The relationship between teacher responsiveness and the engagement of children with aggressive behavior in preschool

A systematic literature review from 2000-2016

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ABSTRACT

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The importance of aggressive behavior in preschool ages can be seen from the serious negative impact it has later in children’s lives if a suitable change will not take place. The number of children with behavioral problems in preschool are increasing with a great amount of teachers admitting that they are insufficiently prepared to manage it. The aim of this systematic literature review is to examine the evidence of teacher responsiveness affecting child engagement, with specific focus on children from two to six years of age who display aggressive behavior in a preschool environment. Ten articles were included and the results were that children with aggressive behavior are unable to exhibit appropriate behaviors and have poor peer interactions which lead to low engagement. The closeness to the teacher can help them increase their engagement in combination with providing social-emotional support, positive classroom management and focus on the interest of the child.

Keywords: aggressive behavior, engagement, preschool, teacher responsiveness
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I Introduction

Engagement is a way to promote child’s development, even for a child with aggressive behavior. One of the main concerns for both teachers and parents is the development of the child. The importance of aggressive behavior in preschool ages can be also seen from the serious negative impact it has later in their lives (Broidy, et al., 2003) if a suitable intervention does not take place (Persson, 2005). Behavioral problems, learning difficulties and low academic achievement are only some of them (Hinshaw, 1992; Rimm-Kaufman, et al., 2000). Aggressive behavior might be limited throughout years, however the problem is alarming when this behavior is getting worse as the child is growing up, because of the difficulties that arise later on in the child’s life (Tremblay, et al., 2004).

How can a child with aggressive behavior engage in a classroom environment? How can a preschool teacher act in order to help the child? Articles and books have been published in order to help teachers use effective strategies to have a disciplined class in order to promote children’s engagement and as a consequence their development. The number of children with behavioral problems are increasing, with more than half preschool teachers admit that they are “insufficiently prepared to manage behavior problems in the classroom” (Filcheck & McNeil, 2004, p.94) or that “managing behavior can be a challenge for early childhood professionals” (Spiker, Hebbeler & Mallik, 2005, p.331; Coalition for Psychology in Schools and Education, 2006; Isaacs, et al., 2007; Melnick & Meister, 2008).

In addition, the impact of teacher responsiveness is a field with limited research, even though it is so important (Dobbs, Arnold & Doctoroff, 2004; Keen, et al., 2011; Pochtar & Vecchio, 2014). Findings such as the fact that teacher responsiveness is more positive to girls than boys is an important issue and one of the first tries related to teacher responsiveness (Dobbs, Arnold & Doctoroff, 2004), however this is not enough. Why is this happening and which are the effects on boys, are some issues that need to be considered and researched. Gender might be only one factor that influences the way a teacher responds, which are the others? Teacher beliefs about child knowledge and culture are related to their responsiveness (Pochtar & Vecchio, 2014). Cross cultural differences may lead to different responses of the teachers which may lead to negative outcomes (Lansford, et al., 2005). For example, teachers tend to use verbal reprimands even if a child behaves appropriately to prevent future misbehaviors, but there is not enough evidence if this technique actually works (Dobbs, Arnold & Doctoroff, 2004).

Trying to discipline the class is the number one of the most significant aim of the teachers, for this reason they do not have enough time to use responses such as praising and discussing (Madill, Gest & Rodkin, 2014). Finding ways to help teachers to engage the children with behavioral problems such as aggressive behavior in their class, is an important issue, not only for the increase of the engagement but also for the learning outcomes (Hart & Risley, 1995).
Furthermore, the fact that most incidents related to aggression are ignored or not noticed by the school staff, even though an intervention from an adult/teacher can decrease the incidents, is alarming (Smith & Green, 1975; Fantuzzo, Bulotsky, et al., 2003). Teachers’ and adults’ response have a direct impact on children with aggressive behavior. According to the learning/behavior theory, without the response of an adult, when children adopt aggressive behavior in order to gain something and in the end they succeed, they will continue acting this way to get what they want (Hurd, & Gettinger, 2011). What is more, when teachers cannot manage the classroom environment and chaos is one of the main characteristics of the class, conflicting messages can be given to students concerning the way they have to behave inside the classroom, but also outside of it (Skiba, Ormiston, Martinez & Cummings, 2016). If the main part of the class acts and behaves in an inappropriate way and the teachers are unable to control and manage it, children will most likely not understand what is the right way to behave.
2 Background

2.1 Aggressive behavior

Aggressive behavior can be defined as “a broad construct that encompasses a wide variety of behaviors that are intended to hurt or harm others” (Helmsen, Koglin & Petermann, 2012, p.87) or as “the observable manifestation of aggression, which is defined as any act intended to cause harm, pain or injury in another” (Liu, Lewis, & Evans, 2013, p.157). Responses without any emotion, low levels of fearful inhibition and decreased sensitivity to punishment are some basic characteristics of children with aggressive behavior (Kimonis, et al, 2006). However, aggressive behavior can also be seen as a stage in child’s progress, where the development of social skills occurs. When children in preschool play and interact, acts of aggression may occur, but they are part of the whole pattern of social participation and the normal developmental process (Muste & Sharpe, 1947; Greydanus, et al., 2003). According to Dollard’s theory, aggression is a normal reaction in cases of frustration and impeding (Morlan, 1949).

There are many types of aggressive behavior such as direct or indirect (face to face or involvement of a third person), verbal and physical aggression, and relational aggression which aims in destroying peer relationships (Monks, Ortega & Torrado, 2002). Two functions of aggression are the reactive and proactive. Reactive aggression can be defined as the response to a threat and proactive is the desire for personal gains or domination of the others (Renouf, et al., 2010). Social rejection in preschool when displaying aggressive behavior is a common phenomenon, in contrast with older ages where showing aggressive behaviors is perceived as more socially accepted (Monks, et al., 2002).

Aggressive behavior is a “problem” a child might have. When the child displays behavior problems such as aggressive behavior, there is a risk that parents and teachers blame each other. However it is more complicated like researchers admit (Sameroff, 2010). Bronfenbrenner developed a bio ecological model, according to which a child’s function and needs are affected by five levels: the microsystem, the mesosystem, the exosystem, the macrosystem and the chronosystem. A change in one of these systems can potentially cause a change to another one too, and all of them interact with each other. Microsystem is the closest system that the child develops in (school, teachers, and family) and the one that influences the child most (Bronfenbrenner, 1994). The reasons for a child to show aggressive behavior during preschool years are related to many aspects but the one that this paper will focus on is the microsystem which consists of the child, family and preschool. The description of the microsystem and some basic characteristics of aggressive behavior follow.

2.1.1 Child characteristics

Moral reasoning can explain why preschoolers develop aggressive behavior, which can also be confirmed by the structural – developmental theory (Malti, Gasser & Buchmann, 2009). The fact that an action is right or wrong is something that a child can recognize from the age of three, but that does not mean that the child will follow it. However, self centered reasons and negative emotions after transgressions can also affect the way a child acts. The
desirable gains a child might have from aggressive behavior such as take a game or a candy in an aggressive way, can explain their behavior (Liu, et al., 2013). Moral cognition develops through time, when preschoolers grow up justifications to moral principles will increase (Malti, Gasser & Buchmann, 2009).

In addition, the theory of mind might be also related to aggressive behavior. According to the theory of mind, young children can engage in a situation such as pretend play without realizing that it is not real because they are unable to understand the nature of the representations in real life (Perner, 1991). The fact that preschoolers can understand social cues and the difference between appearance and reality can explain the theory of mind. The lack of these skills can predict aggression (Renouf et al., 2010). Basic personality differences, personal experiences and social environment of the child are also related to child’s aggressive behavior and can vary to a great extent, depending on the child (Muste & Sharpe, 1947).

Lack of friendships can make a child be more aggressive or vice versa (Koutras & Giannopoulou, 2015). Children with aggressive behavior are unable to enter a game, because most of the times they demand, rather than asking (Wilson, 2006). For example, when seeing two peers playing with a ball they will just take the ball and start playing with them instead of asking like other children do ‘Can I play with you?’. According to the “Need to belong” theory, rejection from peers can also make children aggressive in order to protect themselves, not only to the ones that reject them but also to others (Dodge, et al., 2003; Stenseng, Belsky, Skalicka & Wichstrom, 2014). Lastly, there are also physical/body characteristics that can increase a child’s aggressive behavior such as lower systolic and diastolic blood pressure (Gower & Crick, 2011).

Therefore, different factors related to the child play an important role to understand why children start showing an aggressive behavior. Family and preschools are two of the microsystem which are directly related to the child. An overview of the family is vital in order to have a deeper understanding of why children develop aggressive behavior.

2.1.2 Family characteristics

According to Bandura’s theory children have the tendency to mimic what they see, which means that in an environment where aggressive behavior can be seen from parents and teachers, children will follow the same path (Bezevegkis, 2010). When a child lives in a family where violence and punishment dominates, this will have a great effect on the child’s behavior and it may lead to aggressive behavior towards the surroundings. The family in this occasion can be characterized as dysfunctional because it takes away strength and self-esteem from the child (Riddle, 1991).

In addition, studies have found that marital conflict provides children with a model of aggressive behavior and the child generalizes it when responding to other incidents during his life. For example, it means that if a child sees a father hitting the mother, the child will probably act with the same way as the father. Even harmless disagreements can be perceived by children as serious conflicts, to which they may respond aggressively. When a child lives in an environment with constant marital conflicts and parents may react harshly towards their child, the
aggressive behavior of the child may increase. Thus, a reciprocal relationship can be easily seen here (Cummings, Goekke-Morey & Papp, 2004; Erath & Bierman, 2006; Pendry, Carr, Papp & Antles, 2013). Risk, additive or interactive factors for early aggression can be related to the quality of early attachment relationships, managing strategies from parents and family situation (DeKlyen, & Greenberg, 2008). Furthermore, low family income, low parental education, crime and violence inside the house and single-parent household are some factors predicting behavioral problems, such as aggressive behavior, in preschool children (Ziv & Sorongon, 2011). Punishment as a solution for discipline from the parents, patterns of interaction between the child and the parents (Olson, et al. 2011; Shi, Bureau, Easterbrooks, Zhao, & Lyons-Ruth, 2012), racism, various heritable/genetic factors (Brendgen, et al., 2011) and media exposure (Tomopoulos, 2007;Ostrov, Gentile & Mullins, 2012), are other predicting factors that increase the level of aggressive behavior in preschoolers (Koutras & Giannopoulou, 2015).

It can be seen that the family characteristics are crucial for the aggressive behavior of the child. However, in most European countries children spend a lot of time in the preschool environment (OECD, 2005) and this influences their aggressive behavior, both positively and negatively.

