

IMPACT EVALUATION

FREE OF BULLYING AND CHILDREN'S SOCIO-EMOTIONAL SKILLS



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November 2017

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1. SUMMARY

BACKGROUND AND PURPOSE

The consequences of bullying are significant and potentially long-lasting, which highlights the need to tackle bullying early on. In recent years, many scientific and empirical studies have attempted to investigate what an effective anti-bullying programme looks like. The most recent research has evolved from adopting an individual-based focus to looking at the children's group as a whole and regarding bullying as a group phenomenon that is not about "evil children" but about "evil patterns". Many of these studies have focused on anti-bullying programmes in schools, but only a very small proportion of them have considered early anti-bullying interventions.

The Free of Bullying anti-bullying programme fits into this context, since the programme focuses on developing inclusive children's communities and mobilising the bystanders in bullying situations. Additionally, Free of Bullying represents an early and preventative initiative that is suitable for children as young as 0 to 3 years of age.

This evaluation is the first of its kind to study the quantitative effects of the Free of Bullying anti-bullying programme. The report highlights the effects – measured on children's socio-emotional skills – of using the Free of Bullying programme among preschool children under normal everyday conditions in preschools. This approach enables us to evaluate the extent to which children will benefit from the programme if it is adopted in local preschools. The study looks at whether proactively working with an anti-bullying programme in a preschool environment strengthens children's socio-emotional skills.

THEORETICAL BASIS

Precisely what makes an anti-bullying programme effective is unclear, but many studies suggest that programmes which not only focus on the bully or the victim – but also address the underlying socio-emotional factors – can be more effective. Studies have therefore identified a close link between emotional intelligence and bullying, as well as that strengthening social-emotional learning can influence bullying on both the individual and group levels. An important aspect of developing strong and secure children's groups could thus be to support the development of the social and socio-emotional skills that children need to participate successfully in these children's groups.

STUDY DESIGN AND DATA USED

Three municipalities participated in trialling and evaluating the Free of Bullying programme. The selected preschools in the municipalities were randomly divided into two groups: a treatment group and a "wait list" control group. Both groups completed a pre-evaluation of the children's socio-emotional skills, after which the treatment group started working with Free of Bullying. The control group continued to follow their normal routine. The duration of the programme spanned five months. At the end of this period, a post-evaluation of all the children's socio-emotional skills was completed for both the treatment group and the control group. The preschools on the wait list, i.e. those in the control group, then received the relevant materials and training in the Free of Bullying programme, so that they could start working with it as well.

The children's socio-emotional skills were studied using the measurement tool SEAM (Social-Emotional Assessment/Evaluation Measure), which uncovers children's social behaviour and emotional well-being. The questions in SEAM can be divided into 10 subscales that reflect the various aspects of the child's behaviour. These subscales can subsequently be incorporated into two indices: Empathy index and Self-regulation and teamwork index. It is important to remember that the two indices thus cover a range of the child's skills.

Other than measuring the children's socio-emotional skills, the study data also consisted of reflection notes completed by staff members in the treatment group bi-monthly throughout the duration of the project. These reflections provide an insight into how intensively the materials were being used and the children were participating in the programme. Finally, we collected background information about the children and their parents from Statistics Denmark.

MAIN RESULTS

The children's socio-emotional skills are strengthened



Significant positive effect of Free of Bullying on the Empathy index

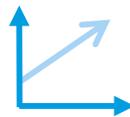


Positive development on the Self-regulation and teamwork index

Working with Free of Bullying provided substantial benefits for children in the treatment group compared with children in the control group. This was particularly true for children's ability to demonstrate empathy. The fact that the most substantial impact was linked to the Empathy index is not surprising, since this index covers the skills that are most closely aligned with the focus areas of the Free of Bullying programme.

The measurement tool used was not specifically designed for the content and activities included in the Free of Bullying programme, which is why the results indicated that the work with the Free of Bullying programme had a spillover effect on the children's socio-emotional skills in general.

Higher programme intensity increases the benefits



Positive correlation between higher programme intensity and increased benefits



A high degree of parental engagement is linked to increased benefits from the programme

There was significant variation in the extent to which the treatment group used the Free of Bullying programme. This variation was reflected in both the number and types of activities. Across the different types of activities, the results showed a correlation between higher programme intensity and increased benefits, measured by the strengthening of the children's socio-emotional skills.

The extent to which parents are engaged in the programme seems to have a particularly strong effect on the impact achieved from participation. Children from preschools that involved the parents to the greatest extent experienced the most significant effects of Free of Bullying across all three measures – empathy, self-regulation and teamwork.

The results of this subanalysis, which builds on the teachers' reflection notes, should be interpreted with a degree of caution, however, since differences in programme intensity among the different preschools were not necessarily random. In part, the study was not intentionally designed so that the children would participate in the programme to various degrees. In addition, this variation could be linked to the characteristics of the children and/or the preschools. It should therefore be noted that the results linked to programme intensity cannot be interpreted as causal links. Nevertheless, results clearly indicate that the intensity with which the preschools use the programme and the types of activities used play a role in the benefits the children get from Free of Bullying.

LIMITATIONS

The impact evaluation was based on a wait list-inspired design, which allowed us to control for many variables. Nevertheless, we were not able to control whether the teachers in the wait list control group changed their behaviour despite not using the Free of Bullying programme, for example. As a result, we could not determine whether there were systematic differences in the way in which the teachers in the control and treatment groups evaluated the children before and after the programme period. The combination of the analysis design, data and analysis model used in this study allowed us to link the measured effects as closely to the work of the programme as possible.

2. BACKGROUND AND PURPOSE

BACKGROUND

For some time now, our understanding and perception of bullying have shifted from an individual-based approach to increasingly being understood as a group phenomenon. This means that we no longer focus on the individual “weak” child, but rather pay more attention to the undesirable dynamics between children in social situations from which they cannot extract themselves (Petersen, 2015; Kofoed & Søndergaard (red.), 2009; Rabøl Hansen, 2005). The dynamics within the children's group are paramount, since bullying not only involves the bully and the victim, but also the bystanders and the followers (DCUM, 2017).

When a child is bullied, there are far-reaching consequences. These consequences can have short- and long-term effects on the individual subjected to the bullying, the person who bullies, and the individuals who witness the bullying. Bullying affects the child's well-being. A large body of research shows that bullying causes destructive effects on children's health and behaviour (Gini & Pozzoli, 2009; Reijntjes et al., 2010; Fisher et al., 2012). Being bullied makes children extremely insecure and causes them to feel that they are not accepted (National Academies of Sciences, Engineering, and Medicine, 2016). Bullying can also affect a child's performance at school. As an example, Eriksen et al. (2014) shows that a child who is bullied is more likely to perform poorly in school compared to children who are not bullied.

The substantial body of evidence showing the significant and potentially long-term consequences of bullying underscores the need to combat it.

ANTI-BULLYING PROGRAMMES

In recent years, there has been an increasing focus on the need for initiatives that protect children against bullying; even the UN's Convention on the Rights of the Child has included a requirement stipulating that children must be protected from bullying. There is no clear answer as to precisely which anti-bullying programmes work and why, however. Numerous meta-analyses have studied the effectiveness of different anti-bullying programmes. A new study finds evidence to suggest that measures that proactively attempt to prevent bullying are effective. However, the way in which these measures are designed varies significantly (Jiménez-Barbero et al. 2016). Another new study concludes that anti-bullying programmes are more effective for younger children¹ (Yeager et al., 2015). These meta-analyses tend to focus on school-based anti-bullying programmes, while only a relatively small number of studies focus on early-stage initiatives. This is despite the fact that there is a well-established body of knowledge indicating that the younger the children when introduced to a programme, the more effective the results (Kautz, Heckman et al., 2015). The combined implication of these findings is that early prevention of bullying is important and can help create safe and healthy children's communities, and thus enhance children's well-being. What matters most is that the chosen anti-bullying programmes are effective.

ANTI-BULLYING PROGRAMMES AND SOCIO-EMOTIONAL SKILLS

Clear evidence of what an effective anti-bullying programme should encompass does not exist at present. However, a significant amount of research indicates that anti-bullying programmes containing multiple components are more effective than programmes directed solely at the bully or the victim, for example (Ttofi & Farrington, 2009; Vreeman & Carroll, 2007). Also, programmes that focus on the underlying socio-emotional factors that can lead to bullying appear to be effective. Some studies suggest a close link between emotional intelligence and bullying (e.g. Schokman et al., 2014). Others indicate that strengthening social-emotional learning can influence bullying on both the individual and group levels (Smith & Low, 2013). An important aspect of developing strong and secure children's groups could thus be to support the development of the social and socio-emotional skills that children need to participate successfully in these children's groups.

¹ In this meta-study, younger children are defined as children in Grade 7 or below.

FREE OF BULLYING – AN ANTI-BULLYING PROGRAMME

Driven by a desire to foster inclusive children's communities and promote well-being in children's groups, The Mary Foundation and Save the Children Denmark established the Free of Bullying anti-bullying programme in 2007. The project takes inspiration from the Better Buddies programme in Australia and aims to prevent bullying and strengthen children's communities.

Box 2-1: The main objective of Free of Bullying

The main objective of Free of Bullying is to prevent bullying by:

- Creating a lasting and inclusive culture among children and adults.
- Developing positive relationships among children characterised by tolerance and respect for one another.
- Developing children's abilities to be caring towards each other and giving them the courage to stand up for themselves and for classmates who may find it difficult to defend themselves.
- Having the content and values of the programme become a permanent and natural part of the children's daily routine from when they start in day care until they leave primary school.
- Making childcare professionals and parents aware of the impact adults have on children's relationships, and strengthening the collaboration between childcare professionals, parents and children.

