

The Incredible Years teacher classroom management programme in kindergartens: effects of a universal preventive effort.

Sturla Fossum¹, Bjørn Helge Handegård¹ & May Britt Drugli^{2,3}

¹The Regional Centre for Child and Youth Mental Health and Child Welfare - North. UiT, the Arctic University of Norway, Tromsø, Norway. ²The Regional Centre for Child and Youth Mental Health and Child Welfare – Central Norway, Norwegian University of Science and Technology (NTNU), Trondheim, Norway. ³Centre for the Study of Educational Practice (SePu), Hedmark University College, Elverum, Norway.

Corresponding author:

S Fossum

RKBU

Faculty of health sciences

UiT the arctic university of Norway

9037 Tromsø, Norway

Phone +47 77 64 58 61, Fax +47 77 64 58 60

sturla.fossum@uit.no

Running head: IY in kindergartens

Abstract

The purpose of this study was to identify preventive effects of the Incredible Years (IY) teacher classroom management (TCM) programme, which is employed in Norwegian kindergartens for three- to six-year-old children. IY TCM is a universal preventive intervention intended to reduce the frequency of inappropriate types of behaviour and support children's social- and emotional competence in kindergartens and schools. IY TCM was implemented in 46 kindergartens and compared to 46 matched kindergartens that did not receive the intervention. A total of 1049 children took part in the trial, 511 from the IY TCM group and 538 from the comparison group. Children's behaviours were measured using well-validated instruments at the beginning and end of a school-year cycle, approximately nine months later. Findings showed promising reductions in aggression, internalizing and attention problems, and increases in social competence in the IY TCM kindergartens. In a sub-sample comprising children who scored equal to or above the 90th percentile on aggressive behaviour before the intervention, promising developments were found in social competence among the children in IY TCM kindergartens. The IY TCM lead to promising preventive effects in young children's aggressive behaviours, internalisation, attention problems, and social competence in kindergartens in Norway. However, even if the changes were statistically significant, effect sizes were small. For children with severe behaviour problems, few positive results were found.

Keywords:

The Incredible Years; Universal prevention; Kindergartens; Aggressive behaviour; Social competence.

Background

Population-based birth cohort studies have shown that childhood behavioural and disruptive problems may be developmental precursors of a wide range of negative outcomes including peer rejection, academic failure, psychopathology, substance abuse, suicidality and criminality (Burke, Loeber & Birmaher 2002; Odgers et al. 2008; Shaw, Gilliom, Ingoldsby & Nagin 2003). Aggression, attention and conduct problems are common among such children (Wichstrøm, Berg-Nielsen, Angold, Egger, Solheim & Sveen 2012). These problems, especially if they begin early, may develop into more severe disruptive behaviours that meet the diagnostic criteria for oppositional defiant disorder (ODD) or conduct disorder (CD) (American Psychiatric Association 2013). Due to the nature, stability and burdens of these problems for the children and families affected and for society as a whole, these problems are costly at both family and societal levels (Scott, Knapp, Henderson & Maughan 2001). Developing and implementing effective treatments and preventive interventions in a wide area of settings is important, and exploring the outcomes of these outcomes are a necessity. In Norway, among 96-97% of children aged three to five attend kindergartens (Statistics Norway 2016), which suggests that Norwegian kindergartens are highly suitable for universal interventions and to consider the effects of such efforts.

The ability of preschool children to manage their emotions and behaviour, and their social competence, are important predictors of readiness for schooling and positive cognitive and academic development (Webster-Stratton & Reid 2004). Children who on the other hand have early problems in paying attention, controlling negative emotions and getting along with others are at risk of school failure. Teachers report that 16-30 % of children have lasting emotional, behavioural and social problems (Raver & Knitzer 2002), and some of them show persistent problems (Campbell & Ewing 1990; Odgers et al. 2008).

Most children now spend several years in kindergartens. Their teachers are in a unique position to support their development, in particular that of children at greater risk (Sabol & Pianta 2012). The ways in which teachers interact with children affect their emotional, behavioural, social and cognitive outcomes (Kunter, Baumert & Koller 2007; Webster-Stratton & Reid 2004). Teachers have the opportunity to take various steps to address negative and disruptive behaviours before children develop serious problems. Preventive interventions in kindergartens that focus on strengthening emotional, behavioural and social functioning are of great importance in promoting success at school among children at risk (Webster-Stratton & Reid 2004). Such universal preventive interventions typically focus on how to provide a supportive classroom environment during teacher training. These programmes are conducted independently of child risk status, and target all children in a group or a kindergarten (Greenberg, Domitreovich & Bumbarger 2001). Even if early prevention is assumed to have more

positive effects than later efforts, relatively few universal prevention programmes are targeted on children in kindergartens (Humphries & Keenan 2006) and there is still a need for early interventions to maximize effects (Humphries, Keenan & Wakschlag 2012).