2.1.3 Preschool characteristics
The context (urban or rural) in which the school is situated can have an effect on the child’s aggressive behavior (Koutras & Giannopoulou, 2015). Children that are raised in urban regions tend to be more aggressive. This can be explained by the disappearance of childhood in western societies (Nikitina-Den Besten, 2008). Children might be more aggressive in order to get more attention from both parents and teachers.

Relationships between teachers and children that are negative and teachers’ indifference to children (Koutras & Giannopoulou, 2015) can increase the possibility of externalizing behavior problems, such as aggressive behavior (Silver, Measelle, Armstrong & Essex, 2010). In the preschool context, teacher support (academic or interpersonal), classroom structure, size of the school, choices and policies the school provides, peer relationships and task characteristics can either increase or decrease their engagement (Fredricks, Blumenfeld & Paris, 2004).

The teaching style can impact the aggressive behavior of preschoolers. Even though children at preschool age know what is right and wrong, teachers’ responding may influence their reactions. According to Fromm (1973), when preschoolers acted aggressively and they had positive responds and feedbacks from their teachers they tended to generalize these aggressive behaviors to all their life levels. This means that, they believed it is an appropriate way to act with this way in different occasions because they got approval from the teachers for the aggressive behavior they used, in order to gain something.

Children with aggressive behavior act without being realized from the teachers (Hurd & Gettinger, 2011). Teachers should first of all become conscious that there is a problem in their class. Where teachers should focus on, is trying to improve the self-esteem of children, make them understand the feelings of peers and promote the importance of themselves. As a result, children will be able to predict the results of their actions, be calmer, control their aggression and replace it with positive behavior (Koutras & Giannopoulou, 2015). The problem resource
gravitation is the phenomenon during which a child behaves following the rules and has an adaptive behavior in general, and if for some reason the child will act unacceptably it will not matter. On the contrary, if a child is aggressive, behaves unacceptably inside the classroom and does not follow the rules, the teacher will probably not notice or praise if the child will be well-behaved or achieve something (Granlund, 2015). Following the rules of the class is an important prerequisite in order to engage in the class, but is not enough. Engagement is the basic element in order to understand if children with aggressive behavior are actually influenced from this behavior.

2.2 Engagement

Engagement has been typically defined as “the amount of time children spend interacting appropriately with the environment at different levels of competence” (McWilliam & Bailey, 1992, p. 234) or as a “multidimensional construct that consists of children's capacity to interact with different aspects of the school environment including teacher, peers, and activities” (Williford et al., 2013, p.300).

The importance of engagement can be seen from a quote by McGarity and Butts (1984) who state that “A student can be engaged and not achieve, but it is hard for a student to learn a task who was not engaged while that task was being taught” (p.60). That means that engagement might not be sufficient for learning but it is a necessary component. In order to have a child that is engaged but at the same time the learning outcomes are relevant and meaningful with what the teacher planned the engagement has to be goal directed (Fuchs, 2002) That means that the teacher should be clear about what she wants and what she expects from the children, which is the purpose and it is related to the learning goals. What is more, the teacher has to use the learner's interests and task preferences to enhance and increase their engagement (Endicott & Higbee, 2007).

Engagement and teachers’ behavior are connected through a reciprocal relationship, where teaching strategies and student engagement affect each other. Positive reactions from teachers exist due to positive engagement from students and vice versa (Skinner & Belmont, 1993; Portilla, et al., 2014). Higher developmental trajectories and academic achievement are outcomes deriving from positive relationships between children and teachers, which focus on emotional support in preschool. Negative relationships and conflicts can lead to lower engagement, school avoidance, absence of collaboration and participation (Williford et al., 2013; Portilla, 2014). Emotional, organized and instructed responses; as well as interaction with teachers may lead to higher results in language and literacy skills, even though a child has low individual patterns of engagement in the class (Williford et al., 2013).

The teaching method, classroom structure, physical and social environment, relationships with adults such as parents and self-concept are factors that affect children’s engagement, especially for preschoolers (De Kruiif & McWilliam, 1999; Fredricks et al, 2004; Searle, Miller-Lewis, Sawyer & Baghurst, 2013). Teachers report that the problems mostly related to children's engagement are the difficulty to follow directions, the lack of academic skills and the striving to work independently (Rimm-Kaufman et al., 2000). According to Aydogan (2012), children are more engaged when the teacher tries to “teach” them something through an activity they are already interested in,
instead of giving instructions to do or play with something different. Moreover, Skinner and Belmont (1993) found that engagement is not only succeeding in the class, but also increasing the competencies.

Engagement is a broad and complicated concept with many components such as behavioral, cognitive and emotional (Fredricks, Blumenfeld & Paris, 2004). Firstly, behavioral engagement is the involvement in classroom activities, following the rules and routines, participating and concentrating in tasks and activities and is related with school achievement. Secondly, emotional engagement is the negative and positive reactions like interest, boredom, happiness of the child in his microsystem, such as teachers and peers and affects the willingness to “work” in the class. Correspondingly, teacher structure and teacher involvement are the predictors for behavioral and emotional engagement (Skinner & Belmont, 1993). Thirdly, cognitive engagement can be described as the idea of investment, it is the effort and work in order to understand difficult and complex ideas and skills. Engagement can vary in intensity and duration (Fredricks, Blumenfeld & Paris, 2004). Most of the research conducted on behavioral engagement focuses on primary ages than emotional and cognitive engagement, which are mostly related to secondary school (Skinner, Wellborn & Connell, 1990; Powell, Burchinal, File & Kontos, 2008; Keen, Pennell, Muspratt & Poed, 2011). This happens because learning in early ages occurs through playing, and the construct of engagement includes the child’s involvement in playing, while displaying social or cognitive interactions with environment (materials, teachers, peers). Engagement is considered very important since it is so closely related to academic achievement (Fredricks, Blumenfeld & Paris, 2004). Many factors can affect the engagement of a child such as culture, family, individual needs and community, but the focus of this paper will be on the classroom environment.

Self-regulation has as an outcome self-control and self-discipline which help the school engagement of the child and can predict academic achievements and preschool readiness (Normandeau & Guay, 1998; Fitzpatrick, 2012). The balance between self-regulation and regulation of others, changes as the child grows up. This can be understood when thinking that at the beginning of their lives, children depend on others such for eating, whereas when being adults they have to take care about others nutrition, such as their children (Sameroff, 2010). Children who can control their emotions and behaviors have better relationships with teachers and as a result higher engagement (Portilla, 2014). According to Sameroff (2010, p.15) “self-regulatory capacities are heavily influenced by the experience of regulation provided by caregivers”. Teachers use different strategies to support the child to develop self-regulation. The most common strategies that are used by the teachers are intrusive behavior, such as warnings, giving different choices, praising and guided compliance. Another strategy is verbal reprimands, which means that the teacher disapproves the inappropriate behavior of the child, or express dissatisfaction and shows to the child an example of appropriate behavior (Ritz, Noltemeyer, Davis & Green, 2014) According to Williford et al. (2013), the positive engagement of the child (cooperate with peers and teachers, take part in activities) can help the development of the child’s self-regulation and, on the contrary, when the child is negatively engaged (conflicts, no cooperation or participation) the development of the self-regulation of the child is weaker.
“Different models of classroom engagement may be more beneficial for different types of child outcomes” (Chien, et al., 2010, p.1536). Most of the studies, when examining school environment as well as children’s achievements and development; focus on classroom structure, environmental issues and some of them on teachers’ behavior. In order to have a deeper understanding, the focus for this paper will be on the child’s engagement in activities, play, or relationships with peers and teachers. It is vital to make it clear that the importance of other factors such as family and siblings and the relationship they have with the child are not discussed, but their influence cannot be doubted (Chien, et al., 2010; Williford et al., 2013).

Preschool teachers are important for the children’s engagement and development, and it is essential to describe preschool teacher function in different countries. Thus, it is vital to specify the role of preschool teacher in an international perspective, as well as to describe what is meant by “teacher responsiveness”.

2.3 Preschool – Preschool Teachers

The importance of preschool for a child’s development is well known, and it has become a great concern for parents, who realize that it is crucial for the child’s social development (Şahin, Ramazan & Şahin, 2013). However, depending on the country, preschool today focuses more on educating than caring and too much pressure is put on preschoolers from an early age (Ang, 2014). Nowadays, in some countries it has been proven that starting preschool from the age of five or six is already too late for their development and that the amount of money invested in preschool education can almost be tripled for the economy of the country if someone follows the outcomes in long term (Starr, 2002; Duncan & Magnuson, 2013). As a consequence, children of ages from two to six will be considered for this paper in relation to preschool settings in different countries. What is more, studies show that children between two and three years old start to give signs of aggressive behavior (Kingston & Prior, 1995; Tremblay et al., 1999; Hay, Payne & Chadwick, 2004; Tremblay, Gervais & Petitclerc, 2008; Liu, et al., 2013). All preschools are not the same, the way a preschool works depends on the teachers working in it.

According to the International Standard Classification of Education (ISCED), dimensions such as years of studying, entry requirements and practical work can picture the minimum training that is required to become a preschool teacher. For a common use preschool teachers are defined as “professional personnel involved in direct student instruction” (UNESCO Institute for Statistics, 2006).

Preschool teachers in a common sense, are people working in a preschool with the educational level needed. The level or the years of education to become a preschool teacher might differ in different countries, nevertheless teachers that work in Europe tend to have a similar level of education (UNESCO Institute for Statistics, 2006). The quality of teachers is vital for improving students’ engagement and learning. A positive relationship between teachers and students has shown higher students’ performance. When talking about teachers’ quality factors characteristics such as educational level, years of experience, other qualifications and knowledge are considered (Goldhaber & Brewer, 1997; Organisation for Economic Co-operation and Development, 2005; UNESCO Institute for Statistics, 2006).
The quality of the relationship between the teacher and the child and between the child and other children influence the self of each child and the people around them (Colwell & Lindsey, 2003). This teacher-child relationship can lead children to higher levels of engagement and participation in the class (Furrer & Skinner, 2003; Hughes, 2011). It is also important to state that a strong relationship between teachers and children will both minimize aggression behavior and also limit the possibilities for children who are in risk, to develop aggressive behavior (Brendgen, et al., 2011). The transactional model states that behavior needs to be consider as a reciprocal process. For example children with aggressive behavior have a negative effect on the teacher who respond negatively to the child, which in turn may lead to higher level of child aggression (Sameroff, 2010). According to McComas, Johnson and Symons (2005), teachers tend to respond less to children with aggressive behavior, for this reason children with aggressive behavior find other people to express their aggression such as their peers. This can also be confirmed from O'Connor (2010), who found that children with aggressive behavior tend to have a weaker relationship with their teachers. Teaching as well as responding to students differs depending on the personality and the education of each teacher. So what do we mean when we say teacher responsiveness?

