on turn-taking skills, increased peer play, increased engagement &amp; decreased solitary play, positive Interactions with peers</td>
</tr>
<tr>
<td>Garfinkle &amp; Schwartz (2002).</td>
<td>during baseline: small group activities with teacher prompting &amp; praising for peer imitation, free play, during generalization: only free play</td>
<td>non-social engagement increased for CSN, proximity of CSN to their peers increased, peers imitated CSN during intervention, peers more aware of the CSN and of each other, improved waiting- and taking turns- skills</td>
</tr>
<tr>
<td>Fuchs et al. (2002).</td>
<td>PALS: coaching sessions &amp; feedback</td>
<td>positive effect on learning for CSN, promoting learning, engagement, and frequent correct feedback from the high performing classmates</td>
</tr>
<tr>
<td>Jones (2007).</td>
<td>tutors and CSN develop their own strategies of cooperating</td>
<td>Tutors: more confident, responsible, understanding, helpful, patient and proud of themselves, Inclusion &amp; acceptance promoted</td>
</tr>
<tr>
<td>Klavina et al. (2014).</td>
<td>peer tutor training sessions, TIP-TAP steps in pairs: instructions, demonstration, physical assistance, feedback, error correction.</td>
<td>friendship feelings strengthened, attitudes shift, positive peer perception, overall benefited self esteem, benefited class climate</td>
</tr>
<tr>
<td>Mills et al. (2014).</td>
<td>EL: children initiate interaction, limited teacher direction to children, DL: teachers select materials and activities with children, teachers initiate interactions with children</td>
<td>1st exp: DL and EL: no significant difference in language diversity and complexity, EL: utterances significantly more, 2nd exp: EL: when play situation structured by teacher without further involvement, then increased utterances from children, DL: teacher involvement= higher word complexity</td>
</tr>
<tr>
<td>Davenport et al. (2004).</td>
<td>Cross-Age Peer Tutoring: discussions between older tutors for skills worth teaching, weekly sessions in preschool for literacy related activities</td>
<td>positive effect on reading attitudes of the kindergarten students, positive progress to reading achievement for special education elementary students</td>
</tr>
</tbody>
</table>

CPTW= Class Wide Peer Tutoring, CSN= Children with Special Needs, PALS= Peer Assisted Learning Strategies, EL= Enterprise Learning, DL= Direct Learning, exp= experiment
Beecher, Dale, Cole & Jenkins, 2014), autism (Garfinkle & Schwartz, 2002; Jones, 2007), physical and mild cognitive disabilities (Klavina, Jerlinder, Kristén, Hammar & Soulie, 2014) (Table 5.1).

5.1 Strategies in interventions involving peer mediated learning

In the eight interventions that came up from the articles, eight different strategies involving peer mediated learning were used. The strategies are displayed in table 5.2.

Two of the studies described related strategies: one used Class Wide Peer Tutoring (CWPT) (Plumer & Stoner, 2005) and the other Peer Assisted Learning Strategies (PALS), (Fuchs et al., 2002). One of the articles used Cross Age Tutoring- a strategy involving older children serving as tutors for younger children (Mills et al., 2014), and the rest used methods first introduced in those specific studies (Stanton-Chapman, & Snell, 2011; Garfinkle & Schwartz, 2002; Jones, 2007; Klavina et al., 2014; Davenport et al., 2004). The explored strategies will hereby be presented as a three-step process, before, during, and after intervention.

5.1.1 Before starting the interventions

Two out of the eight studies mention that they had some form of preparation for the children that would serve as peer tutors. In one of the studies, during which typically developing children would tutor children with moderate physical disabilities and mild cognitive disabilities in physical education, the tutors underwent a training about collaborative educational values, teaching instructions and communication skills. They discussed with their teacher and one-another about empathy, compassion and being a good friend. They also had a chance to practice peer mediation on each other under teacher supervision (Klavina et al., 2014). In the second study fifth grade students with learning disabilities served as tutors for typically developing preschool children in literacy-related activities, the tutors practiced reading preselected books for the preschool children and discussed skills they could model and positive ways to provide feedback (Davenport et al., 2004).