Free of Bullying focuses on enabling children to develop the skills to show tolerance and respect for all children in the group. Children need to learn to show an interest in, compassion for, and helpfulness towards all children. And finally, children should be encouraged to develop the courage to say no and set their own boundaries, and to speak up when they see children overstepping others' boundaries.

This evaluation of Free of Bullying has been completed in preschools in three Danish municipalities. The study builds on previous evaluations carried out by researchers at Roskilde University (RUC). These evaluations take a more qualitative approach and focus on the experiences gained from implementing and using the programme, as well as on the observed benefits. This approach reveals that staff members find that children become more caring and inclusive in their social interactions, and that the staff members themselves become more aware of how the teachers deal with children's relationships (Oxford Research, 2013). An analysis conducted by Wilke (Wilke, 2011) also shows that 90 per cent of the teachers asked find that Free of Bullying has a positive impact on the children. Ninety-eight per cent of the teachers would recommend Free of Bullying to others.

THE PURPOSE OF EVALUATING FREE OF BULLYING

Whereas previous evaluations of Free of Bullying have focused on the perceived effects among children and teachers, this evaluation aims to establish quantitative – measurable – documentation of the potential effects. This brings with it the challenge of isolating measurable results in connection with an anti-bullying initiative. Previously conducted qualitative evaluations have shown that childcare facilities and schools that have implemented the programme find that the children in their care are more caring. These results and the studies referred to above, which point to socio-emotional skills as being important elements in the prevention of bullying, have informed the selection of a measuring tool for this evaluation. The selected tool is a resource-focused questionnaire which is particularly well-suited to measuring the effects of initiatives that focus on supporting children's positive social skills and therefore also to measuring the development of those effects. The resultant measures of effectiveness relate to the existence of a phenomenon as opposed to the absence of an unwanted phenomenon, such as bullying. The project thus assesses whether proactively working with an anti-bullying programme under normal everyday conditions in preschools strengthens children's socio-emotional skills.

3. DESCRIPTION OF INTERVENTION

In the following chapter, we briefly describe the intervention that preschools in the three participating municipalities implemented to test Free of Bullying.

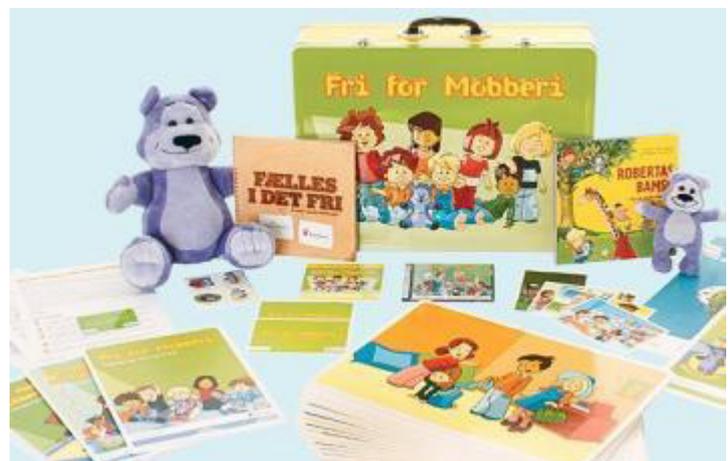
THE FREE OF BULLYING PROGRAMME

Free of Bullying is an anti-bullying programme that consists of teaching materials which teachers use to strengthen the community spirit among children in the preschool and thus prevent bullying. In addition to the children, the target group also includes the teaching staff and the parents, since the programme is designed to inspire and guide the teachers to develop an inclusive culture in the preschool and motivate parents and childcare professionals to act as role models for the children. Additionally, the programme also seeks to encourage parents to support the activities and thus help facilitate the work being done in the preschools.

The materials for Free of Bullying are gathered in a suitcase that was provided to the preschools. In addition, senior staff and selected teachers completed a one-day course, where they were introduced to the aspects involved in working with Free of Bullying in their preschool. They took on the role of ambassadors for the programme in their preschools and introduced their colleagues to its concepts and materials.

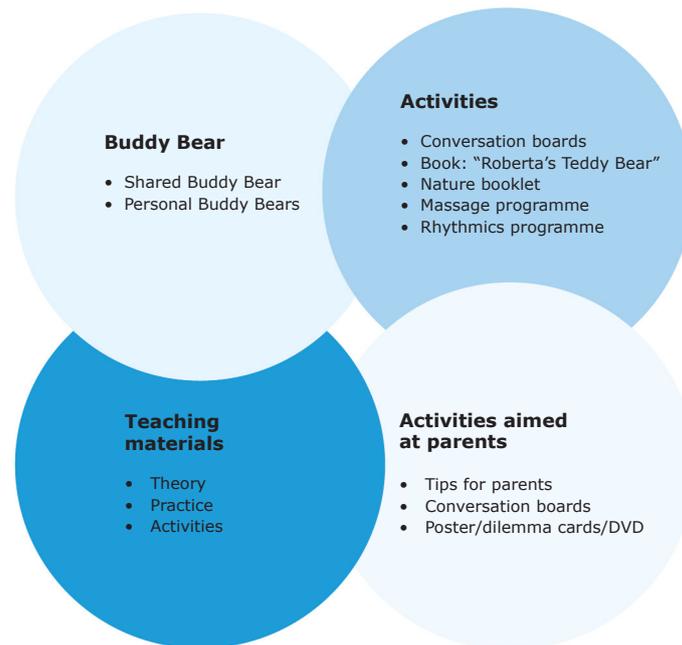
One of the suitcases in the Free of Bullying programme is designed for children aged 3 to 6 years. It contains materials for the children as well as information for childcare professionals and parents about their roles in the efforts to prevent bullying. The contents of the suitcase are divided into four areas in the figure below².

Free of Bullying – a children's suitcase containing materials



² These four areas cover elements in the Free of Bullying suitcase which have been measured in terms of their use in the programme.

Figure 3-1: The contents of the Free of Bullying suitcase divided into four areas



The materials in the suitcase provide the teaching staff with tools to help them develop positive and nurturing communities in the preschool and work on the existing culture in the children's group.

As an example, the materials can be used to enable the children to practice understanding and dealing with the various emotions that arise in a group setting. Stories in the book "Roberta's Teddy Bear" and conversation boards help the children learn about different feelings. The Free of Bullying conversation boards depict scenes from daily life at preschool, for example, and these are used as a practical tool to encourage the children to talk about various situations in the children's group and about how they can deal with them in a way that has a positive impact on the situation. The materials also assist the teachers in developing the children's abilities to demonstrate tolerance, respect and care for each other, as well as in supporting children to feel courageous, so that they can react and say no to bullying. In doing so, the programme also focuses on the passive bystanders who witness bullying. The various materials in the suitcase thus provide inspiration for activities that the teachers can perform with the children in the programme as well as tools to engage parents in Free of Bullying. This makes it possible to bring the focus on community spirit and children's skills into the home as well.

4. STUDY DESIGN AND DATA USED

When determining the effects of an intervention, we need to compare the development of the children who participated in the intervention (the treatment group) with the development of children who did not participate in the intervention (the control group). The effect of the intervention will thus be reflected in the additional development we can observe among the treatment group, compared with the control group.

In order to determine whether this difference in the children's development can be ascribed to the programme, it is essential to ensure that there are no systematic differences between the treatment group and the control group even before embarking on the intervention. For example, systematic differences could arise if the treatment group has more preschools with children with below-average socio-emotional skills, or if there are differences in the educational level among parents – as this could influence the children's development. Simply comparing the average development in the treatment group with the development in the control group would not be expedient under those circumstances, since systematic differences between the groups would risk obscuring the actual effects. The risk of this would be that, even if the anti-bullying programme had made an impact, this would not be identifiable from the children's results, because they had a lower starting point to begin with. The consequence of this would be that we would risk underestimating the impact of the programme.

In order to determine whether the Free of Bullying anti-bullying programme has an impact, it is therefore essential that the results emerging from the analysis actually can be linked to the intervention and not to other factors. In the section below, we describe the study design adopted for the evaluation and how it specifically takes potential systematic differences into account.

Study design

The effects of the anti-bullying programme on the children were studied using a wait list-inspired design. The idea behind this design was that all participants would eventually receive the programme. To start with, the participating preschools were divided into two groups: a treatment group and a wait list control group. Both groups completed a pre-evaluation of the children's socio-emotional skills, after which the treatment group started working with Free of Bullying. The preschools in the control group continued to follow their normal routine. The intervention period spanned from October 2016 to March 2017. At the end of this period, a post-evaluation of all the children's socio-emotional skills was completed for both the treatment group and the control group. The preschools in the wait list control group then received the relevant materials and training in the Free of Bullying programme and could start working with it as well.

The municipalities that participated in the intervention were Odense, Thisted and Viborg, all of which are situated in Denmark³. The three municipalities recruited the participating preschools, which were then categorised based on background factors such as the size of the preschool (number of children), staffing ratio and proportion of bilingual children. Finally, these preschools were randomly divided into the treatment and control groups. In total, 16 preschools participated in the project, of which nine were included in the treatment group and seven in the control group⁴. In total, 649 children participated in the project. See Appendix 1 for more information. Dividing the preschools in this way enabled us to evaluate the effect of the Free of Bullying programme by comparing the development among the children in the treatment group with that of the children in the control group.

Despite designing the study in this way, the post-analysis of the pre-evaluation showed that there were a number of systematic differences between the children in the two groups. Among other things, the children in the control group were consistently assessed to have slightly more advanced socio-emotional skills compared to the children in the treatment group. These systematic differences were subsequently dealt with in the analysis – in part by considering the development among the children,

³ The Mary Foundation and Save the Children Denmark selected the municipalities based on a selection criteria requiring the level of penetration of Free of Bullying to be as low as possible.