### 2.4 Teacher Responsiveness

According to Mahoney and Wheeden (1999), responsiveness can be defined as “the appropriateness and promptness of the teacher's responses to the child's actions, communications and intentions” (p.56). Teacher responsiveness such as praising, warning or even penalizing can motivate children to work and learn. However, children are already affected from home and are either compliant or oppositional to adults, if they do not respect their parents at home and do not listen to their warnings or corrections, they will neither do it in preschool class with their teachers (Herring & Wahler, 2003). A way of responding is also the enjoyment a teacher shows of how much does the teacher enjoys interacting with the child. Another way is the supportiveness, like the positive attitude towards the child. Achievement orientation like the encouragement from the teacher to the child, to try and succeed is also a way of responding. Concepts related to teacher responsiveness can also be directiveness as the intensity and frequency a teacher talks, questions, comments and directs to control or guide the child (Mahoney & Wheeden 1999). Specifically, for children who display aggressive behavior, seriousness and disapproval such as walking away or ignoring are the most common responses of preschool teachers (Pochtar & Vecchio, 2014). Teacher responsiveness can also be "multi-party" responsiveness, because even though the interaction might be between the teacher and one child, the other children in the class also interact because they might wait to ask something from the teacher or talk to her (Koole, 2014).

Teacher’s behavior can be divided in two categories: instructional and emotional. The instructional aspect is related to the teachers’ way to give instruction in order to engage the students and improve basic sectors of their development. The emotional aspect, refers to the warmth and the caring teachers show to their students, and the general climate in the class. Most of the teachers focus mostly on the emotional aspect, whilst it has been proved that increasing the level in both instructional and emotional behavior of teachers is related to higher academic achievements for the children (Aydogan, 2012).
2.5 Aim and Research Questions

The aim of this systematic literature review is to examine the evidence of the relationship between teacher responsiveness and child’s engagement, with specific focus on children from two to six years of age who display aggressive behavior in a preschool environment.

Specifically, the paper focuses on the following questions:

- What is the relation between aggressive behavior and child’s engagement?
- What do the literature indicate about the preschool teachers’ responsiveness and the engagement of children with aggressive behavior in the class?
3 Method

The search was conducted in four different levels. At the first level inclusion and exclusion criteria (see table 1.) were designed according to the aim and the research question. After this the search words string was planned, which should be appropriate and include all the possible search words that an article could use. Then the databases were chosen depending on the information they include. At the second level, after the articles were found through the search procedure they were reviewed on abstract level (Appendix C) and after this the ones left were reviewed in full text. At the third level, a protocol (Appendix A) was designed for the articles included and data analysis as well as data extraction were performed. Lastly, at the fourth level, quality assessment (Appendix B) and peer review were performed, in order to be certain about the articles included and their quality.

3.1 Search Strategy

The database search for this systematic literature review was performed in February-March 2016 using the databases PsycInfo, ERIC, Web of Science and Academic Search Elite. The databases incorporate information of the fields of education, psychology and topics related to engagement in different environments. The same search words were used for all the databases: (Aggression OR aggressive behavior OR challenging behavior) AND (preschool OR kindergarten OR nursery) AND (engagement OR participation OR involvement). For the search words “teacher responsiveness” or “teacher”, were not used because they were related only to the second research question and not to the first one. A protocol (see Appendix A) was used in order to include articles that were related to the aim and the research questions. The protocol also included year of publication, methodology and related concepts such as aggressive behavior, teacher responsiveness and engagement.

Definitions for the words used are given in the background part, in order to understand the concepts and the way the research was done. Engagement, preschool – preschool teachers, ages and aggressive behavior explanations were chosen related to the relevance with the aim.

3.2 Selection Criteria

As table 1 shows, the included articles were only those that had been published after 2000, and were written in English, measuring children’s aggressive behavior in preschool context. The included articles need to be published in peer reviewed journals. Articles concerning ages two – six and having concepts such as engagement, teacher responsiveness and aggressive behavior are included. Only articles that were about preschool environment are included. In the inclusion criteria there are no specific countries because in many preschools children come from all over the world. The fact that a school is in Sweden does not mean that only Swedish children attend this school. Furthermore, the aim is not influenced from the country the child belongs to. Articles were included according to mainstream preschool settings. Either being private or public does not affect teachers and the way they respond, and also children and their engagement. In addition to this, the research had to be conducted in the preschool class with a preschool teacher with all the students being present, and without providing extra support only for one child outside the class. For example if an article was about leisure activities after school or in the middle of a day, for children with aggressive behavior, it will not be included. Articles that were too general or too specific but still
related to the inclusion criteria were included. For example, physical aggression may be too specific in relation to the aim of the paper because it focuses only on one part of aggression, but it will also be included. This was decided in order to be sure that no articles will be left behind or excluded, even though they can provide relevant knowledge.

Articles including children older than six years of age or younger than two years old, not written in English language and not peer reviewed were excluded. Books were also excluded because most of the times they are not up to date. Articles concerning aggression, parental care and academic achievement for children older than six years of age were also excluded because they were not related to the aim. Reviews and articles that are not empirical researches were also excluded. The participants in the articles included will not be considered if they have a disability. For example, if an article is about a child who is diagnosed with ADHD and is related to aggressive behavior, the article will be excluded. The reason for this is that for children with disabilities more risks and factors should be taken into account that affect their engagement and a different research should be conducted.

Table 1. Selection criteria for the articles

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
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<tbody>
<tr>
<td>Published after 2000</td>
<td>Children older than six years old or younger than two years old</td>
</tr>
<tr>
<td>Peer Reviewed Journals</td>
<td>Books</td>
</tr>
<tr>
<td>Preschool Environment</td>
<td>Articles concerning parental care and academic achievement for older students</td>
</tr>
<tr>
<td>Mainstream preschools both public and private</td>
<td>Not empirical researches</td>
</tr>
<tr>
<td>Written in English Language</td>
<td>Articles for children with disability</td>
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<tr>
<td>Ages between two to six years old</td>
<td>Written in a language other than English</td>
</tr>
<tr>
<td>All countries</td>
<td>Not peer reviewed journals</td>
</tr>
<tr>
<td>Concepts of aggressive behavior and engagement</td>
<td>Published before 2000</td>
</tr>
<tr>
<td>Too general or too specific articles</td>
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</tbody>
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### 3.3 Initial search procedure

At the beginning of the search, when the search words were used in different databases 590 articles came up. Duplicates were removed, articles found in more than one database. After this the articles were assessed in abstract level. Even though some articles found, could have been excluded from the beginning because of their title, it was decided that it would be better to read the abstract to be certain that no articles that could have been included were left behind. The 42 articles left, were reviewed in full text with the help of a protocol (see appendix A).
3.4 **Study Selection**

The flow of studies though this systematic review process is illustrated in Figure 1.

**Step 1:** The search words in the databases gave 91 hits in ERIC, 148 in Web of Science, 51 in Academic Search Elite and 299 in PsycInfo. This gave in total 590 studies, of those 218 were excluded because they were not written in English, were not peer reviewed, or were not published before 2000. Also, 112 studies were excluded because they were duplicates. This left 372 articles for abstract screening.

**Step 2:** From the 372 articles, 330 were excluded because they were not responding to the research questions and were irrelevant concerning the aim. The categories that can be created with the reasons of exclusion are parents (80), disability (31), irrelevant (30), older children (27), predictors for aggressive behavior (24), no aggressive behavior (16) and no qualified teachers (10). More details can be seen in appendix C.

In this part it should be stated that sometimes aggression or aggressive behavior was not stated in the abstract or the title. However in some databases notes after the abstract such as ‘key words’ or ‘key points’ that had aggression were included. This is also related to the sixth category above. The articles from the sixth category did not have these extra ‘key words’ or ‘key points’ and that is the reason they were excluded. Here it should also be noted that some articles had more than one reasons to be excluded. For example, an article might be about older children that display a challenging behavior and how parents can intervene. This means that the article can be excluded from many aspects, but the most important is the age. Because the challenging behavior might also be about aggression and the article can have aspects about how parents can intervene but also how can teachers intervene to help them engage in the class.

**Step 3:** That means that 42 articles were left for full text review. These articles were assessed with the help of the protocol (Appendix A). The articles that could not fit in the protocol were excluded. Out of the 42 articles, 32 were assessed as ineligible. Eleven (11) of them were excluded because they were not an empirical research and four others were excluded because they were about an implementation of an intervention and the difficulties teachers had to face. Moreover six articles that were not in the preschool environment were also excluded, for example separate strategies for children with aggression but individually without the whole class, and not from a teacher but from a specialist. Even though at the step 2 many articles were excluded due to the age limit, in this step six of them were in the edge, for example 6,08 years, and they were also excluded. Five (5) of them were about teachers’ views for aggression or gender differences related to aggression. So 10 articles will be used for this study.
Figure 1. Flow chart of the procedure for the articles excluded

Articles identified through database searching, N=590
- Articles reviewed for abstract, N=372
  - Full articles assessed for eligibility, N=42
    - Final articles included, N=10

Duplicates removed, N=112
- Published before 2000, not peer reviewed, not in English, N=218
- Articles excluded because of abstract, N=330
- Articles excluded during review of the whole text, N=32
3.5 Protocol

The protocol (See appendix A) helped in order to collect the data and present the results. It was designed in this way to categorize the data collected from the articles included. For this reason, the first half of the categories of the protocol is related to the age of the children that participated in the study and the year of publication which had to be after 2000. The aim of the articles was also considered so it is known what the researchers wanted to find and what the concepts included are. For this category, the concepts included, four main concepts related to the aim and the research question were used. These concepts are aggressive behavior, engagement and preschool environment which were vital in order to include an article for both research questions and teacher responsiveness, which is part only of the second question. So articles may be included even though they do not have the concept of teacher responsiveness. The articles that had the concepts throughout the study were marked with X, and the ones that do not have a concept are left blank.

The other half is about the measures used in each of the articles. Teachers, observers or research assistants, parents and children are the three categories used. With this protocol, there is an attempt to present who measured what. For example, in the teachers’ category, they might use the Student Teacher Relationship tool to measure the aggression of the children in their class. In the parenthesis what is tried to be measured is stated. In the example above it is aggression. For some studies, they also measured concepts that are related neither to the aim nor to the research questions of this review, so they are not stated in the protocol. For example, they might have measured the performance in mathematics of children with aggressive behavior and their engagement. The mathematics scores are not related to the aim or the research questions but the engagement of children for children with aggressive behavior is, so only this one was included in the protocol.