The IY TCM program in kindergartens focus on emotional, behavioural and social development (Webster-Stratton & Reid 2004). There is a focus on positive relationships, and being a proactive teacher involves the use of praise and encouragement, and of incentive programmes for promoting positive emotional, behavioural and social skills. Furthermore, the training focuses on increasing parent involvement, and on setting up hierarchies of discipline and individual plans for children who display problematic behaviours. Previous research on IY TCM reported significant reduction in use of harsh and negative teacher strategies child conduct problems and levels of child disengagements when IY TCM was combined with the child training classroom programme Dina dinosaur in high-risk schools in the Seattle region in the USA (Webster-Stratton, Reid & Stoolmiller 2008). Employing a cluster randomised controlled trial exploring the effects of IY TCM programme among high-risk young children identified by their teachers being one of the three most disruptive children in each class in Jamaican kindergartens using, teachers reported a reduction in child conduct equal to 0.42 and improved social skills equal to 0.59 in terms of effect-sizes (Baker-Henningham, Scott, Jones & Walker 2012). In UK, children in the intervention were observed in structured lessons being significantly less off-task and the teachers used significantly less negative commands in the IY TCM group as compared to the controls (Hutchings, Martin-Forbes, Daley, & Williams 2013). Nevertheless, more knowledge regarding the effects of universal preventive interventions aimed at kindergartens is needed, both in general and when considering the IY TCM programme as a universal approach that measures a wide range of child behaviour.

This study explored the preventive effects of the IY TCM, both among children in general and children with high levels of aggressive behaviour (high-risk children). High-risk children are those who scored equal to or above the 90th percentile on the Sutter Eyberg Student Behaviour Inventory (Kirkhaug, Drugli, Mørch & Handegård 2012) (see below). In light of previous research on IY TCM we hypothesized that 1) The IY TCM provided as a universal programme in kindergartens reduced behavioural, attention and internalization problems, and promoted social competence in the general population. We further hypothesized that 2) behavioural, attention and internalisation problems are reduced and social competence are promoted among high-risk children.

Method

Participants

The number of children in the kindergartens was 3161 of whom 1527 were in intervention kindergartens and 1634 were in comparison kindergartens. In each department, we randomized seven children to participate in the trial. This resulted in 581 randomized children in IY and 637 in comparison groups. Six kindergartens, three in each condition, did not respond in time on Time 1 assessments. This included 70 children, 28 children in IY and 42 in comparison. Furthermore, 49 cases were incomplete due to missing replies from the kindergarten teacher, 21 in IY and 28 in comparison. Finally, 63 cases were insufficiently completed, 26 in IY and 37 in comparison. Due to protocol error, probably due to delayed arrival of consent-forms from the parents, we received 13 extra forms, five from IY kindergartens and eight from comparisons. These children are included in the analyses.

Figure 1 provides a flow-chart of the stages in the study.

<Insert Figure 1 about here>

Table 1 presents information about the kindergartens included in the study. Apart from children being slightly younger in the IY kindergartens, none of the variables were significantly different at the .05 level. This was true for information regarding the size of the kindergartens, distribution of males working in the kindergartens, number of children, and sex of the child (see Table 1 for more details).

<Insert Table 1 about here>

The IY Norway invited Norwegian municipalities with the IY Parenting Training programme already implemented to participate in the trial. The available group leaders could teach the IY TCM to the kindergartens that applied to IY Norway. The 46 intervention kindergartens that participated received the implementation free of charge. Each kindergarten and its personnel received a small economic compensation for the time spent in completing the questionnaires in addition.

The comparison group consisted of 46 kindergartens, recruited from both rural and urban municipalities in which none of the IY programmes were available. The recruitment procedures were similar to the intervention condition. Interested kindergartens applied to IY Norway to participate in the comparison group. The

kindergartens and the kindergarten teachers received a small economic compensation for the time spent on in administering the study and for the kindergarten teachers to complete the questionnaires. The kindergartens in the comparison group were offered training in the IY TCM program one year later.

In order to avoid programme contamination, an inclusion criterion was that none of the kindergarten staff attended or had attended training in an evidence-based kindergarten behavioural intervention or programme in the course of the previous year.