⁴ During the early stages of the project, one of the preschools left the study. This reduced the number of preschools in the control group from eight to seven.

and in part by taking account of a wide range of background factors relating to the child and his or her parents, such as ethnic origin, educational level, socio-economic status and family structure. These background factors were included as they could play a role in explaining the systematic differences.

The data used

The analysis of the effects of Free of Bullying was based on data from three sources: measurement of the children's socio-emotional skills, reflection notes completed by the preschool teachers and registry data from Statistics Denmark. Table 4-1 presents an overview of the three data sources used.

Table 4-1: The data sources used in the analysis

Data source / measurement tool	Purpose and content	Respondent and time
SEAM	Measurement of the children's socio-emotional skills	Completed for each child by the teaching staff who interact most with the child. Completed prior to commencing the intervention and after the intervention has concluded
Reflection notes	Provides insight about the level of intensity with which the materials have been used and the extent of the children's participation in the intervention	Completed by the teachers every two weeks
Registry data from Statistics Denmark	Background information about the children and their parents	Collected from Statistics Denmark for both the treatment group and the control group

SEAM

The children's socio-emotional development was uncovered using an assessment questionnaire which the teachers completed based on their evaluation of the children's socio-emotional skills. The assessment matrix used was the standardised and validated measurement tool known as *SEAM*⁵ (Social-Emotional Assessment/Evaluation Measure), published by Hogrefe.

Box 4-1: SEAM - Social-Emotional Assessment/Evaluation Measure

SEAM is a questionnaire that can be used to measure young children's well-being and socio-emotional development. The questionnaire consists of between 35 and 41 questions or statements, all of which are thoroughly explained and motivated by examples of children's behaviour. The purpose of these explanations and examples is to support the respondent's understanding of what the questions mean. The questions are answered by selecting one of four possible responses to each question: very true, somewhat true, rarely true and not true.

SEAM is designed to measure progress and is therefore suitable for capturing the potential effects of an intervention that focuses on the socio-emotional area. SEAM is a resource-focused questionnaire and only contains positive items. This makes SEAM particularly well suited to measuring the effects of programmes that focus on supporting children's positive competencies and thus the development thereof (See for example, Pontoppidan and Niss, 2014; Kiil et al., 2016).

SEAM has three versions for different age groups and this analysis used the *SEAM* version aimed at preschool children aged between 3 and 6 years⁶. *SEAM* was completed by an adult who knew the child well. Since the questionnaire could be completed without having to test the child at the same time, this was an easy task to incorporate into the normal daily routine.

The questions in *SEAM* can be divided into 10 subscales that reflect the various aspects of the child's behaviour. These subscales can subsequently be incorporated into to indices: *Empathy*⁷ and *Self-regulation and teamwork*⁸.

⁵ SEAM is listed on the Danish National Board of Social Services' overall list of approved instruments that are particularly suitable for evaluating the well-being of young children.

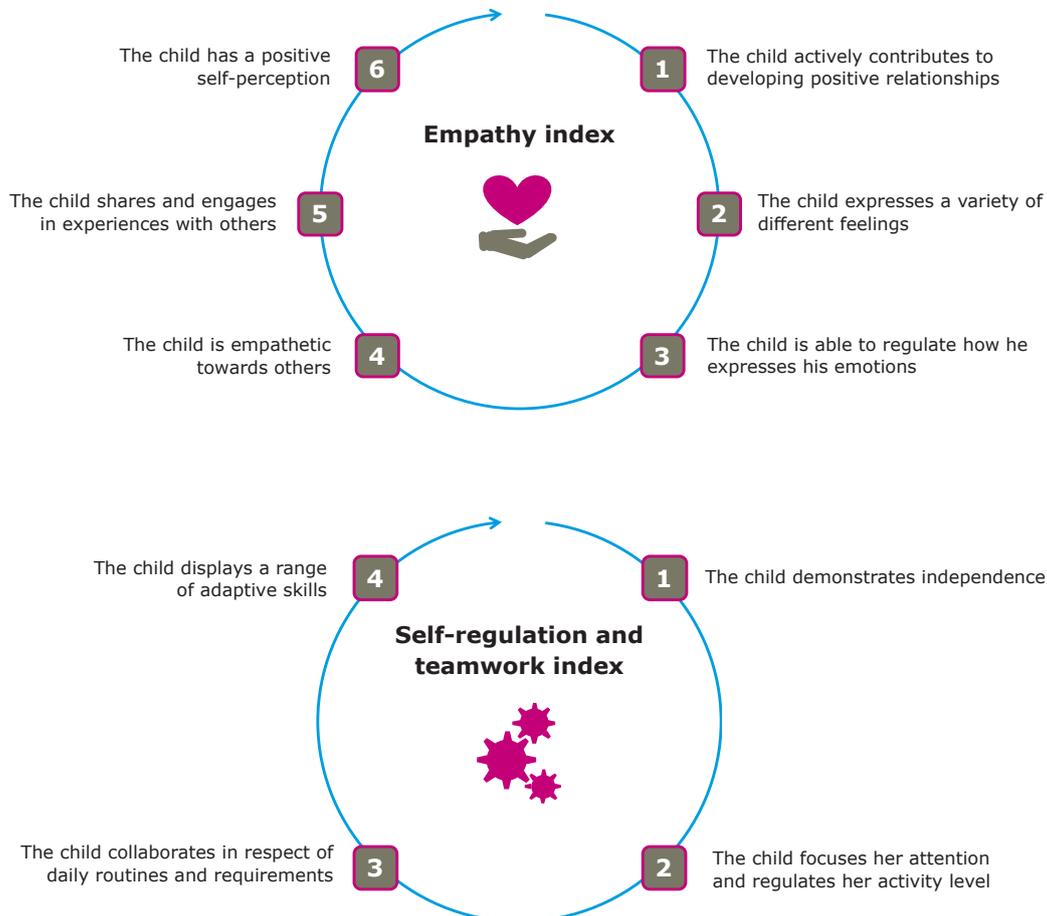
⁶ There are other SEAM questionnaires which cover the age groups 2-17 months and 18-35 months.

⁷ The children are given a total score of between 0 and 18. A high SEAM score is regarded as a more well-functioning level than a low score.

⁸ The children are given a total score of between 0 and 12. A high SEAM score is regarded as a more well-functioning level than a low score.

The 10 subscales and how they are divided into the two indices is presented in Figure 4-1. Since the SEAM questionnaire used needs to cover a mixed group of children from the age of 3 years until they start school, the indices are adjusted for gender and age. This makes it possible to compare results across gender and age groups.

Figure 4-1: The SEAM preschool version is divided into 10 subscales and two overall indices, Empathy and Self-regulation and teamwork



In the analysis, the effects of the intervention on Empathy and Self-regulation and teamwork were evaluated separately. Empathy describes the development of the ability to distinguish between oneself and other individuals and thus the ability to communicate one's own feelings, decode others' feelings, and understand other's feelings. Self-regulation and teamwork describes the child's interest in exploring the world around her, and describes the child's ability to regulate and adapt her behaviour to her surroundings. As described above, the two indices reflect the 10 underlying subscales. It is therefore important to remember that the two indices cover a wide range of the child's skills.

Since there is no direct overlap between the content of the programme and the measures identifying the children's socio-emotional skills, the measure provided insight into the extent to which the intervention had a spillover effect on the children's socio-emotional development.

Reflection notes – ongoing documentation of the implementation of the intervention

Free of Bullying is designed in such a way that the school or childcare facility implementing the intervention is largely in control of how and the extent to which the materials are used. Bearing this in mind, one of the important focus areas of this evaluation was to systematically document how Free of Bullying was used by the childcare professionals.

We therefore developed a tool (reflection notes) for the intervention which was designed to support teachers' reflections on and evaluations of the implementation of the intervention, with a view to

ensuring high quality. The reflection notes were designed to help the teachers reflect on whether they worked with the programme in the way it was intended and on how the activities managed to engage the children. The reflection notes were completed online every two weeks for each class. Insight gained from the reflection notes were used to support the impact analysis and inform our understanding of what worked and why.

Registry data

With the help of the children's civil registration numbers, it was possible to include anonymised registry data from Statistics Denmark⁹. In addition to obtaining background characteristics pertaining to the children, the civil registration numbers also enabled us to link this with data on the parents¹⁰. The following background variables were used in the analysis: the child's birth weight, the child's age, the child's gender, the mother's education, ethnic origin, family status (i.e. parents married, single-parent household, etc.), type of residence (own home, rented accommodation), employment status, income, number of children in the family¹¹. We used the latest available registry statistics from Statistics Denmark for this analysis (see Appendix 1 for a detailed description).

Description of the data

We conducted a thorough investigation into how comparable the children in the treatment and control preschools were in relation to a number of characteristics that in part described the child and in part could have an impact on the child's socio-emotional skills. We also studied whether the socio-emotional starting point of the children in the treatment and control preschools were different.

When the child's characteristics – such as gender, age and birth weight – were considered, we found no significant differences between the preschools in the treatment group versus those in the control group. Differences did exist with respect to a number of other background variables, however. The preschools in the treatment group were characterised as having a higher proportion of children with a non-Western ethnic origin, a higher proportion of single parents, and a higher proportion of families with multiple children. We also found that the treatment preschools included proportionately fewer children living in owner-occupied homes and a higher proportion of families with unemployed parents and lower average earnings.

Comparing the children's socio-emotional skills across the treatment and control preschools going into the project, we identified that the socio-emotional skills among the children in the control group were at a higher level upon starting the intervention compared to the children in the treatment group. This difference was only found to be significant for the *Empathy* index.

These results show a tendency towards systematic differences between the treatment and control preschools. This was taken into account in the subsequent analysis, partly by including a wide range of explanatory variables and partly by considering the development among the children between the pre- and post-analysis. Appendix 1.3 presents detailed results of this analysis.