3.6 Data extraction

Data extraction was performed by using the tool, specifically designed from the researcher only for this paper. This tool was used in order to be certain that the information needed to be extracted were relevant to the aim and the research questions.

In this part it is vital to present an extra finding that came up during the research and specifically during the data extraction. Even though it is neither stated in the research question nor in the aim the definition of the aggressive behavior is essential to consider all the articles included. To be specific, if an article defines aggressive behavior differently than the other articles, it cannot be included. Because it might be relevant to the aim and the research questions but if they do not see aggressive behavior with the same way, the results will be different and cannot be considered together. For this reason, when reading the included articles, the definitions that the articles used for aggressive behavior are also presented in the results and were considered.
3.7 Data analysis

The data analysis was performed using table 4. This table was designed to have all the results together and it was also a way to be certain that all the important information found would be included. Moreover, it helped the researcher to have a clearer view of the results found. Three categories were designed: aggressive behavior, teacher responsiveness and engagement. This helped in order to combine the same information from each article included and not reading each article separately with all the information mixed. This can be better explained with an example. For example, when writing about the category teacher responsiveness, in an article that is both about teacher responsiveness and the influence of aggressive behavior on the engagement of the child only the information about teacher responsiveness were read thoroughly. After this the researcher went back to this article when the category about aggressive behavior had to be completed.

3.8 Quality assessment

The quality assessment was done using the sections M and N from an appendix of a review in April 2010, by the health committee of the royal Swedish academy of sciences (Gustafsson, et al., 2010), for the content see Appendix B. The section M describes the quality of the studies: description, included questions related to the details for each article chosen for this literature review. The questions were related to the method part of the studies and the procedure, such as the data collection and recruitment of participants, context of the study and data analysis. The section N which is described as overall quality of the study, included questions related to the overall quality of each article chosen for this review. The questions were about the reliability and validity of data, bias and generalization of the results and appropriateness of research design.

Only 3 changes were done to the M section. The question 'are the aims stated’ is not included because it can be answered from the protocol. The questions ‘are there adequate descriptions of the methods used to collect data’ and ‘is there adequate description of the data analysis’ were combined in one question. The question ‘Do the authors avoid selecting reporting bias’ was also removed because it is answered in the N part (Gustafsson, et al., 2010).

The included articles for the research went through a quality assessment. All articles were included despite some having a low or medium quality, due to the limited number of articles found. The quality assessment will only affect the discussion part. In the discussion part the articles with low quality will have a limited strength on answering the research question, the ones with medium quality a little bit higher and the ones that will have the higher impact are those with high quality. Specifically, the reliability of the results of articles with low quality are low, so they cannot be as strong as the ones that have high quality and their results can be easier trusted. In order to be certain about the quality of the articles the help of a second reviewer was used. The articles included as well as the table for the quality assessment were given to a second reviewer.
3.9 Peer review

A peer review procedure was conducted in order to be certain that no articles that should have been included are missing and no articles that should have been excluded are included. For the peer review procedure, a second reviewer read the full text of the articles included and excluded. Five articles were given to the reviewer, the articles were both the ones excluded and included, without the reviewer knowing which one of them were included. The articles given were the ones that were really close to being included, but for some reasons three of them were excluded (Turney & Melanahan, 2015; Benish & Bramlett, 2011; Downer, Sabol & Hamre, 2010) and two of them included (Bierman, et al., 2009: Georges, et al., 2011). A copy of the background and the aim of the research were also given to the reviewer in order to have a certain view of what the research is aiming to find.
4 Results

4.1 Participant characteristics

The participants of all the studies included were considered to show aggressive behavior according to the ratings of their parents, teachers or observers/researchers. The articles included focused on the preschool environment and on the aggressive behavior children show towards peers and not towards parents or teachers. The children participated in the studies were 2046 from 2782 preschool classes. The number of teachers and their qualifications (university degree, years of experience etc) were specified only in some articles so there is not an exact number for all of them. The ages of the children ranged from 2-6 years old (Appendix A). The articles by Georges, Brooks-Gunn & Malone, 2011 as well as the article by RimmKaufman, et al., 2005, did not specify the age of the children, who were characterized as kindergarteners.

4.2 Quality assessment

The methodological quality of the articles included can be seen in the Appendix B. From the 10 articles included five of them were found to have high quality (Bierman, et al., 2008; Coolahan, et al., 2000; Bulotsky-Shearer, et al., 2012; Bierman, et al., 2014; Lee & Bierman, 2015), three of them had medium quality (RimmKaufman, et al., 2005; Smith, et al., 2011; Stormont, et al., 2007) and two of them had low quality (Bierman, K., et al., 2009; Georges, et al., 2012). The agreement with the second reviewer was 100%.

The reasons of having a medium or lower quality were the low scores in each of the questions of the quality assessment, which can be seen in the appendix B. The reasons for the articles having medium or low quality were mostly facts such as the age and characteristics of participants that were not clear, the limited length of observations and the way they were performed, how generalizable are the results and the insufficient details of the method part. The five articles that had high quality was because they could answer the questions of the quality assessment in a positive and clear way. They had specific details for the method part and their aims, their results could be generalized, checks for reliability and validity were conducted, the aim and the context were clear and the data collection as well as the data analysis were described with details.

To be specific, the study from Bierman et al. (2008) was the only one that collected information from the measurement of the aggressive behavior from parents, teachers, children and researchers/observers, this was an important aspect that was considered in order to evaluate the article as high quality. In contrast the study from Bierman et al., (2009) was evaluated to have low quality because of many reasons. The observation hours were limited, it was only for a short period of time, many families did not want to participate and the measurement of the aggressive behavior came only from teachers, which might have influenced the results because of the positive or negative relationship they have with the child. Another example is the study from Bierman et al (2008) which the overall quality was high because of the unbiased measures and the reliability and validity were checked and enhanced. Contrary to the study of Georges et al. (2011) where nothing was stated about the reliability and validity, and the results were biased for many reasons, that is why the overall quality was low.
4.3 Peer review

The two reviewers (researcher and a second reviewer) had an agreement 100%. For the articles excluded the reasons were as both reviewers agreed that when talking about decreasing aggressive behavior in preschool class does not necessarily mean that the engagement is increasing for the article from Benish and Bramlett, (2011). What is more Downer’s, Sabol’s and Hamre’s (2010) article was excluded because even though it was an interesting article containing all the information about teacher – child interactions but it did not contain any method part. Lastly the article from Turney and Mclanahan (2015) was excluded because even though it was a longitudinal study in 3, 5 and 9 years old which only the part for 3 and 5 years old could have been used, the actual results of the research done were about the age of 9 which was different for the age range of this paper.

The articles that were included by Bierman, et al., (2009) and Georges, et al., (2011) were included because they had all the characteristics needed such as aggressive behavior, engagement, teacher responsiveness and all the selection criteria.

4.4 Measures

The measurement used in the articles included can be seen in the protocol. (Appendix A).

Aggression, engagement and teacher responsiveness were measured by teachers, observers/researchers, parents and children. Most of the articles only used two of them, teachers and observers/researchers ratings (Lee & Bierman, 2015; Smith, et al., 2011; Georges, et al., 2012; Stormont, et al., 2007). Three of the articles included only the results that teachers rated and completed (Bierman, et al., 2009; Bulotsky-Shearer, et al., 2012; Coolahan, et al., 2000) and one of them was only based on the observers/researchers ratings. Only the article by Bierman and his colleagues (2008) has used results from the four groups of people (parents, teachers, children, researchers/observers). The article by Bierman (2014) used three of them teachers, parents and observers/researchers. Children listened to stories which were about different situations in life and then they had to choose how they feel about this. For example, they read a story about a child hitting another child to take a toy and then asked the children how they feel about this, sad, happy, mad etc. After this they presented four different pictures with a specific scenario to the children and then asked open ended questions about how the children would respond to these scenarios. The results were correlated among the measures of child behavior ratings.

The four groups of people that were measuring the aggressive behavior and the engagement of children with aggressive behavior were teachers, parents, children and observers/researchers. They have completed different tests and papers, depending on the research such as observations (Lee & Bierman, 2015; Bulotsky-Shearer, et al., 2012; Smith, et al., 2011; Stormont, et al., 2007; Bierman, et al., 2008), questionnaires (RimmKaufman, et al., 2005), interviews (Bierman, et al., 2014) and specific tests with subscales and scores (Bierman, et al., 2009; Georges, et al., 2012; Coolahan, et al., 2000).
4.5 **Aggressive behavior**

The results of the research are presented in table 2.

To begin with, in order to understand how aggressive behavior influences the child’s engagement, how aggressive behavior was defined in the articles included has to be stated. Aggressive behavior was defined as overt aggression and disruptive behavior such as being stubborn, yelling to others, fighting, aggressive social problem-solving tendencies, verbal physical antagonism (Bierman, et al., 2008; Bierman, et al., 2014; Lee & Bierman, 2015) breaking things (Bierman, et al., 2009), unusual habits, outburst, acting out, pushing others, provoke others, being unfriendly, being oppositional, being inattentive (Bulotsky-Shearer, et al., 2012; Georges, et al., 2012), arguments, not taking turns, being demanding, destroying others’ things, disrupting the play of others (Coolahan, et al., 2000), verbal or physical threats against others, hitting, spitting, kicking, teasing, throwing toys (Smith, et al., 2011), whining, taking materials from another child and interrupting classes (Stormont, et al., 2007). All of the articles were about aggression towards peers in either small or big groups.

4.6 **The relation between aggressive behavior and child’s engagement**

According to Bierman and his colleagues (2009), classroom participation, which means following rules and focusing attention, is negatively correlated with aggressive behavior. This behavior leads to inability to display behaviors that are regulated and well behaved in order to be engaged, but also has as a consequence the difficult adjustment in the preschool environment (Bulotsky-Shearer, et al., 2012). The aggressive behavior influences negatively the ability of children to learn, even though this behavior might not interfere in the activities of the classroom (Georges, et al., 2011).

Aggressive behavior leads to poor peer interactions which leads to poor engagement (Coolahan, et al., 2000), not only for the children with aggressive behavior but also for their classmates because peers are influenced by them. The result is the low engagement of the whole class (Bulotsky-Shearer, et al., 2012). During a research, where teachers observed children with aggressive behavior they found out that the children’s low levels of engagement led to low cognitive and social skills by the end of the year (Bulotsky-Shearer, et al., 2012). Children with aggressive behavior did not affect their peers but the ones that affected the classroom climate most were the children with attention problems (Georges, Brooks-Gunn & Malone, 2011). According to Bierman and his colleagues (2009), the engagement of a child with aggressive behavior is even lower when it is combined with pro-social skill deficits.