Procedures

Before to the Time 1 assessment and the first IY TCM training, the study was presented to the kindergarten staff. Teachers and other staff involved with three- to five-year-old children were invited to attend the IY teacher-training curriculum. The parents received written information about the project and the data collection procedures, and were requested to consent to their children's participation. Parents who did not speak or understand Norwegian were excluded. If the kindergarten received the IY TCM, all children indirectly received the IY TCM kindergarten intervention. The kindergarten teachers received and completed the questionnaires at Time 1, one to three weeks ahead of the first workshop session and then again at Time 2, one to three weeks after the final workshop. The period between the two assessments was eight to nine months.

In order to reduce data dependency, seven children per department were randomly selected for the assessment by a statistician involved in the project (2nd author BHH). For example, in a group of 21 children, a random number list from 1 – 21 was generated electronically, and the kindergarten teachers matched the seven numbers with the children's alphabetical order. The statistician was blind to the characteristics of the kindergarten. In the analyses we also included a subsample of high-risk children who scored equal to or above 138 on the Sutter–Eyberg Student Behaviour Inventory Total Intensity score (SESBI-R) on Time 1. This score corresponds to the 90th percentile (Kirkhaug et al. 2012). The total sample consisted of 1049 children of whom 106 scored above clinical cut-off score on the SESBI-R (see Figure 1).

A quasi-experimental pre-post design with continuous enrolment of intervention and control kindergartens was employed. The pre-assessment, Time 1, was completed in October and the post-assessments, Time 2, at the beginning of June the following year. Data collection lasted from autumn 2009 until spring 2014. The Regional Committee for Medical and Medicine Research Ethics (REK Nord) approved the procedures and the study protocol.

The IY kindergarten intervention.

The IY TCM programme is a preventive programme developed to strengthen kindergarten staff strategies to reduce children's aggressive behaviour and promote prosocial behaviour (Webster-Stratton & Herman 2010). In this study, the kindergarten teachers and staff received the IY TCM intervention in order to reinforce their skills in effective child management. The programme focuses on children's social and emotional development. Two experienced and qualified IY group leaders trained the staff in groups across six full-day workshop sessions. Each workshop lasted for seven hours and was typically held every fourth week during the implementation.

The IY TCM program for kindergartens involves six themes with one workshop for each theme. Each workshop is based on the previous one: (i) Building a positive relationship with the child and the proactive teacher; (ii) preventing problems – the proactive teacher; (iii) nursery teacher attention, coaching, encouragement and praise; (iv) motivating kindergarten children through incentives; (v) reducing inappropriate behaviour by ignoring and redirecting and logic consequences; and (vi) developing emotional regulation, social skills, and problem solving. The IY TCM uses a group leader manual that promotes the integrity of the training (Webster-Stratton 2011).

The entire staff of kindergarten teachers and assistants involved with the children in each kindergarten received training simultaneously during regular working hours in planning sessions. The children were not present in the kindergartens when sessions were conducted. The 20 group leaders providing IY TCM worked in Educational-Psychological Services and the courses were free of charge to the kindergartens in question. The group leaders were trained pedagogics with a bachelor- or master degree and had conducted at least one IY TCM prior to coursing in the research project. Less experienced group leaders were paired with more experienced group leader in the trial. The IY Norway, funded by Norwegian Directorate of Health, covered expenses in organizing curriculums, groups and training of the group-leaders. The group leaders completed checklists, used reminders and suggestions in the presentations and discussions in the workshops described in the manual (Webster-Stratton 2011). At the time of conducting the study, the fund-raiser wanted barriers between the implementation of IY TCM in Norway and the research project to facilitate independency between research and implementation. As a result, it is very problematic to provide valid data from the implementation process.

Measures

SESBI-R consists of 38 items that measure the intensity of behaviour problems (Eyberg & Pincus 1999). Teachers evaluate the frequency and severity of various types of behaviour in children aged 2–16 years. The behaviours are rated on a seven-point scale ranging from one = never to seven = always. The item scores on the scale are summed, and the total ranges from 38 to 266. The intraclass correlation (ICC) on SESBI intensity was .21. On each item, teachers also indicate, on a yes-no-scale, whether the observed intensity constitute a problem or not. A total problems score, ranging from zero to 38, is computed as the number of “yes”-occurrences. The ICC on SESBI problems was .21. In this study, we applied the Norwegian norms for children aged 3 to 6 (Kirkhaug et al. 2012). Cronbach alpha in the intensity scale was .97 and .94 on the problems scale.