5.1.2 During the interventions

The strategies were implemented in a variety of subjects and activities. In the studies that involved elementary school children, one of them was implemented during literacy time and free play in elementary school (Plumer & Stoner, 2005), one during the instruction of mathematics (Fuchs et al., 2002), one was implemented on play activities (Jones, 2007), and one during physical education class (Klavina et al., 2014). One of the studies involved both
elementary and preschool children. It was implemented during literacy related play activities (Davenport et al., 2004). The three studies that involved only preschool children, were implemented during play related activities (Garfinkle & Schwartz, 2002; Stanton-Chapman, & Snell, 2011; Mills et al., 2014). During the implementation of the intervention strategies, certain commonalities and differences were also observed.

As seen in table 5.3, on the next page, in one of the studies only the children with special needs- in this case learning disabilities, had the role of the tutor (Davenport et al., 2004). In three of the studies, children with special needs practiced both being the tutor and the tutee to typically developing children (Plumer & Stoner, 2005; Fuchs et al.; Stanton-Chapman, & Snell, 2011). One study involved only children with special needs, who served as tutors and tutees to one another (Garfinkle & Schwartz, 2002). The rest of the studies assigned the role of the tutor to typically developing children and the role of the tutee to the children with special needs (Jones, 2007; Klavina et al., 2014; Mills et al., 2014).

Table 5.3: Tutor and tutee roles assigned

<table>
<thead>
<tr>
<th>Article</th>
<th>Tutor</th>
<th>Tutor</th>
<th>Tutee</th>
<th>Tutee</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Typically developing child</td>
<td>Child with special needs</td>
<td>Typically developing child</td>
<td>Child with special needs</td>
<td></td>
</tr>
<tr>
<td>Plumer &amp; Stoner (2005).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>Stanton-Chapman &amp; Snell (2011).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>P</td>
</tr>
<tr>
<td>Garfinkle &amp; Schwartz (2002).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>P</td>
</tr>
<tr>
<td>Fuchs et al. (2002).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>Jones (2007).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>Klavina et al. (2014).</td>
<td>X</td>
<td>X</td>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mills et al. (2014).</td>
<td>X</td>
<td>X</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davenport et al. (2004).</td>
<td>X</td>
<td>X</td>
<td></td>
<td>E/ P*</td>
<td></td>
</tr>
</tbody>
</table>

E= Elementary school, P: Preschool, *Tutors: elementary school students & tutees: preschool students
In all five of the studies that involved elementary school children as tutors, the interventionists' role was to introduce the activity and observe during the implementation (Fuchs et al., 2002; Davenport, Arnold & Lassmann, 2004; Plumer & Stoner, 2005; Jones, 2007; Klavina et al., 2014). Interventionists involved within the activities, requiring him/her to give prompts and praises were demonstrated in two of the studies that involved preschool children as tutors (Garfinkle & Schwartz, 2002; Stanton-Chapman, & Snell, 2011). The third study that involved preschool children as tutors, gave two instructional approaches for the interventionists. One was the *Elementary intervention (EL)*, which limited the role of the interventionists to instructing the activity at first, and then observing and asking questions when needed. The other was the *Direct Language (DL) intervention*, according to which the interventionists were the ones to coordinate the whole activity from the beginning to the end (Mills et al., 2014).

### 5.1.3 After implementing the interventions

After implementing the strategies involving peer mediated learning, one of the studies involved follow up sessions as generalization-maintenance setting, in order to determine what changes the strategies had brought to the children (Garfinkle & Schwartz, 2002). Another study involved generalization observations on children's behaviors (Stanton-Chapman, & Snell, 2011).

### 5.2 Effects of strategies of interventions involving peer mediated learning on the children

The effects of strategies of the interventions involving peer mediated learning on the children that were involved are displayed in table 5.2.