Lastly, the weak engagement of a child with aggressive behavior even though it exists it could have been higher; however, it is in a low level. The reason for this is that activities in preschool have a limited short duration and the classrooms are small, when these two dimensions are combined negative externalities such as aggressive behavior, are minimized (Georges, Brooks-Gunn & Malone, 2011). Moreover, Bierman, et al. (2009) pronounced that being actively engaged with teachers and classmates albeit with the aggressive approach such as arguments is better for the development of the child than to be passive without any interactions with teachers or peers.
4.7 The relationship between teachers’ responsiveness and the engagement of children with aggressive behavior in preschool class

The classroom quality might decrease behavior problems such as aggression, but this does not necessarily mean that the positive behaviors are increasing at the same time (RimmKaufman, et al., 2005). When group settings are smaller, children are more engaged and the teacher is able to control problem behaviors that might occur more easily, using less effort (RimmKaufman, et al., 2005). Rules and routines from the teachers with what they exactly expect from their students can develop the self-regulation skills of children with aggressive behavior (Lee & Bierman, 2015). Reducing stress and enhancing security, are also possible ways (Lee & Bierman, 2015).

The engagement of the children is highly related to their closeness with the teacher. The better their relationship is, the lower the aggression and the higher their engagement in the class (Lee & Bierman, 2015). Moreover, when they have a good relationship with their teacher, they try to please him or her and as a consequence, they become engaged in the activities the teacher plans (Lee & Bierman, 2015). However, classes with high levels of aggression displayed by children make it even harder for a preschool teacher to manage it (Lee & Bierman, 2015). Children are more engaged when the activities planned are teacher directed, maybe because during other activities the teacher cannot control everything taking place in the class (RimmKaufman, et al., 2005). However, aggression was more likely to occur when the activity was structured and teacher directed, because children might ask for something from the teacher and their demands would not be completed immediately (RimmKaufman, et al., 2005).

Instructions and support are important for the engagement of the child but limits should also be present. Specifically, teachers should also keep in mind to let the child express their feelings, explore and feel free to act and interact (Bierman, et al., 2008). Positive classroom management, praise and support can also control the emotions of children with aggressive behavior and they can highly engage them in the preschool environment (Bierman, et al., 2008). Child-centered learning activities are more effective in combination with emotion coaching and induction strategies (Bierman, et al., 2008). Another positive outcome from small group settings is the fact that children can positively interact with their peers and increase their engagement (RimmKaufman, et al., 2005).

In addition, teachers should always keep in mind each child’s interests and strengths when planning an activity (Bierman, et al., 2008). Making the school’s tasks more interesting to increase engagement can be succeeding by increasing the levels of participation which will leads to the improvement of the children’s cognitive skills (Bierman, et al., 2009). This is a long term goal for them, not only to reduce aggression, but also to promote engagement (Bierman, et al., 2009). Focusing only on reducing aggression with strategies like time out (take a child out because the child disturbs the class) and other prohibitions will only help in short term goals without any positive effect on their engagement (Bierman, et al., 2009). The language that teachers use is also important, sensitive responds, social problem-solving dialogue, questions and in general rich talks with preschoolers can help in order to improve the classroom support interact (Bierman, et al., 2008).
Teachers promote the engagement of children with aggressive behavior when they focus on the child’s socio-emotional skills (Bierman, et al., 2009). Focusing on children’s socio-emotional skills can be achieved by teachers’ emotional support. This can be the level of warmth and responsiveness that might depict the teacher-child relationship (Lee & Bierman, 2015; RimmKaufman, La Paro, Downer & Pianta, 2005). The emotional security students feel can enhance their confidence and comfort them in order to reach the positive classroom engagement (Lee & Bierman, 2015). In addition, according to the PATHS curriculum, which was designed to promote the social-emotional skills such as conflict resolution and emotional expression skills, teachers can use use puppets, photos, role play games, stories and discussions when they have a child with aggressive behavior in order to promote their engagement (Bierman, et al., 2008).

Lastly, when teachers use prerecursive statements and behavior-specific praise with or without expectation instead of using a reprimand the engagement of the preschoolers is higher. More precisely, prerecursive statement is when the teacher explains to the child before implementing an activity what is the best way to behave and to do the activity. Whereas, behavior specific praise with or without expectation is a positive verbal comment when the child shows an approved behavior or both the approved behavior but also the expectation the behavior represents. In this way not only the levels of aggression are decreasing, but also the engagement is increasing. When trying this way, the reprimands of teachers’ automatically decreased. Reprimand is the negative comment a teacher can verbally express when a child exhibits a behavior that is not approved. (Stormont, Smith & Lewis, 2007; Smith, Lewis & Stormont, 2011).
Table 2. Results of the articles included

<table>
<thead>
<tr>
<th></th>
<th>Aggressive Behavior</th>
<th>Teacher Responsiveness</th>
<th>Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee &amp; Bierman, 2015</td>
<td>Overt aggression and disruptive behavior (Stubborn, yells, fights)</td>
<td>High support (emotional support)</td>
<td>Reduced aggression and higher engagement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Close relationship between teachers-students Supportive classroom environment Organized classroom rules</td>
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<tr>
<td>RimmKaufman, La Paro, Downer &amp; Pianta, 2005</td>
<td>Aggression towards peers in small groups or the whole class. Off task in whole class activities. Structured teacher-directed activities more aggression</td>
<td>Classroom quality, instructional and emotional support, positive, sensitive and warm</td>
<td>Reduced aggression and higher engagement</td>
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<td></td>
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</tr>
<tr>
<td>Bierman, Nix, Heinrichs, Domitrovich, Gest, Welsh &amp; Gill, 2014</td>
<td>Aggressive social problem-solving tendencies, verbal physical antagonism, overt aggression and disruptive behavior (Stubborn, yells, fights), relational aggression</td>
<td>Social – emotional support, high quality teacher-students interactions</td>
<td>Beneficial, enrichment, enhanced</td>
</tr>
<tr>
<td>Bierman, Torres, Domitrovich, Welsh &amp; Gest, 2009</td>
<td>Aggressive oppositional behavior (stubborn, yells, fighting, breaking things) Aggressive behavior – prosocial skills</td>
<td>Teacher – student interactions Emotion regulation and social problem solving skills, conflict management skills</td>
<td>Higher peer relationships (\rightarrow) higher engagement</td>
</tr>
<tr>
<td>Stormont, Smith &amp; Lewis, 2007</td>
<td>Disruptive and aggressive: Yelling, spitting, hitting, teasing, whining, taking materials from another child, interrupting lessons</td>
<td>Praise, precorrection, behavioral support</td>
<td>Reducing problem behavior leads to higher engagement in class</td>
</tr>
<tr>
<td>Authors</td>
<td>Key Terms</td>
<td>Implications</td>
<td>Support</td>
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<tr>
<td>Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, Blair, Nelson &amp; Gill, 2008</td>
<td>Overt aggression (stubborn, yelling, fighting) and relational aggression</td>
<td>Positive classroom management, praise, support, emotion coaching, induction strategies, rich talk, sensitive, questions, social problem solving dialogue BUT too much instruction reduces the engagement</td>
<td>Support to child’s development, students’ interests and strengths, follow classroom rules, deal with learning challenges</td>
</tr>
<tr>
<td>Georges, Brooks-Gunn &amp; Malone, 2011</td>
<td>Externalizing behavior problems, argues, fights, angry, acted impulsively, disturb activities of others</td>
<td>Short duration of instructions, Small classes, teachers control in the class</td>
<td>Minimize negative externalizing behavior</td>
</tr>
<tr>
<td>Bulotsky-Shearer-Shearer, Dominguez, Bell &amp; Graesser, 2012</td>
<td>Overactive problem behavior, unusual habits, outburst, acting out, pushing others, provoke others, unfriendly, oppositional, inattentive. Aggressive behavior matters in school readiness and peer environment. Lower cognitive, social and motor skills effect sizes. Social and academic difficulties. Aggressive behavior $\rightarrow$ lower engagement in social and class level. Influence others negatively</td>
<td></td>
<td></td>
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<tr>
<td>Coolahan, Fantuzzo, Mendez, McDermott &amp; Pressley, Michael, 2000</td>
<td>Fights and arguments, not taking turns, demanding, destroying others' things and disrupting the play of others. Aggressive behavior $\rightarrow$ poor peer interactions $\rightarrow$ poor engagement</td>
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<td></td>
</tr>
<tr>
<td>Smith, Lewis &amp; Stormont, 2011</td>
<td>Verbal or physical threats against others, hitting, yelling, spitting, kicking, teasing, destroying materials, throwing toys</td>
<td>Precorrective statement, behavior specific praise, behavior specific praise with expectation, non specific behavioral praise</td>
<td>Improvement of behavior, decrease of aggressive behavior</td>
</tr>
</tbody>
</table>
5 Discussion

The study points three findings regarding aggressive behavior, teacher responsiveness and engagement in the preschool environment. Firstly, aggressive behavior was defined as overt aggression and disruptive behavior. Secondly, aggressive behavior was related with lower social skills which led to lower engagement in the class. The engagement of children with aggressive behavior was low but even lower when it was combined with attention problems. Thirdly, the teacher responsiveness is vital in order to increase the engagement of children with aggressive behavior. This can be succeed with emotional support and a closer relationship between them, positive classroom management, high quality class and activities which focus on the interests of the child.

All of the articles included were about children with aggressive behavior, but all of them measured aggression with different ways, so do we all talk about the same aggression? Eight of ten articles that were included, used teachers to measure the aggressive behavior for the children in their class (Coolahan, et al., 2000; Bierman, et al., 2008; Bierman, et al., 2009; Smith, et al., 2011; Georges, et al., 2012; Bulotsky-Shearer, et al., 2012; Bierman, et al., 2014; Lee & Bierman, 2015). The relationship a teacher has with a child, which might be negative but also positive, can easily influence the results of these measures (Pianta, et al., 2002; Downey & Pribesh, 2004; Mashburn, Hamre, Downer, & Pianta, 2006; Konold & Pianta, 2007). The numbers show that it was a “problem” that all the researches had, so they should have been aware of it to minimize the bias. This could be fixed by using measures from researchers/observers, teachers and parents and see if they results agree with each other. Moreover a way to measure aggressive behavior could be to use children’s perspectives.