The Child Teacher Report Form (C-TRF) includes scores on several difficulties and problems, including the internalisation scale and the subscales Attention and Aggression employed in this study. The kindergarten teachers rate children’s behaviours on 99 items on a zero to two scale, zero = not true as far as you know; one = somewhat or sometimes true; two = very true or often true (Achenbach & Rescorla 2000). The Internalisation scale comprises the four subscales Emotional reactive (seven items), Anxious/Depressed (eight items), Somatic Complaints (seven items), and Withdrawn (10 items) and the ICC for the summed Internalisation score was .21. The Attention scale consist of nine items, and has an ICC equal to .10, and Aggression consist of 25 items and the ICC was .13. Test–retest reliability and validity on the C-TRF have been found to be high (Achenbach & Rescorla 2000). The number of participants on the subscales C-TRF attention and C-TRF aggression is lower. These subscales were not included in the questionnaires at the first assessment round due to a protocol error.

The Social Competence and Behaviour Evaluation for Teachers (SCBE-T) employed in this study was the 40-item total score for social competence from the Social Competence and Behaviour Evaluation for Teachers (SCBE-T). These items summarise the positive characteristics of a child. Higher numbers represent more positive ratings and lower numbers indicate fewer competencies. Scores range from zero to five and a total score, ranging between zero to 200, was computed. The ICC was .32. Test-retest reliabilities range from .74 to .87 (LaFreniere and Dumas 1995).

Data Analyses

For tests of differences on demographic variables and comparisons of completers and non-completers, we used one-way ANOVA, Pearson’s chi-squared test or linear mixed models depending on the situation. We used Linear mixed models (LMM) to test for group differences on Time 1, and for group differences in change

in behaviours and social competence from Time 1 to Time 2. In the analysis of the entire group, the data were hierarchically organized with observations (level 1) nested within children (level 2), and children were nested within teachers (level 3). Intraclass correlations were estimated from Time 1 using LMM on the unconditional means model (Singer & Willett 2003). In the analysis of the high-risk group, the third level was considered to be unnecessary, as few teachers were responsible for more than one high-risk child.

Effect sizes were computed as standardized group differences in mean change from Time 1 to Time 2. We used two different approaches to compute effect sizes (ES). For high scorers, Hedges' g was computed. For the whole sample, we adopted an approach from Hedges (2007) to take the clustering within kindergarten teachers into account, using Hedges' d_{T2} measure. In both cases, we used the pooled standard deviation for the groups at Time 1 in the standardization (Morris 2008; Carlson & Schmidt 1999). We used SPSS version 23 for all analyses. A significance level of 0.05 was employed in every test.

Results

A total of 921 children were included in both pre- and post-assessments, while 121 cases were lost post-intervention, 62 (11.6%) boys and 58 (11.4%) girls. There was no association between child gender and participation, $\chi^2(1) = 0.01$, nor between age and participation $F(1, 1037) = 1.3$. Children with missing data at Time 2 differed significantly on SESBI-R intensity at Time 1, compared to the children with complete data at Time 1 and Time 2. Among the children who dropped out, mean score was 102.2 ($SE = 3.3$) while the score for children at both assessment points in time was 93.1 ($SE = 1.5$), $t = -2.7$, $p < .01$. In all, 121 cases with Time 1 data were missing at Time 2. Thirty-nine cases were due to lack of responses from three kindergartens, 15 cases in IY and 24 cases in comparison. Kindergarten teacher drop-outs resulted in 24 missing cases, 5 in IY and 19 in comparison. Finally, 58 cases were child drop-outs, 29 in each condition.

None of the child measures differed significantly between the intervention and comparison groups at Time 1 (see Table 2 below for more details). In general, there were more positive developments in the IY group compared to the comparison group. In the entire group, the change on SESBI-R intensity, SESBI-R problem, C-TRF scales internalisation, attention and aggression were significantly in favour of IY (see Table 2). Similarly, the improvement in social competence measured by SCBE-T was significantly larger in the IY group. For the high-risk group of children, the changes in child aggression, attention problems and internalizing were in favour of IY, although none of these differences were significant at the .05-level. The change in social competence

among the high risk children was significantly in favour of IY as compared to the comparison. For details about changes from Time 1 to Time 2 and effect sizes, see Table 2.

<insert Table 2 about here>

Discussion

The aim of this study was to evaluate effects of the Incredible Years teacher management training (IY TCM) in kindergartens in Norway. The study is naturalistic in the implementation of IY TCM and kindergarten teachers' use and skills in the intervention. The intervention was implemented in ways that are typical for coursing and training of kindergarten teachers. At Time 1 the children in general scored within range of what is typical for Norwegian children on both SESBI intensity and problems scales (Kirkhaug et al. 2012) suggesting that the included children being representative, both the universal and the high-risk samples. It is worth noticing that norm data shows that Norwegian children mean scores are lower than seen among US children (Eyberg & Pincus 1999). In all, 10% of the children in this sample scored in clinical range on SESBI on Time 1, showing more intensive behaviour problems and being perceived more difficult. For preventive intervention effects, there were statistically significant treatment effects in behaviour, internalisation, attention problems, and social skills. On every measure, the IY TCM children changed more favourably than the comparison children did. The children lost from the study between Time 1 and Time 2 scored significantly higher on SESBI-R intensity at Time 1. This would possibly result in reduced overall intervention effects since changes in the study were larger for the high-risk children. The findings of the effects were generally in line with our hypothesis, which was that the IY TCM implemented as a universal programme in kindergartens would reduce behaviour, improve attention and internalisation problems, and promote social competence among children in general. Our hypothesis, that the high-risk children would experience similar changes was not supported though, with one exception. The change in social competence was larger in the IY TCM group compared to the control group.