The types of measurements of the effects can be seen in table 5.4. Six studies conducted observations in order to find out about the effects of the peer mediated learning strategies, either direct (Plumer & Stoner, 2005; Garfinkle & Schwartz, 2002; Fuchs et al., 2002) or videotaped (Stanton-Chapman & Snell, 2011; Klavina et al., 2014; Mills et al., 2014). Three studies considered the students’ opinion (Plumer & Stoner, 2005; Jones, 2007; Klavina et al., 2014), five the teachers opinion (Stanton-Chapman & Snell, 2011; Garfinkle & Schwartz, 2002; Fuchs et al., 2002; Jones, 2007; Klavina et al., 2014) and one the parents’ opinion (Jones, 2007) on the effects of the strategies. One study conducted tests before and after the implementation of the
interventions (Davenport et al., 2004). The transcribing and analysis tools are not in the focus of this study, therefore they will not be explained further.

Table 5.4

<table>
<thead>
<tr>
<th>Types of measurements of the effects of peer mediated learning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article</td>
</tr>
<tr>
<td>Plumer &amp; Stoner (2005).</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Stanton-Chapman &amp; Snell (2011).</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Garfinkle &amp; Schwartz (2002).</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Fuchs et al. (2002).</td>
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<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Jones (2007).</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Klavina et al. (2014).</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mills et al. (2014).</td>
</tr>
<tr>
<td>Davenport et al. (2004).</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

SSBD= Peer Social Behavior Code of Systematic Screening for Behavior Disorders, PALS= Peer Assisted Learning Strategies, CHAT= Codes for the Human Analysis of Transcripts system, ERAS= Elementary Reading Attitude Survey, BCIBS= Brigance Comprehensive Inventory of Basic Skills, Revised Edition

5.2.1 Effects on the engagement of the children

Effects on the engagement of the children were found in three of the included studies mention.

One of the three studies mentions that the social communication intervention that was implemented in preschool resulted to increased engagement on peer play. The researchers support that a student in order to be engaged he/she has to take part in an activity and actively interact with the materials and people around him/her, in a way appropriate for the situation (Stanton-Chapman, & Snell, 2011).
In the second study, during the interventions and throughout the follow ups, refers to increased non-social engagement of preschool children with special needs above baseline levels. With the term non-social engagement, attending to and interacting in an appropriate for their age way with materials of their environment is implied (Garfinkle & Schwartz, 2002).

The last study, mentions increased levels of engagement for children with special needs in elementary school. This study, though, does not specify what engagement is considered to be (Fuchs et al., 2002).

**5.2.2 Effects on the learning and cognitive outcomes of the children**

As far as the positive learning outcomes are concerned, three out of the eight studies refer to them. One of them was about mathematical achievement among elementary school students, during which also frequent and correct feedback from the typically developing children was also promoted (Fuchs et al., 2002). The second study involved both elementary and preschool students, positive learning outcomes were measured for the reading achievement of the elementary school students. Also positive effects were measured on the attitudes of the preschool students towards reading (Davenport et al., 2004). The third study supported that when teacher involvement was more increased and teachers were more active in decision making, then the word complexity the children used during the teacher directed activity was higher, but had non-significant difference for free play time (Mills et al., 2014).

**5.2.3 Effects on the social outcomes of the children**

Six out of the eight studies referred to the social outcomes that the peer mediated learning strategies had on the children. Even though, one study referred to non-generalizable results on social setting behaviors, when the researchers used class wide peer tutoring, positive effects occurred on social setting behaviors, when the class wide peer tutoring was combined with one on one peer coaching during literacy activities (Plumer & Stoner, 2005).

Four out of these studies refer to a generally more positive class climate, as the interactions between peers were more positive (Stanton-Chapman & Snell, 2011) and the proximity of children with special needs to their typically developing children and they were more aware of each other within the whole school environment (Garfinkle & Schwartz, 2002). Moreover, the friendship feelings were strengthened and the peer perception was more positive (Klavina et al., 2014). The typically developing children became not only more accepting and
understanding, but also more proud, confident, responsible, helpful and patient towards their peers with special needs (Jones, 2007).