Analysis model

The purpose of the analysis was to estimate the effect of the Free of Bullying programme on the children's *Empathy* and *Self-regulation and teamwork*. In addition to the actual design and source data, such an analysis is based on a specific analysis model. The effect of the programme is estimated by using an analysis model that looks at the children's individual development throughout the duration of the intervention. In practice, the development is defined as the difference between the child's *Empathy* and *Self-regulation* score before and after the intervention period. In other words, the individual children's scores represented the data included in the statistical analysis. The specific results of the analysis reflected an estimated effect that identified the average impact on the children. The results of the study therefore indicated whether there were improvements in *Empathy* and *Self-regulation and teamwork*.

⁹ We were unable to obtain registry data for 34 of the children, of which one-third were in the treatment group (12) and two-thirds were in the control group.

¹⁰ All analyses using socio-economic background variables were performed according to the Statistics Denmark's research service agreement.

¹¹ A detailed description of the registry variables used are available in Statistics Denmark's official documentation.

teamwork among the children who participated in the Free of Bullying programme compared to those who did not.

Various methods were used in the analysis to ensure that the effects were calculated as precisely and correctly as possible. Among other things, the standard errors were adjusted for clustering at the preschool level. This means that we accounted for the fact that children in the same preschool are affected by the same factors.

As examples, the children would be influenced by the same teachers and often reside in the same areas¹². We also considered potential systematic differences between the municipalities. The purpose of these methodology-related adjustments was to ensure that the estimated effects exclusively reflected the impact of the intervention. In Appendix 1, we have presented a more technical description of the underlying analysis model.

¹² In practice, the standard errors in all the analysis models were clustered at the preschool level.

5. THE EDUCATIONAL IMPLEMENTATION OF FREE OF BULLYING

One of the key characteristics of the Free of Bullying programme is that it does not prescribe set guidelines for how and how often the various materials should be used. This is because Free of Bullying is designed to be used as and when it can be applied to the situations a teacher encounters, which will involve children who are different and children's groups that are comprised in various ways. The intensity with which the materials were used and extent to which their use was prioritised therefore also varied considerably among the participating preschools. Based on the reflection notes completed by the teachers, we were able to look more closely at how much each class used the different materials available in the Free of Bullying suitcase, on average.

A total of 21 classes or groups who participated in the project tested Free of Bullying over a five-month period. The teachers of these classes completed the reflection notes nine times during this time. Not all of the classes completed all nine rounds of reflection notes, so the following was based on an average that took account of missing responses.

Box 5-1: Interpreting the figures in this chapter

The results in this chapter are presented in bar charts. There is a brief description on how to interpret these figures below.

- The figures represent the average number of times that the activities were used in the classrooms during the preceding two weeks.
- The results are divided into three time periods, where the **Beginning** represents the average of the first three rounds of collecting the reflection notes; the **Middle** represents the average of the three middle rounds; and the **End** represents the average of the last three rounds of collecting the reflection notes.
- Finally, the **orange triangle** reflects the average number of activities completed throughout the entire period.

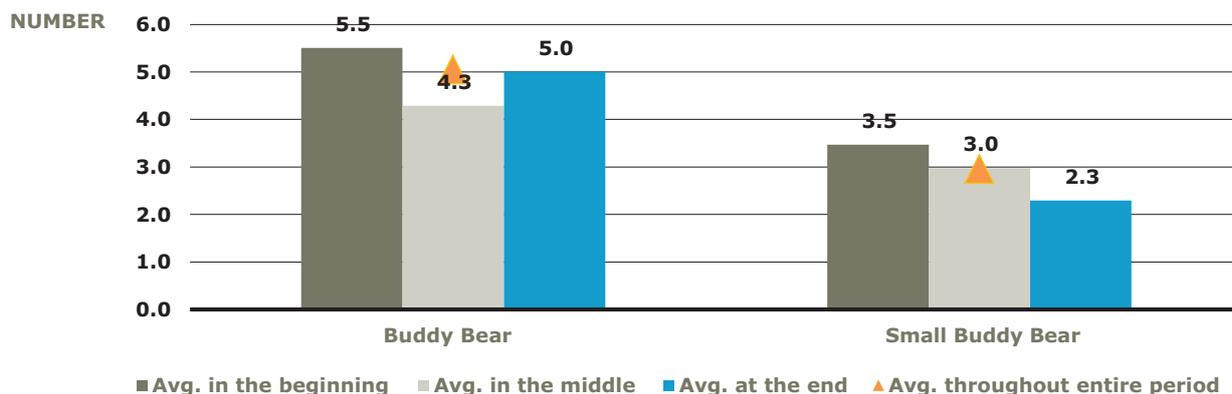
How the teachers used the child-oriented materials

As described in Figure 3-1, there are various different types of child-oriented materials available for the teachers to use. Some of the content is linked to activities using *Buddy Bear* while other content is linked to other kinds of activities. We should emphasise that the Free of Bullying programme contains many more materials in addition to those highlighted here. The elements we looked at here were simply the ones for which we measured the extent of their use at regular intervals.

Buddy Bear

Figure 5-1 highlights how the teachers used the materials aimed at the children's contact with *Buddy Bear*. The figure shows that throughout the duration of the project, *Buddy Bear* was the element that was used the most.

Figure 5-1: Average number of times the activities involving Buddy Bear were used in the classrooms during the preceding two weeks.



Note: The “beginning” is an average of the first three rounds, the “middle” is an average of the middle three rounds, the “end” is an average of the last three rounds, and the “entire period” covers all nine rounds.

The large bear, known as Buddy Bear, is the Free of Bullying mascot and presumably the first element of the programme that the children come into contact with. It is shared among all the children and used as a communication tool to offer comfort and enable the children to get to know each other better. The fact that this was the most used element is therefore not surprising. The small Buddy Bears are the children’s personal miniature Buddy Bear, which is why their use does not necessarily reflect how many times this activity was used in the classroom.

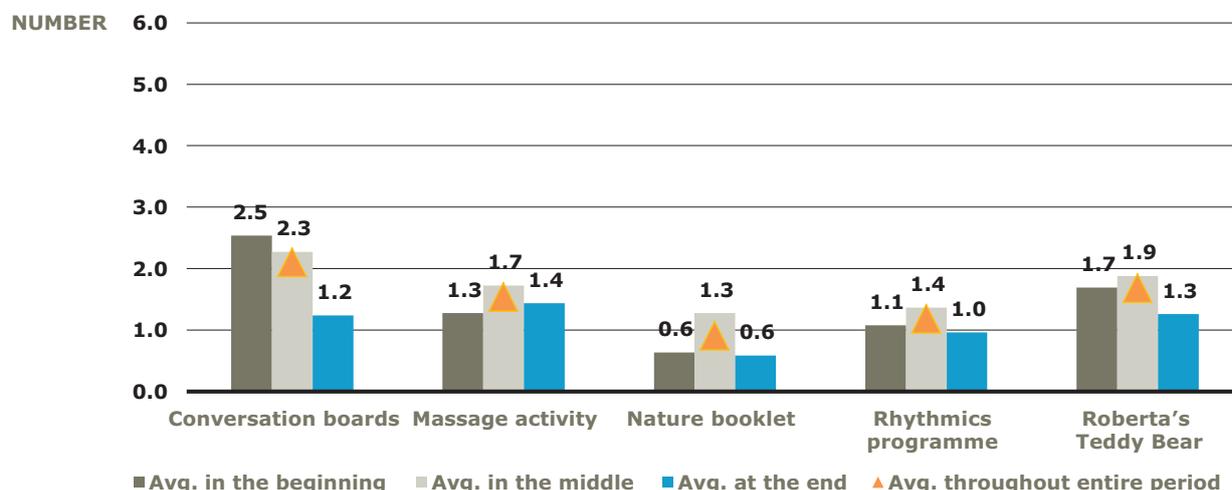
The level of intensity with which Buddy Bear and the small Buddy Bears were used throughout the duration of the intervention varied, with the highest intensity being at the beginning of the intervention.

Activities

Figure 5-2 shows the use of programme materials which were linked to activities. Two of the things that the activities in the suitcase had in common was that they were not used as much as Buddy Bear and that they were used most frequently during the middle phase of the intervention.

The activity that was used most frequently, on average, throughout the duration of the project was the conversation boards. This corresponds well with the fact that the conversation boards are one of the central tenets of the Free of Bullying programme. The figure also shows that the nature booklet was the least used activity, on average. The nature booklet can be used on the playground and during school outings, which explains why it would be natural for this element to be used less often than the other activities. This does not necessarily mean that the nature booklet is less effective, however.

Figure 5-2: Average number of times the activities (not involving Buddy Bear) were used in the classrooms during the preceding two weeks.

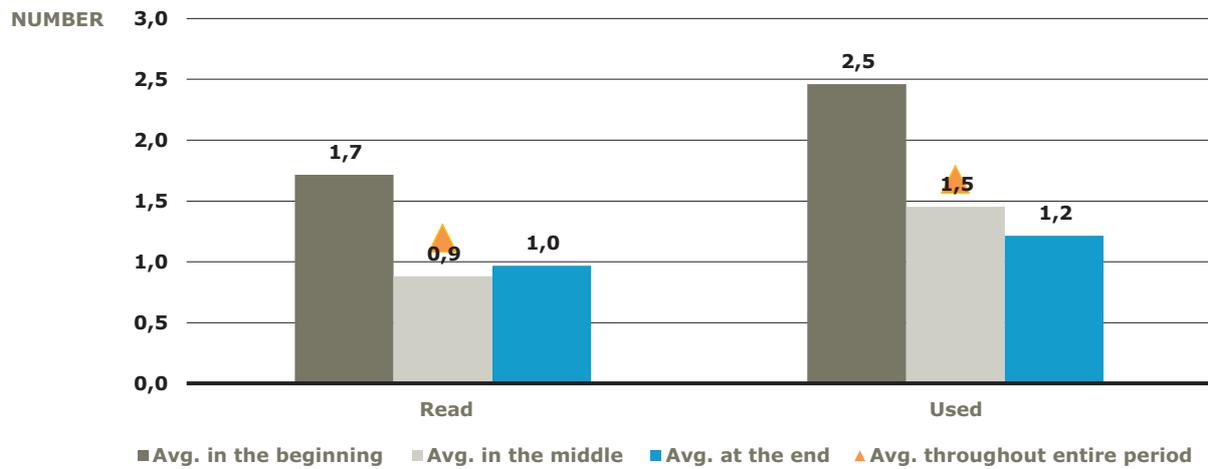


Note: The “beginning” is an average of the first three rounds, the “middle” is an average of the middle three rounds, the “end” is an average of the last three rounds, and the “entire intervention” covers all nine rounds.