The programme originator (Webster-Stratton et al. 2008) reported positive effects when teacher and child training were implemented in high-risk schools in the Seattle region in the USA. These effects were evident both in general and in particular for children who had scored high in conduct problems and low in social functioning. The teachers received IY teacher training and the children took part in the Dina Dinosaur social skills and problem-solving curriculum. The children in that study averaged five years of age, and were thus almost a year older than the children in our study. Applying the IY teacher training in preschools in Jamaica for

four-year-old children with elevated levels of teacher-rated conduct problems, the effects corresponded to moderate reductions in teacher-rated behavioural difficulties and improved social skills (Baker-Henningham et al. 2012). The effects in the Norwegian replication are somewhat smaller for the high-risk children compared to Baker-Henningham et al's findings. However, the changes in teacher-rated disruptive behaviour and social functioning were still in the same range. The group differences in our study were typically in the small range when Cohen's criteria (Cohen 1988) for effect sizes are taken into account. The ES's were in the range of 0.12-0.21 for all children and somewhat larger for the high-risk children; i.e. ES's ranging from 0.20 to 0.48. Our findings add to our knowledge about the effects of the IY TCM as a stand-alone program in kindergartens both for children in the general population, and children at high risk.

Denham and colleagues (Denham, Blair, DeMulder et al. 2003) reported that emotional knowledge and awareness among three- and four-year-old children predicted later social competence in kindergarten. In our sample, the IY children showed, on average, promising behavioural development and improved social functioning compared to the children in the comparison kindergartens. In light of this, and previous research that suggested that externalization moderately predicted peer-liking (Keane & Calkins 2004), the small but positive child developments, may be of relevance. However, we have no control over what causes which changes. We can merely note that the treatment effects were largest in social competence, in both the entire group and the high-risk children. A study showed that, when considered separately, peer acceptance, number of mutual friends, and proximity to others, partially mediated the treatment effects in externalisation behaviour induced by classroom-based and group-oriented preventive interventions aimed at reducing disruptive behaviour and promoting prosocial behaviour (Witvliet, van Lier, Cuijpers, & Koot 2009). As mentioned, implementation of the preventive intervention was naturalistic and with limited control regarding fidelity of the IY TCM intervention. In this sense, the implementation in our study was in line with most preventive school-based interventions with potential for implementing these efforts with better quality (Gottfredson & Gottfredson 2002). Higher levels of fidelity may improve results in school programmes (Ialongo, Werthamer, Kellam, Brown, Wang & Lin 1999) and as such, the preventive effects of The Incredible Years in Norwegian kindergarten could be strengthened.

A challenge presented by primary preventive interventions is of course in cases of positive findings whether the changes really are meaningful. For instance, in our sample the kindergarten teachers reported significant pre-to-post group differences in various behaviours and social skills. Still, the mean reported level of SESBI-R problems at Time 1 was point 2.1 problems on a scale ranging from zero to 38 among the children in

the IY kindergartens. It would seem that in general, the kindergarten teachers regarded disruptive behaviours as being problematic to only a very minor extent even at Time 1. Even though the group differences were significant at Time 2, a mean score of 2.0 in the comparison group compared to 1.1 in IY (see Table 2 for more details), would perhaps not lead to important developments and differences for the children and kindergarten teachers as such? Even so, small progress could be of relevance. Less aggressive and more socially competent kindergarten children exercised better cognitive self-control, which in turn was positively related to academic achievement in school (Normandeau & Guay 1999). Lösel, Stemmler and Bender (2013) argued that rather small changes can be of relevance and that a relatively inexpensive primary prevention could help identify children in need of more treatment. It is also of some interest to notice that, even though the number of studies was somewhat limited in these meta-analyses, the long-term effects of universal prevention of aggressive behaviour in school lasted for social and emotional learning (Durlak, Weissberg, Dymnicki, Taylor & Schellinger 2011).