However, when trying to define aggressive behavior, characteristics like hitting, spitting, pushing and kicking derive according to the results (Bierman, et al., 2008; Bulotsky-Shearer, et al., 2012; Georges, et al., 2012; Bierman, et al., 2014; Lee & Bierman, 2015), a definition that can easily be created is that aggressive behavior has as an intention hurting or harming others (Helmsen, Koglin & Petermann, 2012; Liu, Lewis, & Evans, 2013). This can be a general definition. However, hurting and harming can be obtained not only physically but in many different ways such as hurting the feelings of someone or use someone else to hurt a person. Particularly, in line with the results, being unfriendly, oppositional and inattentive but also threatening others verbally or yelling to others are also some ways to understand aggressive behavior (Coolahan, et al., 2000; Stormont, et al., 2007; Lee & Bierman, 2015). These all can be categorized in direct and proactive aggressive behavior because it occurs in face to face situations (Monks, Ortega & Torrado, 2002) and concerning the function it is “used” for personal gains or domination to others (Renouf, et al., 2010).

In addition to this, using aggressive behavior to achieve something, such as taking a game or a candy from another child can explain why preschoolers act in this way (Liu, et al., 2013), which can be also confirmed from the structural - developmental theory (Malti, Gasser & Buchmann, 2009). A behavior like this has been shown to lead to poor peer interactions, as it can be seen in the results (Coolahan, et al., 2000), but why are they acting like this even though they are aware of the social cues, according to the theory of mind (Perner, 1991)? Who wants a friend that grabs things without asking? According to the transactional model, lack of friendships will lead to aggression, but aggression was the reason that led to lack of friendships (Sameroff, 2010; Koutras & Giannopoulou, 2015).
According to the results, these poor peer interactions have as a result lower engagement for children with aggressive behavior (Coolahan, et al., 2000). Nevertheless, aggressive behavior might be used to protect themselves against peers, according to the “Need to belong theory” (Dodge, et al., 2003; Stenseng, et al., 2014). However, a conflict may arise here concerning the terms of aggressive behavior and engagement. According to Bulotsky-Shearer and his colleagues (2012) aggressive behavior results in lower engagement not only for aggressive children who interrupt the class (Stormont, et al., 2007) but also for all the children in the class. Contrary to this, according to Georges, et al., (2011), the children who are actually responsible for the low engagement of the class are the ones with attention problems. So who is “responsible”?

The answer is the level of how intense the aggressive behavior of a child is and what is the exact problem with the attention. Of course a combination of a child being both aggressive and having attention problems and its effects on the engagement of the class cannot be doubted, as the results can show (Bierman, et al., 2009). As it is stated above, child, family and preschool factors can influence the child, according to Bronfrenbrenners biocological theory (1994). A child might also show aggressive behavior because of the personality and the personal experiences (Muste & Sharpe, 1947) or because of biological factors (DeKlyen, & Greenberg, 2008). Different predictors can also be seen for children having attention problems. So everything depends on the reasons the child might show aggressive behavior or have attention problems, how important they are and in which level they have influenced the child.

According to the results from the articles included but also from the research of the background for this paper it was found that aggressive behavior has also a “positive side”. This means that aggression is a normal reaction, according to Dollard’s theory (Morlan, 1949) and that it is better for a child to act with this way than to be passive (Bierman, et al., 2009). Moreover, being aggressive is a stage in the development of the child, and it might arise in interaction incidents, such as aggression occurring when playing, but it is part of the participation and developmental process (Muste & Sharpe, 1947; Greydanus, et al., 2003). Although this might be a true story, these findings cannot be mutually supported. The reason for this is that the results in the articles used different assessments to measure aggressive behavior and the researches were conducted in different context. It might be “good” to respond even with an aggressive way, but teachers will probably not agree with this, as it is easier to handle a calm child than one with aggressive behavior. This can be easily seen from how a class can be managed with children that show aggressive behavior compared to others that do not respond.

Sometimes the teachers’ responsiveness is not enough and in order to have higher levels of engagement the organization of the class can be helpful too. The contribution of the classroom quality in the engagement of children with aggressive behavior is also important (Fredricks, Blumenfeld & Paris, 2004). For example, in line with the results, small group settings help children to engage in activities, and interact with their peers easily (RimmKaufman, et al., 2005). The school environment and how the classroom is organized by the teachers can increase or decrease the children’s engagement (Chien, et al., 2010; Williford et al., 2013). For instance, the fact that preschool classes
have a limited number of students and that the duration of the activities is short, help students to be engaged and minimize behavior problems (Georges, et al., 2011).

The teachers’ responsiveness to children with aggressive behavior can help with their engagement and way of learning. Most of the articles included found that in order to encourage children’s engagement socio-emotional support from teachers is essential (RimmKaufman, et al., 2005; Bierman, et al., 2009; Lee & Bierman, 2015) which can be also confirmed by the learning/behavior theory (Hurd & Gettinger, 2011). The importance of emotional support can be seen from the fact that it can lead to high scores in literacy and academic skills of the child even though the child might not be engaged in the class (Williford et al., 2013). The emotional support can be simple but really useful. According to Lee and Bierman (2015) warmth and positive responsiveness can help the child build a strong relationship with the teacher but also other more practical ways such as puppets, role play games, stories and discussions can be used (Bierman, et al., 2008). Children tend to mimic what they see, according to Bandura’s theory, so if a teacher acts aggressively or negatively, children will adapt this behavior (Bezevegakis, 2010). However teachers should always keep in mind to let the children feel free and be creative with their own way, too much pressure will lead to opposite results than expected and planned (Bierman, et al., 2008). Furthermore, the interests of the child are also significant as the results show, in order to have a child engaged, teachers should keep that factor in mind too (Fredricks, Blumenfeld & Paris, 2004; Bierman, et al., 2008). Using these methods teachers can increase the engagement of children with aggressive behavior in the class, however a conflict arises here. Children are mostly engaged when the activities are teacher directed (RimmKaufman, et al., 2005; Lee & Bierman, 2015). Contrary to this, the child might be more engaged but the incidents of aggression are higher (RimmKaufman, et al., 2005). So where should a teacher focus on? Try to have the children engaged or try to have the class in calm levels without incidents of aggressive behaviors?

Precorrective statements and praising are the answers according to the results because they do not only decrease aggressive behavior but they also increase the engagement of the children in the class (Stormont, Smith & Lewis, 2007; Smith, Lewis & Stormont, 2011). Praising when the child uses a positive behavior, even though the child is mostly showing aggressive behavior, is vital in order to realize that it might be a small step but at the same time an important one, and the beginning for something greater (Bierman, et al., 2008; Ritz, et al., 2014). What is more, the language as a way to improve the interaction between teachers and children with aggressive behavior seems to be effective (Bierman, et al., 2008). Using all the above teachers might not see immediate results but these methods can be used to succeed in long term goals, which are more important that reducing aggressive behavior for some moments only, so the class will be calmer when teaching (Bierman, et al., 2009).

Furthermore, according to Sameroff (2010), this kind of regulation provided by the preschool teachers leads to developing the self-regulation of the child and as a result increasing the engagement. The preschool teacher should help in the development of the child’s self-regulation. The positive engagement of the child in classroom activities will help in promoting the self-regulation (Williford et al., 2013). If a child can control the emotions and
be self-disciplined, positive outcomes will derive that will help both the child but also the class to be engaged (Koutras & Giannopoulou, 2015).

In addition to this how a teacher responds to her or his students depends on their reciprocal relationship (Skinner & Belmont, 1993; Portilla, et al., 2014). This can be confirmed by the results. When a child has a good relationship with the teacher, the child tries to please her or him and the teacher is trying to organize interesting activities for the child, in order to keep the child engaged (Lee & Bierman, 2015). According to Lee and Bierman (2015) the positive classroom engagement can be reached if confidence and comfort exist in the class (Fredricks, Blumenfeld & Paris, 2004). Unfortunately, teachers tend to respond negatively to students with aggressive behavior (Williford et al., 2013; Portilla, 2014), which means that children are poorly engaged. The reason for this is probably the fact that in classes with high level of aggressive and disruptive behavior, teachers are unable to manage it (Lee & Bierman, 2015). As a consequence the cognitive and literacy skills as well as the whole development is delayed, because one problem brings a new one. What is worse, is that a poor relationship might also lead to higher levels of aggression from the child (Koutras & Giannopoulou, 2015; Silver, et al., 2010).

5.1 Methodological Discussion

The methodology of the research conducted can be improved in order to have more results and a better quality of the articles included. Some modifications could have been done in the choice of the databases. Four databases is a quite satisfying number, however if more databases such as JSTOR would have been included the articles included would be probably more. What is more, in some databases such as Academic Search Elite, out of the 51 articles found only one was included, and the numbers are even more worrying for the PsycInfo database where 299 articles found only two were included. Of course, the problem might not be because of the databases but because of the search words and the aim.

The search words used were (Aggression OR aggressive behavior OR challenging behavior) AND (preschool OR kindergarten OR nursery) AND (engagement OR participation OR involvement), some changes in order to have better results are possible. For example the term “challenging behavior” gave many results from articles that might be related to externalizing or internalizing behavior problems, and not specifically for aggressive behavior, and for this reason they could not be included. As a consequence, many irrelevant articles found in the research progress had to be excluded, and that meant extra time to read all the abstracts and conduct the search strategy as it should. Furthermore, an extra note like “NOT parents” in the databases that it was possible should have been used. Eighty (80) of the articles excluded in the abstract reading part because they were related with parents that have children with aggressive behavior and what they should do to help them an decrease this behavior. Lastly, a word like “teachers” or “teacher responsiveness” should have also been included to make the searching progress more precise.

In addition to this, teacher responsiveness is sometimes difficult to define. In some articles clear definitions about how they perceive the term were missing. The same issue existed for aggressive behavior as well. This made
the search progress even harder because an article could have been relevant to teacher responsiveness, but could not be included because the teacher responsiveness meant something else for the researchers.

Lastly, practical issues such as extra time or access to more articles could have made the whole research progress better and easier. When having more time to search without the time pressure, better results would derive. The extra time would also give the chance for a handsearch, which means searching the reference list of the articles included. Useful information could have been found with this search, and articles that could have been included. Moreover, even though not many were found that there was not access, some of them were written in a language different than English and could not be included.

5.2 Limitations

One of the limitations of this research is the fact that children with disabilities were excluded. The general topic and search might become much more complicated but a clearer view for all children with aggressive behavior would have been created. The fact that some children are not diagnosed does not necessarily mean that they do not have a disability or a delay in their developmental progress. Children with ADHD for example is a category with children with disability, which is totally relevant to the topic and they should have been included. However, this decision was made up because children with disabilities have other reasons to be aggressive, that are related to their disability. For example not being able to walk or to talk, peers are making fun of them and they respond with aggression.