Use of materials aimed at parents and teaching staff

In addition to the child-oriented materials and activities, the Free of Bullying programme also contains materials aimed at teachers and parents. With respect to the teachers, the teacher’s booklets are a key element – containing theory, practice and activities linked to bullying, as well as inspirational ideas on how to implement Free of Bullying to achieve effective results. As shown in Figure 5-3, the teachers consulted these materials almost twice as often during the beginning of the intervention, after which the level of interest levelled out to reading in the booklets every two weeks. The figure reveals that the use of the guidebook for professionals declined throughout the duration of the intervention. This decreasing trend could reflect a tendency to become increasingly familiar with the material as time went on, making it possible to consult the material less and less often as the intervention progressed.

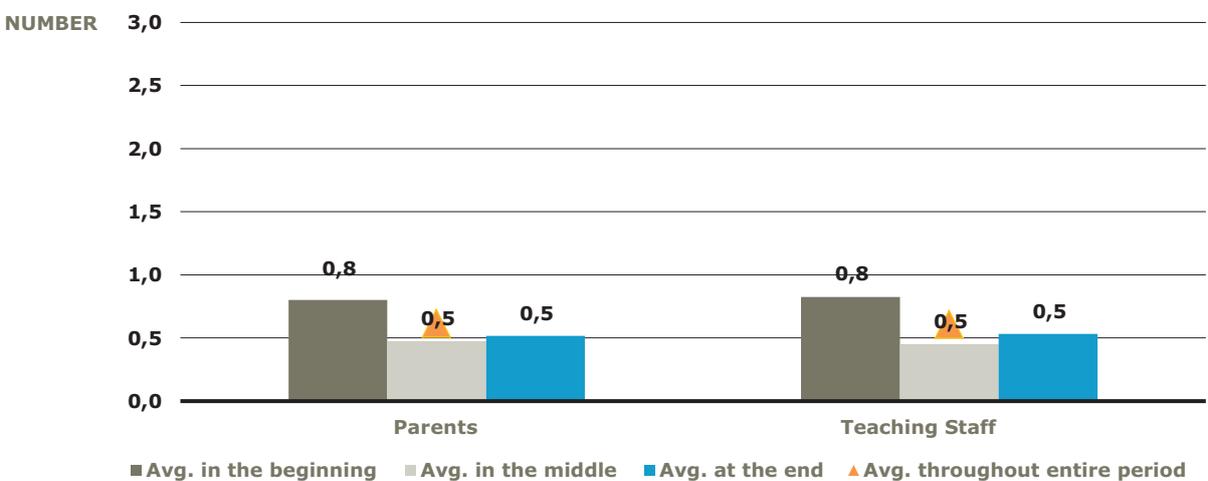
Figure 5-3: Average number of times the guidebook for professionals was read or used during the preceding two weeks.



Note: The “beginning” is an average of the first three rounds, the “middle” is an average of the middle three rounds, the “end” is an average of the last three rounds, and the “entire intervention” covers all nine rounds.

Figure 5-4 shows that the materials designed for parents and teachers were used less often than those aimed at the children. During the beginning of the intervention, these materials were used slightly less than every second week. During the middle and end phases of the intervention, they were used approximately once a month.

Figure 5-4: Average number of times the materials were used by parents and teachers, respectively, during the preceding two weeks.



Note: The “beginning” is an average of the first three rounds, the “middle” is an average of the middle three rounds, the “end” is an average of the last three rounds, and the “entire intervention” covers all nine rounds.

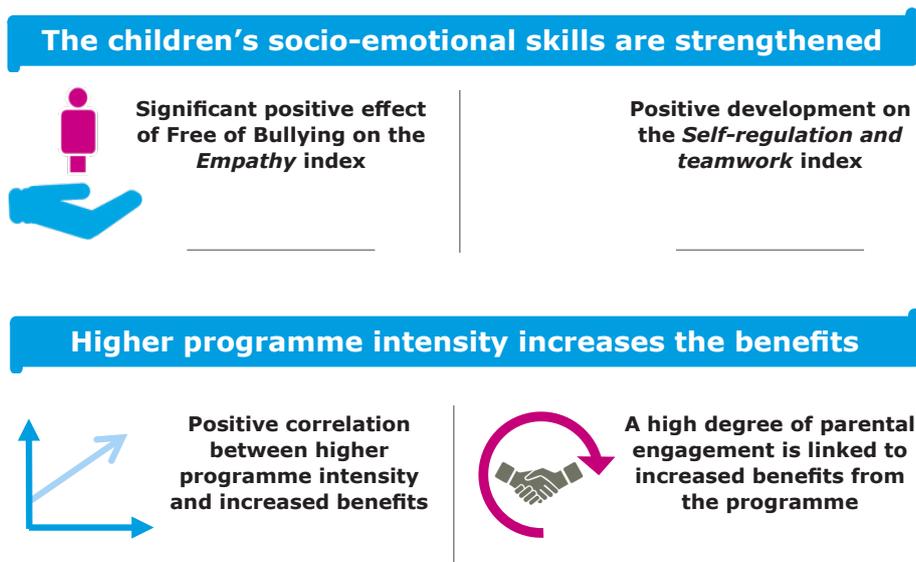
With respect to Figure 5-4, we should emphasise that some of the work with Free of Bullying could have taken place in the home, such as when the parents talked to their children about Buddy Bear, the postcards or the stickers. The teachers were unable to report on this use of the materials, which is why the above figures only reflect the use of the dilemma cards, tips for parents, letter to parents, conversation boards, posters and DVD.

As part the next chapter, we studied what effect the intensity with which the various activities were implemented had on the impact that the programme had on the children's socio-emotional skills.

6. THE RESULTS OF FREE OF BULLYING

We present the results of the evaluation in this chapter. First, we use measurements of the children's socio-emotional skills to present the main effects of the Free of Bullying programme. Specifically, we look at how these skills are reflected in the two indices covering Empathy and Self-regulation and teamwork. We then assess whether these results vary in view of a number of key characteristics. We conclude by determining how the results vary in terms of the intensity with which the programme has been implemented in the preschool.

Figure 6-1: Key conclusions



Box 6-1: Here is what you need to know to understand effect sizes, statistical significance and confidence intervals.**EFFECT SIZES**

The evaluation uses a standardised measurement tool for empathy and self-regulation, respectively. This means that all of the children's scores on these two measures are scaled according to a standard normal distribution with a mean value of 0 and a standard deviation of 1. All of the calculated results of the analysis represent effects measured in standard deviations. The advantage of this standardisation is that the results can be interpreted directly as effect sizes. Effect sizes are independent of which scale has been used to measure the effects. This makes it possible to compare results across different measurements. Furthermore, it is standard practice for international research to work with standardised outcome measures, as this makes it possible compare effect sizes across different studies.

STATISTICAL SIGNIFICANCE

In the following results, statistical significance is identified using stars. A statistically significant result is one that is very unlikely to be random:

- Three stars mean that the probability of replicating the same result if it has in fact occurred randomly is less 0.1 per cent.
- Two stars means that the probability is less than 1 per cent.
- One star means that the probability is less than 5 per cent.

The more stars a result has, the less likely it is that the result has occurred randomly.

CONFIDENCE INTERVALS

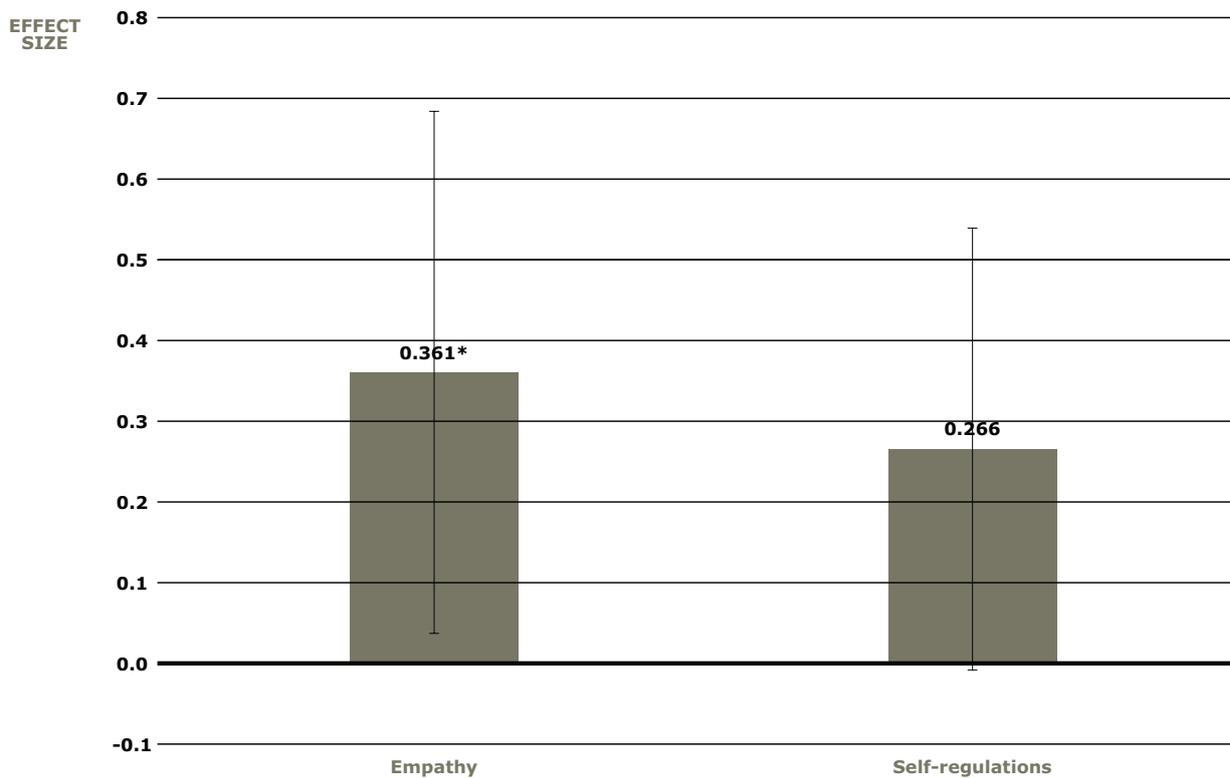
In the figures, the lines in the bars indicate 95 per cent confidence intervals. They represent the uncertainty linked to calculating the effect of Free of Bullying. The vertical lines therefore indicate that the effect of the programme, with a 95 per cent probability, will fall within the area covered by the lines. If the lines remain on one side of the zero, it means that the probability of replicating the result if it has in fact occurred randomly is less than 5 per cent (which equates to the result being statistically significant).