The articles referred to more positive outcomes on language development, after the use of peer mediated learning strategies. Two studies mentioned the positive effect on turn taking skills and patience, in conversations or during play time (Garfinkle & Schwartz, 2002; Stanton-Chapman & Snell, 2011) and increased successful reciprocal conversations (Stanton-Chapman & Snell, 2011) and peer play (Garfinkle & Schwartz, 2002). One of the studies mentioned that teacher structured activities with not extended teacher involvement (the teacher gets involved only for safety reasons), increased the utterances between the children (Mills et al., 2014).

5.3 Strategies in interventions involving peer mediated learning and their effects considering environmental parameters

<table>
<thead>
<tr>
<th>Article</th>
<th>5 A’s</th>
<th>Bronfenbrenner model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garfinkle &amp; Schwartz (2002).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fuchs et al. (2002).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Jones (2007).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Klavina et al. (2014).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mills et al. (2014).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Davenport et al. (2004).</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Although the environmental dimensions of participation - the 5 A’s were not directly mentioned
in most studies, they came up through the strategies used and their results (table 5.5). All of the studies include in an indirect way the Availability and Accessibility in education, by including students who are present during the implementation of the strategies. Affordability is prominent in two of the studies in the form of providing positive outcomes within certain timeframes. Adaptibility become prominent in two of the articles through the flexibility of the strategies, that allows the children to develop their own ways of acting, as in taking their own initiatives, developing their own teaching-learning strategies according to their needs. Acceptability is mentioned to be promoted through the fact that positive school/class climate is being promoted, friendships strengthened, positive peer perception etc. All of the studies focus on the implementation of the peer mediated learning strategies and their effects on the children within the school/class micro level.

### 5.4 Quality assessment

**Table 5.6: Quality assessment**

<table>
<thead>
<tr>
<th>Article</th>
<th>Is the aim clearly stated?</th>
<th>Is the school context clearly described?</th>
<th>Is there an adequate description of the sample and how it was recruited?</th>
<th>Are there adequate descriptions of the methods used to collect the data?</th>
<th>Is there adequate description of the data analysis?</th>
<th>Do the authors mention limitations?</th>
<th>Have there been attempts to establish the reliability and validity of data collection and data analysis?</th>
<th>Are the study results generalizable?</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumer &amp; Stoner (2005).</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
</tr>
<tr>
<td>Stanton-Chapman, &amp; Snell, (2011).</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
</tr>
<tr>
<td>Garfinkle &amp; Schwartz (2002).</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Fuchs, Fuchs, Yazdian &amp; Powell (2002).</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Jones (2007).</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>M</td>
</tr>
</tbody>
</table>


Y = yes, N = no

The results of the quality assessment of the articles are displayed in table 5.6. Three of the articles that were included were found to have overall high quality and five medium quality. None of the studies' results were considered generalizable.

6 Discussion

In an effort to gain insight on inclusive strategies, this systematic literature review identified eight studies with either high or medium level of methodological quality. These studies investigated strategies of peer mediated learning between children with special needs and typically developing children, in preschool and primary school. Overall the studies indicate that these strategies are simple in terms of implementation, with no need for excessive preparation or involvement of the interventionist. They can be implemented in a variety of activities and address the different special needs that children might have in different cases (Mitchell, 2008).

6.1 Peer mediated learning as an inclusive strategy

Some of the included studies, mentioned measures of increased engagement as part of the effects of the peer mediated learning strategies. Falkmer et al. (2012) support the dimensions of “being there” and “being engaged” in participation. Peer mediated learning strategies may constitute steps towards the improvement of the participation of every child— with or without special need. Additionally, the promotion of positive social outcomes and school and class climate also associate with the idea of inclusion. Since this is another very important dimension of participation, this study suggests that peer mediated learning strategies may be introduced, as they
promoted a positive context for children with special needs.

