



**Evaluation of the Incredible Years Teacher Classroom Management Program in a regular Norwegian school setting**

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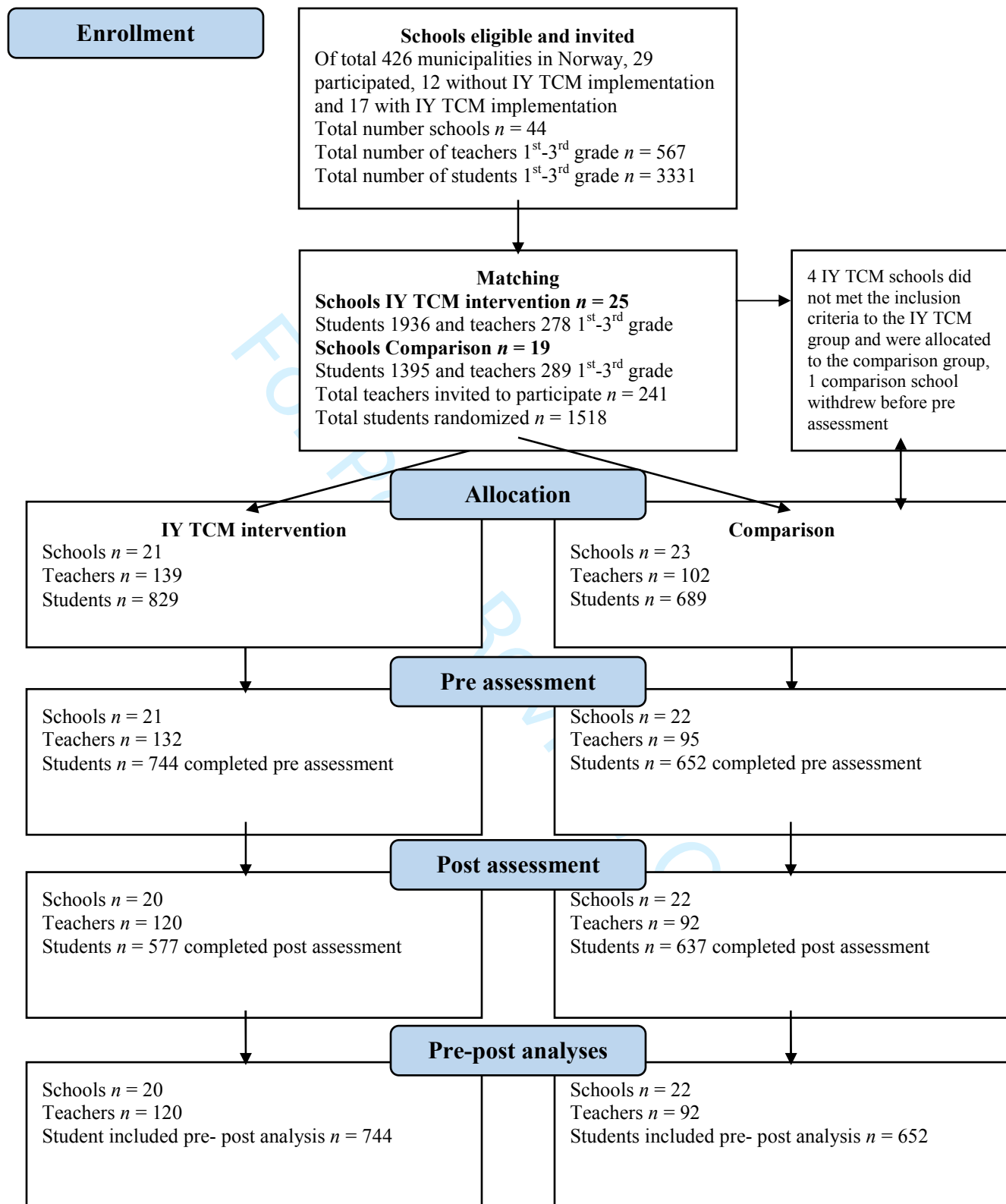


Table 1

*Demographic Information for Schools, Teachers and Students at Baseline*

	IY TCM	Comparison	Total
<b>Schools <i>N</i></b>	21	22	43
School size large (351-780 students)	4	2	6
School size medium (201-350 students)	6	4	10
School size small (< 200 students)	11	16	27
Class size <i>M</i> ( <i>SD</i> )	20.82 (6.85)	18.48 (10.55)	19.74 (8.84)
Teacher responders <i>n</i>	132	95	227
Teacher's age in years <i>M</i> ( <i>SD</i> )	40.94 (11.86)	45.19 (10.31)	42.75 (11.26)
Work experience in year <i>M</i> ( <i>SD</i> )	11.73 (9.11)	15.48 (8.68)	13.37 (9.05)
Educated as teacher <i>n</i> (%)	123 (93.2)	87 (91.6)	210 (92.5)
Female teacher <i>n</i> (%)	115 (87.1)	84 (88.4)	199 (87.7)
<b>Students <i>N</i></b>	744	652	1396
Girls <i>n</i> (%)	355 (47.7)	297 (45.6)	652 (46.7)
Age <i>M</i> ( <i>SD</i> )	7.22 (0.86)	7.30 (0.87)	7.26 (0.87)
Non-Norwegian <i>n</i> (%) <sup>*</sup>	64 (8.6)	13 (2.0)	77 (5.5)
Special education <i>n</i> (%)	67 (9.0)	72 (11.0)	139 (10.0)
High risk student's <sup>a</sup> <i>n</i> (%)	45 (6.1)	38 (5.8)	83 (6.0)

Note. IY TCM = Incredible Years Teacher Classroom Management.