The main effects of Free of Bullying

This chapter presents the effects of Free of Bullying. As previously highlighted, in this evaluation, we are studying the effects of Free of Bullying on children's socio-emotional skills, measured as *Empathy* and *Self-regulation and teamwork*. As shown in Figure 6-2, the Free of Bullying programme has had a significant positive effect on the children's empathy score.

Specifically, the results show that the positive development in the children's empathy corresponds to a standard deviation of 36 per cent. This means that children who have participated in the Free of Bullying programme have, on average, had a more positive development on the *Empathy* index compared to the group of children who have not participated in the programme. Free of Bullying has also been shown to have a positive effect on the index for the children's *Self-regulation and teamwork*. This effect is not statistically significant, however. In other words, these results indicate that Free of Bullying has a spillover effect on the children's empathy. Once again, it is important to remember that the *Empathy* index reflects six underlying subscales and thus covers a wide range of the child's skills. Among other things, the empathy score reflects the child's ability to actively contribute to positive relationships, the ability to express various emotions and the child's ability to show others empathy.

Figure 6-2: The effect of Free of Bullying on empathy and self-regulation



Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent, respectively. | indicates 95 per cent confidence interval. Standard errors for the estimates have been adjusted for "clustering" at the preschool level. All estimated models include all control variables as well as "fixed effects"

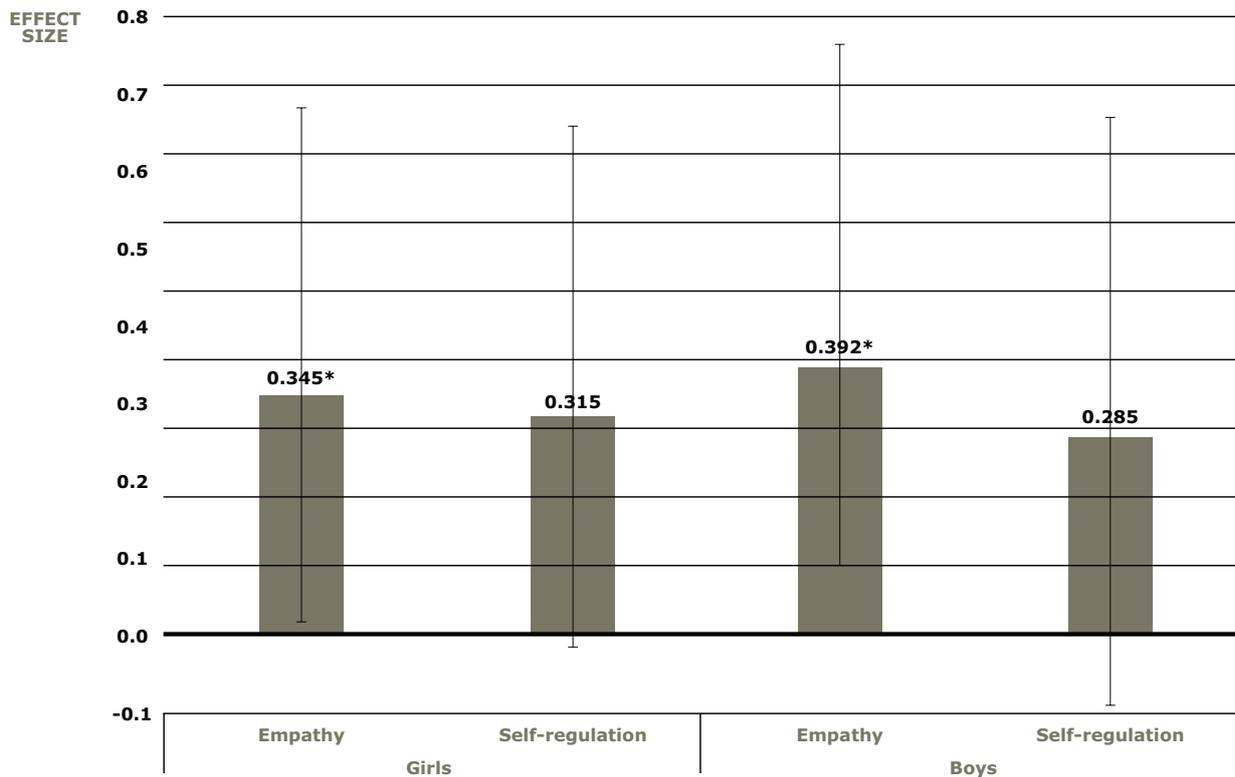
Focusing on the child's mastery of these skills is one of the cornerstones of the Free of Bullying programme, which is why it does not come as a surprise that the most significant benefits of the programme are linked to this particular measure.

The effects of Free of Bullying on different groups of children

The main effects reviewed above are average effects of the Free of Bullying programme across the whole group of children in the study. It could be interesting to find out whether there are some groups of children who benefit more from the Free of Bullying programme, as well as which parts of the programme are particularly effective. In the following section, we investigate whether the effects of Free of Bullying differ between boys and girls¹³.

¹³ We also studied whether the effects varied based on other criteria known to affect children's socio-emotional skills. More specifically, we looked at the parents' ethnicity and the mother's education level. Due to the relatively small sample size on which these subanalyses could be performed, all the results were statistically insignificant and associated with substantial uncertainty. We therefore did not report on these heterogeneity analyses here.

Figure 6-3: The effect of Free of Bullying on empathy and self-regulation – disaggregated by gender



Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent respectively. | indicates 95 per cent confidence interval. Standard errors for the estimates have been adjusted for "clustering" at the preschool level. All estimated models include all control variables as well as "fixed effects" for municipalities.

Figure 6-3 indicates that the Free of Bullying programme has a significant positive effect on the empathy score for both girls and boys. The effect is slightly more pronounced for boys than for girls. The Self-regulation and teamwork score is positive – but insignificant – for both boys and girls.

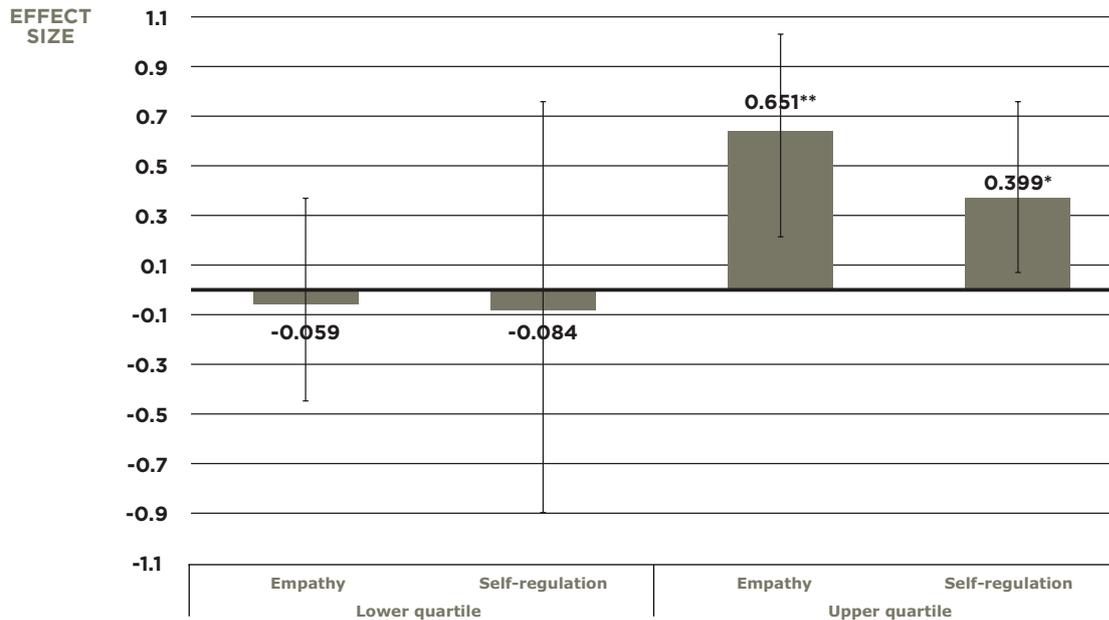
The intensity with which the Free of Bullying programme has been used

As described in a previous chapter, there is significant variation in the extent to which the preschools have used the Free of Bullying programme. This variation is reflected in both the number and types of activities. In this section, we evaluate whether the intensity with which the preschool has used the programme has an impact on what the children get out of the programme. The results in this section should be interpreted with a degree of caution, since differences in the intensity with which each child has been exposed to the programme are not necessarily random. The variation may, for example, be linked to the children's background or the conditions at the preschool. It is therefore not possible to interpret the results found as causal links, but rather simply as an indication of significant tendencies.