Furthermore, another limitation is the fact that longitudinal studies could not be included, because of the age limit that according to the selection criteria was 2-6. Most of the studies found might have started the searching progress in this age but they lasted until older ages than 6 years old. However, it would be really interesting to see how and if all the teaching strategies used in preschool environment could actually influence the academic success or failure. It would be interesting to see if teaching methods and responsiveness are so important that can truly change the way children act and interact. And if a child with aggressive behavior can really change, or the biological and parent factors are the ones that exceeding. These would be great findings, but if someone wants to focus only on the preschool age sharp limits should be followed, as it was done in this research. The fact that children with aggressive behavior could have reduced this behavior does not necessarily mean that it was the teachers’ intervention that influenced them. Throughout the years many factors and incidents in their lives could have influenced them. When having a sharp limit these possibilities also exist but in a lower level.

Lastly, as engagement is a complicated term that is not so often used, most of the articles found that were excluded, were about reducing aggressive behavior in preschool contexts and not increasing the engagement. It would also be easier to have a topic like this, but not better. Reducing aggressive behavior does not mean increasing engagement, and normally this should be the aim of every teacher, to increase the engagement of the children in the class. In general the topic could be altered to become easier. For example externalizing behavior problems could have been used instead of aggressive behavior. Having something so specific like aggressive behavior can limit the results and the findings of the research. Nonetheless, sometimes being specific is better. From the one hand, when
having a child in the class that shows aggressive behavior methods for externalizing behaviors can be used, but they might not be effective. From the other hand, if a child with a different externalizing problem than aggressive behavior is in the class, the methods found for children with aggressive behavior could not be used.

5.3 Future Research

The results found can lead to next steps. For example, the positive side of aggressive behavior is not well known. A research concerning the positive site of aggression and how teachers with their responsiveness can encourage children’s engagement through this, would be really interesting. What is more, specifying the social emotional support with everyday practices is also vital, so each teacher would practically know how to respond to children with aggressive behavior. The poor peer interactions that children with aggressive behavior have is an attractive aspect. Teachers can benefit from “using” peers to help children with aggressive behavior. The future research could also be related to the academic achievement later on the lives of children with aggressive behavior and if teacher responsiveness is actually influencing them. However, many factors could affect them and not only the teacher responsiveness so they should be kept in mind. Lastly, in order to be certain that the aggressive behavior of a child would be limited everyone around the child should cooperate. Focusing on teachers and their respond is a significant part, as preschoolers spend most of their time there, but a cooperation with the family, the extended family, the society etc is essential.
6 Conclusion

To conclude, the predictors for aggressive behavior can be seen everywhere around the child, from the family and the preschool until the inside of the child such as physical and biological factors. Whichever the reasons for aggressive behavior and the intensity are, aggressive behavior is much more complicated than someone can realize. When thinking about aggressive behavior in preschool the first thing that comes in mind are children that hit or kick. However this is only the physical aggression, relational and verbal aggression are also in great importance, but are barely realized. Nevertheless, every coin has two sides. Aggressive behavior is also a way to act and interact, participate, express feelings and a step in the development of the child.

This behavior has an impact around all aspects of the child. It is a behavior that children follow and if appropriate measures are not taken serious problems in their future lives will appear. Children with aggressive behavior might be unable to follow appropriate behaviors and have poor peer interactions which lead to low engagement, but teachers can help them. How can this happen? Being close to their students in combination with providing social-emotional support, positive classroom management and focus on the interest of the child is the answer.

The importance of this research can be seen from the fact that a limited research was conducted in teacher responsiveness, even though it is vital for the development of the child. Aggressive behavior is a common phenomenon in preschool environments that concerns many teachers. For this reason, a way to improve the conditions in the preschool class by using a “correct” responsiveness could be useful for both the teacher and the child.
7 References


# APPENDIX

## APPENDIX A

Protocol of the articles included

<table>
<thead>
<tr>
<th>Ages</th>
<th>Year of Publication</th>
<th>Aim</th>
<th>Concepts included</th>
<th>Methodology - Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee &amp; Bierman, 2015</td>
<td>4 2015</td>
<td>&quot;This study simultaneously examined student–teacher closeness and classroom emotional support in kindergarten, evaluating associations with changes in child aggression,&quot;</td>
<td>x x x x</td>
<td>Student Teacher Relationship scale (kindergarten context), Teacher Observation of Child Adaptation–Revised (aggressive behavior), Inattention</td>
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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Pre-school Environment</th>
<th>Teachers</th>
<th>Observers/Research assistants</th>
<th>Parents</th>
<th>Children</th>
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<tbody>
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</table>


<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Methodology</th>
<th>Findings</th>
<th>Measurement Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rimm-Kaufman, La Paro, Downer &amp; Pianta, 2005</td>
<td>2005</td>
<td>Subscale for ADHD (learning engagement), School Readiness Questionnaire</td>
<td>First, how do children’s engagement, compliance, and cooperation vary as a function of teachers’ use of classroom settings, and second, how does classroom quality moderate the co-occurrence between teachers’ choice of classroom settings and children’s behaviors” (p.380)</td>
<td>Classroom Observation System for Kindergarten (Teachers’ use of classroom settings and child behaviors, Global features of classroom)</td>
</tr>
<tr>
<td>Papadopoulou Vasiliki</td>
<td></td>
<td>social withdrawal, learning engagement, and literacy skill acquisition as socioeconomically disadvantaged children transitioned from Head Start classrooms into a wide array of kindergartens and on into first grade” (p.389)</td>
<td></td>
<td>Subscale for ADHD (learning engagement), School Readiness Questionnaire (learning behaviors)</td>
</tr>
</tbody>
</table>
We hypothesized that the REDI intervention would produce main effects in the dual domains of language-emergent literacy skills and social-emotional skills that were targeted by the program. We sought to determine whether those intervention effects were more likely to be sustained when REDI children matriculated into higher quality or lower quality kindergarten contexts" (p.143)
<table>
<thead>
<tr>
<th>Bierman, Torres, Domitrovich, Welsh &amp; Gest, 2009</th>
<th>4,59</th>
<th>2008</th>
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<tbody>
<tr>
<td>&quot;The purpose of this study was to examine the relationship between three aspects of behavioral readiness (classroom participation, prosocial behavior, and aggressive behavior) and child cognitive readiness (academic knowledge and executive function [EF] skills) in a large, diverse sample of four-year-old children attending Head Start programs&quot; (p. 306)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Rating Scale (attention problems)</td>
<td>Classroom participation was assessed using eight items from a school readiness inventory developed for this study (Classroom Participation)</td>
<td></td>
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<tr>
<td></td>
<td>Prosocial behavior was assessed using seven items from the social competence scale (Prosocial Behavior)</td>
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<tr>
<td></td>
<td>TOCA-R of child adaptation-revised (Aggressive–Oppositional Behavior)</td>
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<tr>
<td></td>
<td>Standard scores on the block design subtest of the Wechsler preschool and primary scale of intelligence–III</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Count</td>
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<tr>
<td>Bulotsky-Shearer, Dominguez, Bell &amp; Graesser, 2012</td>
<td>2011</td>
<td>5,16</td>
</tr>
<tr>
<td>Coolahan, Fantuzzo, Mendez, McDermott &amp; Pressley, Michael, 2000</td>
<td>2000</td>
<td>5,94</td>
</tr>
<tr>
<td>Study</td>
<td>Year</td>
<td>Year of publication</td>
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<tr>
<td>Smith, Lewis &amp; Stormont, 2011</td>
<td>4-5</td>
<td>2011</td>
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<tr>
<td>Stormont, Smith &amp; Lewis, 2007</td>
<td>3-5</td>
<td>2007</td>
</tr>
<tr>
<td>Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, Blair, Nelson &amp; Gill, 2008</td>
<td>4</td>
<td>2008</td>
</tr>
<tr>
<td>Georges, Brooks-Gunn &amp; Malone, 2011</td>
<td>Kindergarten</td>
<td>2012</td>
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</tbody>
</table>