The environmental dimensions of participation- 5 A’s can be used, in order to better understand how peer mediated learning strategies affect participation. Availability (Maxwell et al., 2012) is presented in terms of providing to children with special needs a peer to help them personally, and Accessibility (Maxwell et al., 2012) through providing resources in order to make him/her engaged. Affordability (Maxwell et al., 2012) and Adaptibility (Maxwell et al., 2012) are realized through the fact that the situation becomes easier to understand according to their own needs and to act in with the help of a peer, within their time and energy capacities. Acceptability (Maxwell et al., 2012) is presented in the form of promoting a more positive perception within the microsystems of peers towards special needs. Peer mediated learning strategies support the environmental dimensions, some more than others (table 5.4). This constitutes a step towards the participation of all children, regardless of any diversities, and thus a step towards the inclusion of more children within a quality education (Unesco, 1994).

Applying the findings of this research on Bronfenbrenner's (1997) model of the child ecology, peer mediated learning strategies affect directly the micro level. Perceptions of peers towards special needs are more positively inclined, there are more successful reciprocal conversations and peer play, and friendship feelings are strengthened. Possibly all the levels can be indirectly affected some more and some less. The positive effects on the micro level can possibly affect the meso systems, as the relations between the children and the school become better, which in turn affect the relations between the school micro system and the family micro system. The macro level is also affected as a general shift towards more understanding and inclusive ideologies is being built resulting in more inclusive laws and regulations, and consequently the exo level also becomes more positively inclined towards inclusion. Effects on inclusion at all ecological levels is a goal of accepting and granting the rights of all children to education (United Nations, 1989; Unesco, 1994; United Nations, 2006).

Ladd et al. (2009) explain peer mediated learning in general, and assert that mostly cognitive and learning outcomes have been investigated. Based on results of the studies included in this study, it is obvious that in studies that include children with special needs the majority refer to social outcomes (six out of the eight studies), than those referring to cognitive and learning outcomes (three out of eight studies).
6.2 Methodological discussion and limitations

There were some limitations in the study and they are presented here. Out of the 47 articles that were reviewed with the abstract protocol, 44 discussed peer mediated learning, but only eight of them referred to peer mediated learning concerning children with special needs.

6.2.1 Generalization issues

All of the studies involved small numbers of participants, which could be due to the fact that it can be difficult to find a big number of children with the same special needs, within a certain geographical area. The studies discussed very different types of special needs. Generalization of these peer mediated learning strategies for all children with a variation of special needs and different individual characteristics should therefore, if possible, be made with precaution. Even two children with the same special needs, can display very different individual characteristics. When the strategies, presented here, are used, they should always be adapted to the case faced every time. Furthermore, the fact that only two of the studies used in this literature review involved generalization settings with follow-up sessions indicate challenging issues to be considered in future intervention studies that research the effects of peer mediated learning strategies.

6.2.2 Special needs as a term

All along the process of this literature review, children with special needs have only been considered those that have an official diagnosis. But, worth mentioning is the fact that the past few years there has been a discussion about the term “children with special needs” and whether it can be used without labelling the children. What is supported, is that the “special needs” are not a characteristic of the child, but rather constructs of the context, in which the child lives in, on how these children are perceived (Lillvist, 2010). In a study, by Lillvist and Granlund (2010), including 1138 preschools in Sweden, it was revealed that the majority of children that preschool teachers considered as in need of additional support did not have a diagnosis. So perhaps a more efficient way of referring to the children, in order to cover all needs, would be: children in need of special support beyond what is provided to all children (Lillvist & Granlund, 2010).

6.2.3 Other limitations

Regarding the method of this literature review, the fact that only one search string was used for all databases, could constitute a limitation. In different databases different terms may be used for the same concept. For instance, peer mediated learning can be phrased as peer-assisted learning, or peer tutoring.
Only one researcher reviewed the included articles. The presentation of the results and the discussion may have been affected by the researcher's previous experience and knowledge. The reliability of the study would have been guaranteed in a more efficient way, if a second researcher would have reviewed the studies included and the procedures of data collection and data analysis.