When we investigate this variation, the participating preschools are divided into quartiles based on the average intensity with which the relevant materials have been used throughout the duration of the intervention. We look at the upper and lower quartile of the preschools in the treatment group. This means that we look at the 25 per cent of the preschools that have used the materials/activities least and the 25 per cent of preschools that have used the materials/activities most. The control group remains fixed. The following results are divided according to use of materials linked to Buddy Bear, to the activities, and to parental involvement, respectively (see Figure 3-1).

We first evaluate whether the intensity with which the preschool has used the Free of Bullying programme has an impact on what the children get out of the intervention. There is considerable evidence to suggest that parental involvement is particularly effective in these types of programmes (see for example, Nielsen & Christoffersen, 2009 and Kousholt, 2011). This relationship is represented in Figure 6-4.

Figure 6-4: The correlation between parental involvement and the effects of Free of Bullying

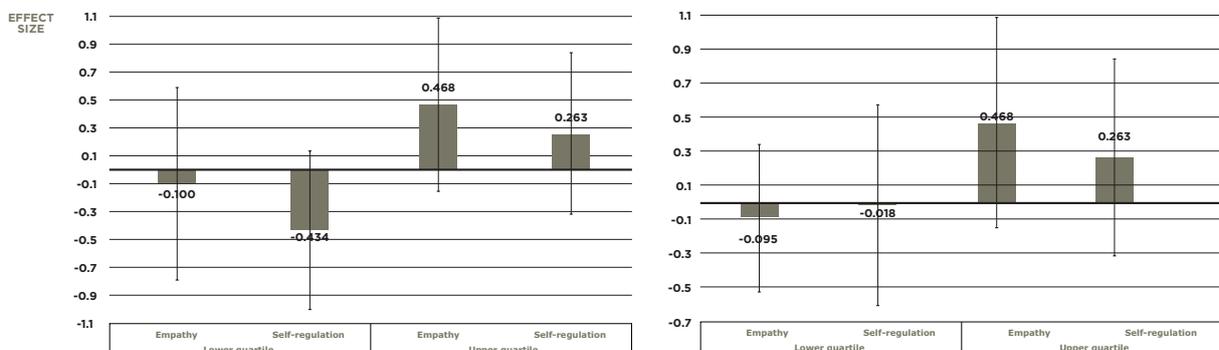


Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent respectively. | indicates 95 per cent confidence interval. Standard errors for the estimates have been adjusted for "clustering" at the preschool level. All estimated models include all control variables as well as "fixed effects" for municipalities.

The results show a clear trend indicating that children in preschools that have engaged the parents in the Free of Bullying programme to a relatively large extent clearly benefit more from the programme compared to children from institutions that have engaged the parents to a very small extent. This applies to both the children's empathy and self-regulation scores.

Figure 6-5 shows the link between the intensity with which Buddy Bear and the Free of Bullying activities have been used and the children's development on the empathy and self-regulation scores. The results show that the more a preschool performs activities with Buddy Bear, the more benefits can be seen on the children's empathy and self-regulation scores. We see the same trend for other Free of Bullying activities. The more a preschool has used activities from the Free of Bullying suitcase, the more progress can be measured on the children's empathy score. These results are not statistically significant, however, and we can therefore not be certain that these results are due to the Free of Bullying programme or have occurred randomly. This increased uncertainty can partly be attributed to the reduced sample size when using quartiles.

Figure 6-5: The correlation between the intensity with which Buddy Bear and the small teddy bears and the Free of Bullying activities have been used and the effect of Free of Bullying



Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent respectively. | indicates 95 per cent confidence interval. Standard errors for the estimates have been adjusted for "clustering" at the preschool level. All estimated models include all control variables as well as "fixed effects" for municipalities.

7. CONCLUSION

In an endeavour to develop inclusive children's communities and promote well-being in children's groups, The Mary Foundation and Save the Children Denmark established the Free of Bullying anti-bullying programme in 2007. This impact assessment documents that the Free of Bullying programme has measurable effects on children's socio-emotional skills.

Collectively, the results show that working with Free of Bullying has provided significant benefits to the children in the treatment group compared to those in the control group. This is particularly true for children's ability to express their feelings, decode others' feelings and relate to how others are feeling, which are all skills that are reflected in the *Empathy* index. The fact that the most substantial impact is connected with the *Empathy* index is not surprising, since this measure is most closely aligned to the focus areas of the Free of Bullying programme.

The study also indicates a correlation between the extent to which the preschools work with the various elements in the programme and the level of impact achieved. Parental involvement appears to be a particularly important element to work with.

This evaluation shows that Free of Bullying is an effectual anti-bullying programme. The programme can therefore have an important role in early preventive efforts against bullying and can support the development of healthy children's groups in which children feel safe, and thereby enhance children's well-being.

8. REFERENCES

- Coe, Robert. (2002). It's the Effect Size, Stupid. Paper presented at the British Educational Research Association annual conference. Vol. 12.
- DCUM (2017), "Hvornår er det Mobning" (When is it bullying?), Dansk center for undervisningsmiljø [Danish Centre of Educational Environment].
- Duflo, E., Glennerster, R. & M. Kremer. 2008. "Chapter 61: Using randomization in development economics research: A toolkit". I: Schultz, T. P. (ed.): Handbook of Development Economics, Vol.4, Elsevier.
- Eriksen, T. L. M., Nielsen, H. S., & Simonsen, M. (2014). Bullying in elementary school. *Journal of Human Resources*, 49(4), 839–871.
- Fisher H. L., T. E. Moffitt, R. M. Houts, D. W. Belsky, L. Arseneault, A. Caspi, et al. (2012) "Bullying victimisation and risk of self harm in early adolescence: longitudinal cohort study" *BMJ*
- Gini G, Pozzoli T. (2009) "Association between bullying and psychosomatic problems: A meta-analysis." *Pediatrics*;123(3):1059–1065
- Jiménez-Barbero, J. A., J. A. Ruiz-Hernández, L. Llor-Zaragoza, M. Pérez-García, and B. Llor-Esteban (2016) "Effectiveness of anti-bullying school programs: A meta-analysis." *Children and Youth Services Review* 61: 165–175.
- Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B., & Borghans, L. (2015). *Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success*. OECD rap-port.
- Kiil, A., J. N. Arendt & M. Rosholm (2016) "Measuring Child Well-being – An overview of potential measurement instruments", KORA rapport
- Kofoed J. & D. M. Søndergaard (red.) (2009) "Mobning. Sociale Processer på Afveje" [Bullying: social processes going astray], Hans Reitzels Forlag, København
- Kousholt (2011): *Børnefællesskaber og familieliv: Børns hverdagsliv på tværs af daginstitution og hjem* [Children's communities and family life: the daily life of children across childcare facility and home], Dansk Psykologisk Forlag.
- National Academies of Sciences, Engineering, and Medicine. (2016). "Preventing Bullying Through Science, Policy, and Practice". Washington, DC: The National Academies Press.
- Nielsen & Christoffersen (2009): *Børnehavens betydning for børns udvikling; en forskningsoversigt* [The impact of preschool on children's development: a research review], SFI [The Danish National Centre for Social Research]
- Oxford Research (2013). "Evaluering af Fri for Mobberi 2013" [Evaluation of Free of Bullying 2013], Rapport udarbejdet af Oxford Research for Mary Fonden og Red Barnet [Report compiled by Oxford Research on behalf of The Mary Foundation and Save the Children Denmark].
- Petersen, K. S. (2015). "Mobning i en børnehavesammenhæng" [Bullying in preschool context], Ph.d.-afhandling [PhD thesis]
- Pontoppidan, M. W. & N. K. Niss, (2014) "Instrumenter til at måle små børn trivsel" [Tools for measuring the well-being of young children], SFI rapport [SFI report]
- Rabøl Hansen, H (2005): *Grundbog mod mobning* [The anti-bullying ABC]. Gyldendals Lærebibliotek

- Reijntjes A, Kamphuis JH, Prinzie P, Telch MJ. (2010) "Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies." *Child Abuse & Neglect*; 34(4):244–252
- RUC (Roskilde University), (2007-2009), "Fri for Mobberi", Delrapport 1 – 8 fra følgeforskningsprojektet. [Free from Bullying, Sub-reports 1–8 from the follow-up research project].
- Schokman, C., Downey, L.A., Lomas, J., Wellham, D., Wheaton, A., Simmons, N. and Stough, C., (2014). Emotional intelligence, victimisation, bullying behaviours and attitudes. *Learning and Individual Differences*, 36, pp.194–200.
- Smith, B. H. & S. Low (2013) "The Role of Social-Emotional Learning In Bullying Prevention Efforts" *Theory Into Practice* Vol. 52 , Iss. 4
- Todd, P. E., and K. I. Wolpin (2007). "The production of cognitive achievement in children: Home, school, and racial test score gaps". *Journal of Human Capital* 1, 91–136.
- Ttofi, M. M., & Farrington, D. P. (2009). "What works in preventing bullying: Effective elements of anti-bullying programs." *Journal of Aggression, Conflict and Peace Research*, 1(1), 13–24.
- Vreeman, R. C., & Carroll, A. E. (2007). "A systematic review of school-based interventions to prevent bullying." *Archives of Pediatric Adolescent Medicine*, 161(1), 78–88.
- Wilke (2011). "Evaluering af Fri for Mobberi" [Evaluation of Free of Bullying], Rapport udarbejdet af Wilke for Mary Fonden og Red Barnet [Report compiled by Wilke for The Mary Foundation and Save the Children Denmark].
- Yeager, D.S., Fong, C.J., Lee, H.Y. and Espelage, D.L., (2015). "Declines in efficacy of anti-bullying programs among older adolescents: Theory and a three-level meta-analysis" *Journal of Applied Developmental Psychology*, 37, pp.36–51.