The IY leads to promising effects in reducing young children's aggressive behaviour, internalization, attention and social readiness, when employed in kindergartens in Norway. The treatment effects were statistically significant, but the size of the effects would typically be regarded as small (Cohen 1988). With the exception of social competence, none of the variables for the children who scored equal to or above the 90th percentile on SESBI-R, showed significant group differences in pre-to-post change. It seems as if the intervention, even though the effects were positive, the intensity of the intervention may not have been sufficient to cause substantial changes in this group.

Limitations

This study has some weaknesses and caution in interpreting the results is essential. The study was conducted under naturalistic and real-life conditions. We have very limited information regarding the fidelity and circumstances of the delivery of IY TCM. We cannot rule out the possibility that this weakness could influence the findings. The findings are solely based on kindergarten teachers' reports of child behaviour and indications of potential long-term effects are lacking. Previous research on IY TCM have included observational data (Baker-Henningham et al. 2012; Hutchings et al. 2013; Webster-Stratton et al. 2008) which obviously would have improved the robustness of the study and findings. This was not a randomized controlled trial and our findings could be affected by methodological shortcomings. An alternative design might be a cluster-randomized trial. This solution was discarded due to practical limitations and problems in applying such a design. We would further emphasise the similarities between the two conditions at Time 1, which argues that the significant

intervention effects are most likely due to the IY TCM. The analysis of high-risk children was based on relatively few cases. Low precision in the parameter estimates could therefore have influenced our results.

Acknowledgements

The authors wish to thank Professor Willy-Tore Mørch for his contribution to the study design, Anne-Kari Johnsen, Merete Aasheim and Oddbjørn Løndal for acquisition of data, parents for their willingness to participate, and the kindergarten teachers for completing data.

Funding

The study was supported by the Norwegian Directorate of Health following the implementation of IY TCM in Norway. The Directorate was not involved in any part of the study, including the design of the study, collection of data, analyses of the data or interpretation of the findings.

Availability of data and materials

The data cannot be shared at present. However, UiT, the Arctic University of Norway is in the process of making all meta data in research projects available for sharing through the Eutro programme.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest: The Incredible Years is a trademark owned by The Incredible Years, Inc. None of the authors are involved in The Incredible Years or receive any compensation from this organisation.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

References

- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- American Psychiatric Association [APA]. (2013). *Diagnostic and statistical manual of mental disorders*. Fifth edition. Arlington, VA, American Psychiatric Association.
- Baker-Henningham, H., Scott, S., Jones, K., & Walker, S. (2012). Reducing child conduct problems and promoting social skills in a middle-income country: cluster randomised controlled trial. *British Journal of Psychiatry*, *201*, 101–108. doi: 10.1192/bjp.bp.111.096834
- Burke, J. D., Loeber, R., & Birmaher B. (2002). Oppositional Defiant Disorder and Conduct Disorder: A review of the past 10 years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry* *41*, 1275–1293. doi: 10.1097/00004583-200211000-00009
- Campbell, S. B., & Ewing, L. J. (1990). Follow-up of hard-to-manage preschoolers: Adjustment at age 9 and predictors of continuing symptoms. *Journal of Child Psychiatry & Psychology*, *31*, 871-889. doi: 10.1111/j.1469-7610.1990.tb00831.x
- Carlson, K. D., & Schmidt, F. L. (1999). Impact of experimental design on effect size: Findings from the research literature on training. *Journal of Applied Psychology*, *84*, 851-862.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. 2nd Edition. Hillsdale, N.J.: Lawrence Erlbaum
- Denham, S. A., Blair, K. A. DeMulder, E., Levitas, J., Sawyer, Auerbach-Major, S., & Queenan, P. (2003). Preschool emotional competence: Pathway to social competence? *Child Development*, *73*, 238-256. Doi: 10.1111/1467-8624.00533
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B, Taylor, R. D., Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, *82*, 405-432. doi: 10.1111/j.1467-8624.2010.01564.x