**APPENDIX B**

Quality assessment of the articles included

<table>
<thead>
<tr>
<th>Lee &amp; Bierman, 2015</th>
<th>Is the context clearly described?</th>
<th>Is there an adequate description of the sample used and how the sample was identified and recruited?</th>
<th>Are there adequate descriptions of the methods used to collect data and of the data analysis?</th>
<th>Is the study replicable?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, it is stated: kindergarten classroom context.</td>
<td>Yes, there is a description of the preschoolers, their ages and also their families (socioeconomic status, educational level of</td>
<td>Yes, in the data collection part the author explains with explicit details how and when data were collected. The</td>
<td>Yes, because they give enough details for the method part, how they collected the data, how they measured and when.</td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Parents etc.</td>
<td>Measures as well as subscales and scales, tests they used.</td>
<td>Yes, because enough details are given for the method part. Details even with the way the observers got trained and the teachers’ qualifications are described. However, a clear definition of the engagement is not given and it is stated as on task off task activities. So another researcher may conduct it differently.</td>
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<tr>
<td>Bierman, Torres, Domitrovich, Welsh &amp; Gest, 2009</td>
<td>Yes, in classrooms of four years old students.</td>
<td>Yes, they also state the reasons that some families did not participate, how many of them</td>
<td>Yes, because they give enough and explicit details at the method part. How did they conducted the research.</td>
<td></td>
</tr>
<tr>
<td>Bierman, Nix, Heinrichs, Domitrovich, Gest, Welsh &amp; Gill, 2014</td>
<td>Yes, it is stated: kindergarten classroom context and there is also a paragraph about the dimensions of the kindergarten context.</td>
<td>Yes, they describe with details the children’s and teachers’ characteristics. Family and economical status, district they live, origin etc.</td>
<td>Yes, because details are given for every step of them. Even the amount of money they gave for each parent and teacher because they joined the research.</td>
<td></td>
</tr>
<tr>
<td>RimmKaufman, La Paro, Downer &amp; Pianta, 2005</td>
<td>Yes, because it is about the classroom contribution.</td>
<td>Yes, there is a description of the children and how many they are, their schools urban or rural and their teachers (qualifications). But there is not a specific age of the children. It is just stated, ‘Kindergarten’.</td>
<td>Yes, they describe the way, hours, periods they did the observations. Moreover they reference their coding systems and what the observers did.</td>
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<tr>
<td>Papadopoulou Vasiliki</td>
<td>parents etc.</td>
<td>Because it is a longitudinal study children that are missing are also discussed.</td>
<td></td>
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<tr>
<td>Study</td>
<td>Details of Participants</td>
<td>Details of Method</td>
<td>Details of Results</td>
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<tr>
<td>Bulotsky-Shearer, Dominguez, Bell &amp; Graesser, 2012</td>
<td>Yes, in kindergarten classroom context.</td>
<td>Yes, the details of the children are mentioned such as gender, demographic information, income of the family and characteristics of the school.</td>
<td>Yes, when, for how long, who participated and measurements. However it is a cross sectional study, so different results in a different period of time are possible.</td>
<td></td>
</tr>
<tr>
<td>Coolahan, Fantuzzo, Mendez, McDermott &amp; Pressley, Michael, 2000</td>
<td>Yes, it is stated preschool context.</td>
<td>Yes, they state the ages of the participants, the ethnic makeup, the gender and the characteristics of their households.</td>
<td>Yes, because they give enough details such as the age, the environment, the families and the school that can guide someone else to replicate it.</td>
<td></td>
</tr>
<tr>
<td>Smith, Lewis &amp; Stormont, 2011</td>
<td>Yes, head start classrooms.</td>
<td>No, they mostly describe the characteristics of the teachers as participants who use the responsiveness to promote the engagement of their students</td>
<td>Yes it is, because many details are included.</td>
<td></td>
</tr>
<tr>
<td>Stormont, Smith &amp; Lewis, 2007</td>
<td>Yes, head start classrooms.</td>
<td>Yes, they describe characteristics of both teachers and students who participated in the research.</td>
<td>Yes, they have enough details of the way they collected their data and the data analysis such as procedures and design procedures. However the data collected are limited.</td>
<td>Yes, because they give enough details for every step.</td>
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<tr>
<td>Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, Blair, Nelson &amp; Gill, 2008</td>
<td>Yes, in classrooms of four years old students</td>
<td>Yes, characteristics of the children such as origin, the communities they live in and ages. They were recruited with brochures describing the study to the parents. Reasons why some families did not participate are also explained.</td>
<td>Yes, about the parents’ interviews and how they were conducted such as place and language, the child’s assessment from the trained interviewers, observations, research staff, teachers’ compensations and the periods all of these were done.</td>
<td>Yes, because specific details are given for each step of the procedure.</td>
</tr>
<tr>
<td>Georges, Brooks-Gunn &amp; Malone, 2011</td>
<td>Yes, kindergarten classroom.</td>
<td>No, specific ages are not stated, even though the authors describe the characteristics of children included and excluded and why, how many are in one class etc. This might be because the data used were from ECLS-K.</td>
<td>Yes, the data they used were from ECLS-K, a nationally representative sample of children in the United States. They also performed cluster analysis using the K-Means algorithm method for the data analysis.</td>
<td>No because the data used were from ECLS-K, so maybe they did not give enough details, because they reference this. If someone follows the reference and sees how they did the research it might be more helpful.</td>
</tr>
<tr>
<td></td>
<td>Was the choice of research design appropriate for addressing the aim posed?</td>
<td>Have sufficient attempts be made to establish the reliability and validity of data collection and data analysis?</td>
<td>To what extent are the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study?</td>
<td>How generalisable are the study results?</td>
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</tr>
<tr>
<td>Lee &amp; Bierman, 2015</td>
<td>Yes. Related measures as well as the data analysis helped in order to find the best possible answer to the aim.</td>
<td>Yes, and it is also stated in one of the strengths of the study, that the measures they used are well validated. It is reliable because it is replicable with the same research tools and reliable because the researchers measured what they set up.</td>
<td>To a high extend. The researchers tried to find out every possible answer to the questions they had, with the data they have collected. The same explanations would reach a researcher that would replicate this study. However the fact that teachers completed so many ratings for children might be biased from the teacher’s-child relationship.</td>
<td>The study’s results cannot be generalized because the children that were included for the research were only the ones from a low economical background.</td>
</tr>
<tr>
<td>Reference</td>
<td>Yes. The observations conducted can help the researchers answer their questions and succeed with their aim. However cross sectional studies are only a snapshot: the situation may provide differing results if another time-frame had been chosen.</td>
<td>Yes, it is one of the strengths of the study. And the fact that the observational conducts have a high stability. However the length of the observations is limited. It is reliable because it is replicable with the same research tools and reliable because the researchers measured what they set up.</td>
<td>To a medium extend. The observations were done only in one day. Furthermore the baseline showed that there are low incidents of aggression in the class.</td>
<td>The study's results can be generalized because the sample is large, there is not a specific choice of children (they observed the whole class).</td>
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</tr>
<tr>
<td>RimmKaufman, La Paro, Downer &amp; Pianta, 2005</td>
<td>Yes. The observations conducted can help the researchers answer their questions and succeed with their aim. However cross sectional studies are only a snapshot: the situation may provide differing results if another time-frame had been chosen.</td>
<td>Yes, the observations conducted have a high stability. However the length of the observations is limited. It is reliable because it is replicable with the same research tools and reliable because the researchers measured what they set up.</td>
<td>To a medium extend. The observations were done only in one day. Furthermore the baseline showed that there are low incidents of aggression in the class.</td>
<td>The study's results can be generalized because the sample is large, there is not a specific choice of children (they observed the whole class).</td>
</tr>
<tr>
<td>Bierman, Nix, Heinrichs, Domitrovich, Gest, Welsh &amp; Gill, 2014</td>
<td>Yes. The observations conducted as well as the tests that were done helped to find results to answer the research questions and the aim.</td>
<td>No, because the observations were only 2-3 hours which is not enough. However the data analysis way are reliable and valid.</td>
<td>To a high extend, kindergarten teachers did not know that there was an intervention and the observers did not know the status of the children.</td>
<td>The results can be generalized because the sample is large, the kindergarten context can be characterized from a wide variability that means it can be any kindergarten and the children are not chosen all of them are included.</td>
</tr>
<tr>
<td>Source</td>
<td>Response to First Research Question</td>
<td>Response to Second Research Question</td>
<td>Overall Quality</td>
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<tr>
<td>Bierman, Torres, Domitrovich, Welsh &amp; Gest, 2009</td>
<td>Yes, all the measurements that were done helped in order to answer the research questions. However because it is a cross sectional study the nature of cross-domain influences over time or the direction of causality can give limited conclusions.</td>
<td>To a medium extend, because only teachers assessed the behavioral readiness.</td>
<td>The overall quality is low.</td>
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<tr>
<td>Bulotsky-Shearer, Dominguez, Bell &amp; Graesser, 2012</td>
<td>Yes, because with their method and results it can be easily seen that they succeed to find what they tried to found.</td>
<td>To a medium extend, because there is a data analytic strategy. However teachers had to complete many tests, so their characteristics of the teachers may contribute to children’s ratings. Moreover the quality of the classroom and the educational level of the teachers might have biased the results because they can</td>
<td>The overall quality is high.</td>
<td></td>
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<tr>
<td>Study (Year)</td>
<td>Findings</td>
<td>Limitations</td>
<td>Quality</td>
<td></td>
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<td>Coolahan, Fantuzzo, Mendez, McDermott &amp; Pressley, Michael, 2000</td>
<td>Yes, because with their choice they were able to find what they were looking for. Yes, for the validity of the instruments Social Skills Rating System was used because of the teachers’ assessment and for the reliability, it was checked when used for the Head Start intervention program.</td>
<td>To a medium extend, because of the measurement part. The measures used as it is stated are the ‘only available for this part of the population’ that does not mean that these measures are the best. The observational level was not intensive and in a micro level. Lastly, the teachers filled in the measures which means that they are not accurate and reliable.</td>
<td>The results cannot be generalized because children from other ethnicities should also be included and are only children from low income urban families. The overall quality is high.</td>
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<tr>
<td>Smith, Lewis &amp; Stormont, 2011</td>
<td>Yes, teachers were observed responding to students with aggressive behavior. Yes, a social validity questionnaire was used in the end of the study to be completed from teachers.</td>
<td>To a medium extend. The data might be biased because teachers rated the children’s aggression. The activities were only teacher-directed and it is not possible to know which strategy influenced the children.</td>
<td>The results cannot be generalized because the study was conducted in a specific area, for head start schools and the sample was limited. The overall quality is medium.</td>
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<tr>
<td>Study</td>
<td>Methodology</td>
<td>Reliability</td>
<td>Validity</td>
<td>Generalizability</td>
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<td>Stormont, Smith &amp; Lewis, 2007</td>
<td>Yes, because they also observed teachers and how they act to children’s aggressive behavior, and not only the children.</td>
<td>Yes, there was an inter-observer for the reliability of the data collected</td>
<td>To a medium extend, because it is not possible to know the impact only on some children, that some teachers taught in the same class and they might have talked about the intervention even though it was not allowed and it was not a new information because it was introduced in the beginning of the year so the teachers were more comfortable with this.</td>
<td>To a medium extend, because of the teachers and teaching assistants included.</td>
</tr>
<tr>
<td>Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, Blair, Nelson &amp; Gill, 2008</td>
<td>Yes, because they used a variety of measures from different aspects of the environment of the child that helped to answer the aim.</td>
<td>Yes, the reliability of the measures were checked and demonstrated adequate agreement. The validity of the findings was enhanced from the randomized-controlled design and use of multiple Informants.</td>
<td>To a high extend. Most of the measures of the study were unbiased as it is also stated in one of the strengths of the study.</td>
<td>The results can be generalized for children with a low economic status.</td>
</tr>
<tr>
<td>Georges, Brooks-Gunn &amp; Malone, 2011</td>
<td>Yes, because they assess every possible aspect related to the aim and find whatever might influences it.</td>
<td>No, nothing is mentioned for the validity and the reliability of the measures used and the data. This is because the used existing data from ECLS-K. The fact that teachers measured the children’s attention and aggressive behavior are not valid neither reliable.</td>
<td>To a medium extend. The fact that teachers measurements were used to collect data have influenced the results.</td>
<td>The results are generalizable because a really large sample is used. The biased measures from teachers exist but this cannot be controlled.</td>
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## APPENDIX C

Detailed reasons for the articles excluded

<table>
<thead>
<tr>
<th>Category</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>Parents (80)</td>
<td>a) reasons, which parents affect their child’s aggressive behavior, how and why</td>
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<td></td>
<td>b) interventions concerning parents and family life to help families decrease their child’s aggression.</td>
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<tr>
<td>Disability (31)</td>
<td>a) aggressive behavior as a symptom for disability</td>
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<tr>
<td></td>
<td>b) society behavior towards children with disability ➔ aggressive behavior</td>
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<tr>
<td>Irrelevant (30)</td>
<td>a) mental health and psychiatric care</td>
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<td>b) bullying, physical aspect of aggression</td>
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<td>Older children (27)</td>
<td>a) preschool until elementary school</td>
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<tr>
<td>Predictors for aggressive behavior (24)</td>
<td>a) why children develop aggressive behavior</td>
</tr>
<tr>
<td>No aggressive behavior (16)</td>
<td>a) the children had other behavioral problems and not aggressive behavior</td>
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<tr>
<td>No teachers (10)</td>
<td>a) teachers without experience</td>
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<td></td>
<td>b) how teachers assess aggressive behavior</td>
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<td>c) not qualified teachers</td>
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