The time frame within which the literature review was conducted, was limited. With a more generous time frame, there could also have been conducted an additional hand search (a procedure that involves reading through the reference lists of the studies included, in order to find additional literature fitting the inclusion-exclusion criteria).

6.3 Future research implications

The procedure followed in this literature review, suggests that further research is needed in inclusive education contexts with peer mediated learning. Firstly, almost all the studies retrieved, were implemented in the USA, apart from one, which was implemented in Sweden. It would be interesting to investigate such strategies, not only in the rest of the European and American countries (to which this literature review also targeted), but around the world. Secondly, future studies should target the role of children with special needs as tutors; what are the effects on them as tutors, what are the effects on their peers? Thirdly, research could be more targeted towards the cognitive and learning outcomes for the children with special needs, as to date social outcomes have mainly been. Finally, the effects of peer mediated learning on female children with special needs should be investigated, as results from male participants dominate research findings of today.

7 CONCLUSION

This review highlights the importance of peer mediated learning strategies as a way to promote inclusion in educational contexts. These strategies promote positive engagement, social and learning outcomes and thus, the rights of every child to education. Peer mediated learning strategies constitute a rather new field of research (developed within about the past 20 years), which calls for further research to fill the literature gaps.
REFERENCES


World Health Organization. (2007). *International Classification of Functioning, Disability, and Health: Children & Youth Version*
## APPENDIX A

**Examples of use of the abstract protocol**

<table>
<thead>
<tr>
<th>Title-Author-Year</th>
<th>Country (not mentioned in the abstract =NM)</th>
<th>Is it about an empirical study (ES) or a literature review (LR), neither (N)?</th>
<th>Preschool- P or elementary school- E context, other- O?</th>
<th>Does it talk about strategies involving peer mediated learning? Yes-Y No-N</th>
<th>Does it talk about what kinds of effects peer mediated learning has on the children?</th>
<th>Does it involve children with disabilities?</th>
<th>Included (I)/ Excluded (E) for full text review</th>
</tr>
</thead>
</table>

* The article was excluded, because it did not refer to peer-mediated learning strategies.
## APPENDIX B

### Examples of use of the full text protocol

<table>
<thead>
<tr>
<th>Title</th>
<th>Author-Year</th>
<th>Study design (qualitative-QL, quantitative-QN, combined-C, literature review- LR, or other-O)</th>
<th>Data collection (Interview-I, questionnaire- Q, longitudinal study- LS, cross-sectional study -CSS, other- O)</th>
<th>Preschool-P or Elementary school- E?</th>
<th>Population and sample (ages of the children- AC, children with special needs- CSN, typically developing children- TDC, G-gender)</th>
<th>What are the special needs of the child/ren? (e.g. diagnosis)</th>
<th>What subject/ kind of activity is the method used for? e.g. free play, language, mathematics</th>
<th>What strategies involving peer mediated learning are being used?</th>
<th>What effects do the methods have?</th>
<th>Included (I)</th>
<th>Excluded (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenwood, Arreaga-Mayer, Utley, Gavin, Terry (2001)</td>
<td>Classwide peer tutoring learning management system: Applications with elementary-level English language</td>
<td>Investigates: the overall outcomes of the students after the cwpt methods were used, the fidelity with which the methods are implemented, the effects of consultation on student outcomes and how satisfied students and teachers were w/ the program</td>
<td>QN</td>
<td>CSS</td>
<td>E</td>
<td>No info</td>
<td>No info</td>
<td>No info</td>
<td>No info</td>
<td>Spelling activities</td>
<td>CWPT</td>
</tr>
</tbody>
</table>

*The article was excluded, because even though it mentioned including children with special needs, it did not go into detail about them. It would focus more generally on the children.*