- Eyberg, S. M., & Pincus, D. (1999). *Eyberg Child Behavior Inventory (ECBI) & Sutter-Eyberg Student Behavior Inventory-revised (SESBI-R)*. Lutz, FL: Psychological Assessment Resources.
- Greenberg, M. T., Domitreovich, C. & Bumbarger, B. (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention & Treatment, 4*, 1-63.
- Hedges, L. V. (2007). Effect sizes in cluster randomized designs. *Journal of Educational and Behavioral Statistics, 32*, 341 - 370.
- Humphries, M. L., & Keenan, K. E. (2006). Theoretical, developmental & cultural orientations of school-based prevention programs for preschoolers. *Clinical Child & Family Psychology Review, 9*, 135-148. doi: 10.1007/s10567-006-0005-1
- Humphries, M. L, Keenan, K. E. & Wakschlag, L. S. (2012). Teacher and observer ratings of young African American children's social and emotional competence. *Psychology in the Schools, 49*, 311-327. doi: 10.1002/pits.21604
- Hutchings, J., Martin-Forbes, P., Daley, D., Williams, M. E. (2013). A randomized controlled trial of the impact of a teacher classroom management program on the classroom behavior of children with and without behavior problems. *Journal of School Psychology, 51*, 571-585. doi: 10.1016/j.jsp.2013.08.001
- Ialongo, N.S., Werthamer, L., Kellam, S.G., Brown, C. H. Wang, S. & Lin, Y. (1999). Proximal Impact of Two First-Grade Preventive Interventions on the Early Risk Behaviors for Later Substance Abuse, Depression, and Antisocial Behavior. *American Journal of Community Psychology, 27*, 599-641. doi:10.1023/A:1022137920532
- Keane. S. P. & Calkins, S. D. (2004). Predicting kindergarten peer social status from toddler and preschool problem behavior. *Journal of Abnormal Child Psychology, 32*, 409-432. doi: 10.1023/B:JACP.0000030294.11443.41
- Kirkhaug, B., Drugli, M. B., Mørch, W.-T., & Handegård, B. H. (2012). Teacher report of children's problem behavior on The Sutter-Eyberg Student Behavior Inventory-Revised (SESBI-R) in a Norwegian sample of preschool and school children. *Scandinavian Journal of Educational Research, 56*, 139-153. doi: 10.1080/00313831.2011.568672

- Kunter, M., Baumert, J., & Koller, O. (2007). Effective classroom management and the development of subject-related interest. *Learning and Instruction, 17*, 494-509. doi: 10.1016/j.learninstruc.2007.09.002
- LaFreniere and Dumas, (1995). *Social competence and behavior evaluation*. Los Angeles: Western Psychological Services.
- Lösel, F., Stemmler, M. & Bender, D. (2013). Long-term evaluation of a bimodal universal prevention program: Effects on antisocial development from kindergarten to adolescence. *Journal of Experimental Criminology, 9*, 429-449. doi: 10.1007/s11292-013-9192-1
- Morris, S. B. (2008). Estimating Effect Sizes From Pretest-Posttest-Control Group Designs. *Organizational Research Methods, 11*(2), 364-386.
- Normandeau, S. & Guay, F. (1999). Preschool behavior and first-grade school-achievement: The mediational role of cognitive self-control. *Journal of Educational Psychology, 90*, 111-121. doi: 10.1037/0022-0663.90.1.111
- Oggers, C. L., Moffitt, T. E., Broadbent, J. M., Dickson, N., Hancox, R. J. Harrington, H... Caspi, A. (2008). Female and male antisocial trajectories: From childhood origins to adult outcomes. *Development and Psychopathology, 20*, 673-716. doi: 10.1017/S0954579408000333
- Raver, C.C., & Knitzer, J. (2002). Ready to enter: What research tells policymakers about strategies to promote social and emotional school readiness among three- and four-year-olds. National Center for Children in Poverty. Columbia University. Mailman School of Public Health.
- Sabol, T.J. & Pianta, R.C. (2012). Recent trends in research on teacher-child relationships. *Attachment & Human Development, 14*, 213-231.
- Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: follow-up study of antisocial children into adulthood. *BMJ, 323*:1-5.
- Shaw, Gilliom, Ingoldsby & Nagin, (2003). Trajectories leading to school-age conduct problems. *Developmental Psychology, 39*, 189-200. doi: 10.1037/0012-1649.39.2.189
- Singer, J.D., & Willett, J.B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York: Oxford University Press.
- Statistics Norway (2016). <http://www.ssb.no/utdanning/statistikker/barnehager>. Retrieved April 20th 2016.