APPENDIX 1

1. REGISTRY DATA – SOURCE DESCRIPTION

All analyses in this assessment were performed according to the Statistics Denmark's research service agreement. Registry data from Statistics Denmark were linked to children from the preschools in the treatment and control groups and their parents via civil registration numbers collected upon commencing the project. The following background variables were used in the analysis:

Variable	Source	Comment
Birth weight	The Danish national birth register (Det Medicinske Fødselsregister)	
Ethnic origin	Statistics Denmark's official definition of immigrants and their descendants and their country of origin. The countries of origin are categorised as western or non-Western countries.	See e.g. the publication "Immigrants in Denmark 2015" http://www.dst.dk/pubfile/20703/Indv2015
Mother's education	Statistics Denmark's register on the education level of the population (Befolkningens Uddannelse). This analysis uses information about the highest level of completed education as of 1 October 2017.	Based on defined main groups, this variable is classified into three categories: 1) Primary school or upper secondary school education. 2) Vocational education. 3) Further education (short, medium-length, bachelor, long and research degrees).
Income and occupation	Statistics Denmark's register on household income. The data from this source is based on the person in the family who has the highest individual income.	Regarding occupation, families are defined in two categories: 1) Families whose income does not stem from employment (unemployment benefit, social security, pension, early-retirement benefit, other) 2) Families whose income stems from employment (wage earner, self-employed).
Type of residence	Statistics Denmark's register on household income.	In the analysis, a distinction is made between families who reside in owner-owned homes and families living in rented accommodation.
Family status	Statistics Denmark's register on family circumstances. Information from E-family is used.	Families are divided into 'couples' and 'singles'. The definition of a 'couple' covers married couples, registered partnerships and co-habiting partners.
Number of children	Statistics Denmark's register on family circumstances. Information from E-family is used.	This variable indicates the number of children living at home with the family. Must be the children of at least one adult in the family.

2. THE FINAL DATA USED

This chapter describes which data selections underlie the final data on which the analyses in the study were based. The below selection table shows the number of observations that were deselected and what percentage of the total final data was covered by this number.

Description	Number of observations	Percentage of total
Percentage basis	649	100.00%
Children registered with a pre-evaluation in a treatment or control group.	639	98.46%
Children registered with a pre- and post-evaluation	615	94.76%
Children who cannot be linked to registry data due to missing or incorrectly completed civil registration number	34	5.24%
Children who are not within the relevant age range for this analysis	17	2.62%

When working with registry data, there are times when some of the relevant information is not available. The various analyses included in this report include children for whom all information is available.

3. DATA DESCRIPTION

In this section, we compare the children in the treatment group and control group preschools in relation to a range of characteristics that describe the child and can also influence the child's socio-emotional skills. We then compare the socio-emotional skills of the children in the treatment and control group preschools going into the intervention.

In order to illustrate how the treatment group and control group initially differ from one another, Table B-1 shows the average value for the treatment group versus the control group in relation to a number of key characteristics. The table identifies differences between the two groups, as well as the extent to which this difference is statistically significant. If there are statistically significant differences between many factors, it raises the concern that there could be systematic differences between the two groups.

Table B-1: Comparison of average characteristics across the treatment and control groups.

	Control	Treatment	Difference	P-value
The Child				
 Boy	0.51	0.47	0.04	0.30
Age in months	52.9	51.3	1.55	0.05
Birth weight in grams	3.493	3.451	-42	0.54
Ethnic origin				
 Danish	0.80	0.60	-0.20	0.00 ***
Western	0.05	0.04	-0.01	0.71
Non-Western	0.15	0.36	0.21	0.00 ***
Mother's education				
 Upper secondary school qualification	0.21	0.34	0.13	0.00 **
Vocational qualification	0.38	0.33	-0.05	0.29
Further education	0.40	0.32	-0.08	0.09
Socio-economic status				
 Occupation	0.91	0.76	-0.15	0.00 ***
Income (DKK 0,000)	220.73	193.97	26.76	0.00 **
Owns their home	0.71	0.57	-0.15	0.00 **
The family				
 Married	0.63	0.56	-0.06	0.11
Co-habiting	0.23	0.21	-0.02	0.53
Single	0.14	0.21	-0.02	0.01 **
No. of children in the family	2.31	2.50	0.20	0.02 *

Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent, respectively. Western or non-Western ethnic origin is defined as indicating that either the father, mother or both parents have the relevant ethnic origin. The numbers reflect percentages, unless otherwise stated.

As indicated by the table, there were no significant differences between the preschools in the treatment group versus those in the control group, when taking the child's characteristics – such as gender, age and birth weight – into account. Differences did exist with respect to a number of other background variables, however. As seen in Table B-1, the preschools in the treatment group were characterised as having: a higher proportion of children with a non-Western ethnic origin; a higher proportion of single parents; and a higher proportion of families with multiple children. We also found that the treatment preschools included proportionately fewer children living in owner-occupied homes and a higher proportion of families with unemployed parents and lower average earnings.

It is also relevant to study the extent to which the characteristics of the preschools in the treatment group differ from those in the control group. Table B-2 presents characteristics of the preschools, such as the number of children in the institution, staffing ratio¹⁴ and proportion of children from a non-Western background.

Table B-2: Comparison of average characteristics across preschools in the treatment and control groups.

	Control	Treatment	Difference	P-value
 Preschool				
No. of children	46.15	40.67	5.49	0.26
Staffing ratio	7.86	5.43	2.44	0.00***
Percentage with non-Western background	0.17	0.30	-0.13	0.26

Note: *, **, *** indicates significance levels for 5, 1 and 0.1 per cent, respectively.

As shown in Table B.2, the only characteristic to differ statistically between the two groups was the staffing ratio. The table shows that, on average, the preschools in the treatment group have more teaching staff per child compared to the control group.

Finally, the children's socio-emotional skills going into the intervention were compared between the preschools in the treatment group versus those in the control group. Table B-3 shows the children's average *Empathy* and *Self-regulation and teamwork* scores, on which they were measured, before the work with the Free of Bullying programme began. A high SEAM score is regarded as a more well-functioning level than a low score. As in the previous table, this table shows the average differences between the two groups, as well as the extent to which this difference is statistically significant.

Table B-3: Comparison of socio-emotional skills going into the intervention between the treatment and control groups.

	Control	Treatment	Difference	P-value
 Empathy	11.78	10.94	0.84	0.02*
 Self-regulation and teamwork	7.39	6.93	0.46	0.06

Note: *, **, *** indicates significance levels for 5, 1 and 0.1 % respectively.

The table indicates that the socio-emotional skills among the children in the control group were generally more advanced compared to the children in the treatment group. This difference is only statistically significant for empathy however. These differences correspond with the expectations that were created based on the family and preschool characteristics identified in the previous tables.

The results from the three previous tables showed signs of there being differences between the treatment group and the control group. This was taken into account in the subsequent analysis, in part by including a wide range of explanatory variables and partly by considering the development among the children between the pre- and post-analysis.

¹⁴ In this study, the staffing ratio is defined as the number of children per teaching staff member. Information about the number of teaching staff working in each of the preschools was obtained at the point of commencing the project.

4. ANALYSIS MODEL

In an attempt to estimate the effects of the Free of Bullying programme on children's empathy and self-regulation, we established an analysis model that would highlight specific changes in the children's socio-emotional skills from the start of the intervention until it concluded. The basic specification for this analysis model is therefore:

$$\Delta y_i = \alpha + X_i\beta + \delta I_i + u_i,$$

where Δy_i indicates the outcome, which in this case is the difference between the pre- and post-evaluation for child i . I is an indicator variable which indicates whether the child is enrolled in a preschool in the treatment group (versus the control group). X includes a number of explanatory variables which encompass child and family variables (e.g. the child's gender, age and birth weight, the mother's educational level, ethnicity and family status). These variables are included to check for individual differences between the groups that could influence the development, and to increase the impact of the results. X also includes preschool characteristics such as the number of children in the preschool and the staffing ratio. These variables are included to check for differences between the preschools that could influence a change. The model also takes municipal "fixed effects" into account. The purpose of this is to eliminate the potential time-independent differences that could exist among the municipalities, which, in turn, results in the effects reflecting the effects of the intervention more reliably.

δ is the parameter of primary interest, and represents the effect of having been part of the Free of Bullying programme, adjusted for characteristics linked to the child, family and preschool. The δ parameter can be interpreted as an intention-to-treat effect¹⁵. What we are measuring is therefore the effect of an attempt to provide the children with an intervention. The participating preschools have received materials for and instructions on how to implement the activities included in the intervention. The extent to which they actually implement the prescribed activities will remain an open question. The results in Chapter 5 paint a picture of the extent to which the various preschools have used the programme.

The model can be regarded as a special version of a "value-added" model, where the pre-evaluation is indirectly adjusted for unobservable characteristics that could correlate with previous socio-emotional skills¹⁶.

In order to take account of the fact that children in the same preschool can have a tendency to resemble each other, since they come from the same geographical area and are influenced by the same teachers, all estimates are presented with clustered standard errors. All standard errors are clustered at the preschool level. This is a technical correction that results in the evaluation of the statistical significance of the effects being more accurate.

¹⁵ See e.g. Duflo, Glennerster and Kremer (2008)

¹⁶ See e.g. Todd and Wolpin (2007)