- Webster-Stratton, C. (2011). Promoting positive academic and social behaviors. The teachers and children series. A video-based course. Lederveiledning. Norwegian edition. Unpublished.
- Webster-Stratton, C., & Herman, K.C. (2010). Disseminating Incredible Years series early-intervention programs: Integrating and sustaining services between school and home. *Psychology in Schools*, 47, 36-54. doi: 10.1002/pits.20450
- Webster-Stratton, C. & Reid, M. J. (2004). Strengthening Social and Emotional Competence in Young Children—The Foundation for Early School Readiness and Success Incredible Years Classroom Social Skills and Problem-Solving Curriculum. *Infants and Young Children*, 17(2), 96-113.
- Webster-Stratton, C., Reid, M. J., Stoolmiller, M. (2008). Preventing conduct problems and improving school readiness: evaluation of the Incredible Years Teacher and Child Training Programs in high-risk schools. *Journal of Child Psychology & Psychiatry*, 49, 471-488. doi:10.1111/j.1469-7610.2007.01861.x
- Wichstrøm, L., Berg-Nielsen, T. S., Angold, A., Egger, H. L., Solheim, E., & Sveen, T. H. (2012). Prevalence of psychiatric disorders in preschoolers. *Journal of Child Psychology and Psychiatry, and allied disciplines*, 53, 695–705. doi:10.1111/j.1469- 7610.2011.02514.x
- Witvliet, M., van Lier, P A. C., Cuijpers, P., & Koot, H. M. (2009). Testing links between childhood positive peer relations and externalizing outcomes through a randomized controlled intervention study. *Journal of Consulting and Clinical Psychology*, 77, 905-915. doi: 10.1037/a0014597

Table 1. Demographic information

	Intervention	Comparison	Total
Information on kindergartens:			
Number of kindergartens	46	46	92
Large kindergarten (number of children > 40)	14 (30%)	16 (35%)	30 (33%)
Number of children in each kindergarten 3-6 years old	33.2 (21.0)	35.5 (18.0)	34.4 (19.4)
Male working in kindergarten	37 (10.3%)	22 (7.8%)	59 (9.2%)
Information on children:			
Number of children	511	538	1049
Age child* (mean/ SD)	4.3 (0.9)	4.4 (0.8)	4.4 (0.9)
Girls (n/%)	253 (50%)	255 (48%)	508 (49%)
High-risk children (score of 138 or higher on SESBI)	60 (12%)	45 (9%)	105 (10%)

*p<.05

SESBI = Sutter-Eyberg Student Behavior Inventory, SD = standard deviation

Table 2. Changes from Time 1 to Time 2 and between group effect sizes

	Intervention				Comparison				baseline	preventive effects	
	Time 1		Time 2		Time 1		Time 2		time 1	time 1-2	
	n	m (se)	n	m (se)	n	m (se)	n	m (se)	t	t	d
SESBI Intensity	506	94.4 (2.0)	454	89.5 (2.0)	526	94.2 (1.9)	499	93.7 (2.0)	0.1	3.2**	0.14
High-risk children	60	160.4 (3.4)	45	137.9 (3.9)	45	161.4 (3.9)	38	147.9 (4.2)	0.2	1.4	0.47
SESBI Problem	500	2.1 (0.3)	461	1.1 (0.3)	528	2.3 (0.3)	493	2.0 (0.3)	0.5	3.0**	0.14
High-risk children	59	9.1 (1.2)	46	5.2 (1.3)	45	12.1 (1.3)	36	10.2 (1.4)	1.7	1.1	0.20
C-TRF Internalizing	505	3.3 (0.3)	455	2.7 (0.3)	535	3.2 (0.2)	507	3.1 (0.2)	-0.2	2.3*	0.12
High-risk children	60	7.0 (0.7)	45	5.0 (0.8)	45	7.8 (0.8)	38	7.2 (0.8)	0.8	1.3	0.24
C-TRF aggression	396	3.8 (0.3)	378	3.1 (0.4)	480	3.2 (0.3)	466	3.3 (0.3)	-1.1	3.1**	0.15
High-risk children	46	15.6 (1.3)	39	11.3 (1.4)	31	17.5 (1.6)	29	16.2 (1.6)	1.1	1.7	0.34
C-TRF attention	388	1.7 (0.1)	371	1.3 (0.2)	473	1.6 (0.1)	454	1.5 (0.1)	-0.5	2.7**	0.14
High-risk children	44	6.2 (0.6)	38	4.3 (0.6)	31	7.3 (0.7)	28	6.1 (0.7)	1.2	1.0	0.18
SCBE-T	511	171.5 (2.3)	461	184.1 (2.3)	537	176.4 (2.2)	509	182.3 (2.2)	1.5	-4.6***	0.21
High-risk children	60	141.6 (3.4)	46	156.9 (3.7)	45	145.3 (3.9)	38	148.6 (4.1)	0.7	-2.4*	0.48

Note!

* $p < .05$, ** $p < .01$, *** $p < .001$, m = mean, se = standard error

IY = Incredible Years kindergarten, SESBI = Sutter-Eyberg Student Behavior Inventory, C-TRF = Child Teacher Report Form, SCBE-T = Social Competence and Behaviour Evaluation for Teachers. High-risk children = A score ≥ 138 on SESBI Intensity. d = effect size (among high-risk children d = Hedges' g)

Figure 1
Flow-chart of kindergartens and children in the study.
N = number of kindergartens, n = number of children