<sup>a</sup>Score of 144 or higher on SESBI-R Intensity.

\**p*<.05.

Table 2

*Descriptive Statistics at Pre- and Posttest, and Results of Multilevel Analyses Examining Group Differences in pre-post Change Scores and Effect Sizes ( $d_w$ )*

	TCM Intervention <sup>a</sup>		Comparison <sup>a</sup>		Baseline <sup>b</sup>		Intervention effects <sup>b</sup>	
	Pre ( <i>N</i> = 557-722)	Post ( <i>N</i> = 442-577)	Pre ( <i>N</i> = 548-627)	Post ( <i>N</i> = 551-634)	<i>t</i>	ICC	<i>t</i>	$d_w$
	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)				
<b>SESBI-R</b>								
Intensity in behavior	79.85 (34.89)	78.83 (33.56)	77.45 (33.20)	79.47 (34.02)	-0.89	0.22	-3.021**	0.08
Behavior is a problem	3.29 (6.48)	3.11 (6.39)	2.75 (6.32)	2.90 (6.60)	-0.96	0.14	-2.047*	0.09
<b>TRF</b>								
Aggressive Behavior	2.10 (4.91)	2.16 (4.73)	1.70 (4.26)	1.80 (4.43)	-1.13	0.06	-1.678	0.08
Attention Problems	5.30 (7.78)	5.15 (7.72)	4.72 (7.37)	5.04 (7.92)	-1.27	0.11	-2.651**	0.08
Academic Performance	3.16 (0.50)	3.22 (0.55)	3.19 (0.53)	3.18 (0.59)	0.67	0.09	1.882	0.08
Total Problems	10.54 (16.58)	11.50 (16.41)	9.44 (15.47)	9.97 (16.32)	-1.40	0.14	-2.137*	0.09
<b>SSRS</b>								
Cooperation	29.54 (5.90)	30.46 (5.94)	30.45 (7.04)	30.30 (6.27)	2.01*	0.19	2.941**	0.17
Assertion	25.95 (4.95)	27.22 (4.85)	26.40 (4.85)	27.23 (4.73)	0.74	0.40	0.960	0.11
Self-Control	27.29 (4.80)	28.39 (5.28)	28.09 (5.10)	28.43 (5.28)	1.98*	0.34	2.389*	0.20
Social Skills Total	82.80 (13.03)	86.00 (13.13)	84.90 (13.80)	85.95 (14.00)	1.75	0.30	2.403*	0.19

Note: TCM = Incredible Years Teacher Classroom Management, SESBI-R = Sutter-Eyberg Student Behavior Inventory-Revised, TRF = Teacher Report Form, SSRS = Social Skills Rating System.  $d_w$  = Effect sizes were computed using the pooled within-treatment groups' standard deviation of the cluster means (pre

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5 assessments scores).

6 All covariates gender, grade, ethnicity, special education, how well the teacher knew the student, and number of hours the teachers taught the student each  
7 week, and number of students in each class were statistically accounted for in the different multilevel analyses.

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9 <sup>a</sup>original data <sup>b</sup>imputed data

10 \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .  
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For Peer Review Only

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3 **Merete Aasheim** is a PhD candidate at The Regional Centre for Child and Youth Mental  
4 Health and Child Welfare - North Norway, The Arctic University of Norway. She earned her  
5 master's degree in special education. Her research interests include mental health promotion  
6 in kindergarten and school settings, prevention of problem behavior and promotion of social  
7 competence in children, and implementation and evaluation research of evidence-based  
8 interventions.  
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15 **Charlotte Reedt** is an associate professor at The Regional Centre for Child and Youth  
16 Mental Health and Child Welfare - North Norway, The Arctic University of Norway. Reedt  
17 has lead the Norwegian research around the IY programme for universal groups of parents,  
18 now called the IY Attentive Parenting Programme. Her main research interests are child &  
19 adolescent mental health & wellbeing, and parent training, children of mentally ill parents,  
20 evidence based practice/best practice interventions and implementing innovative interventions  
21 in community health & social care.  
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30 **Bjørn Helge Handegård** is senior lecturer at The Regional Centre for Child and Youth  
31 Mental Health and Child Welfare - North Norway, The Arctic University of Norway. He has  
32 a master in statistics, and teaches statistics and co-authors publications within the mental  
33 health field. His main research interests are data analysis, statistical methods, research  
34 planning, psychometrics, simulation.  
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41 **Monica Martinussen** is a professor at The Regional Centre for Child and Youth Mental  
42 Health and Child Welfare - North Norway, The Arctic University of Norway. Martinussen is  
43 leading a research group conducting research on mental health prevention among children and  
44 young people including how to best provide services to families, e.g., through Family Centers.  
45 Her research interests include research methods and psychometrics, mental health and  
46 preventive work, and work- and organizational-psychology. Martinussen is Chief Editor of  
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3 Ungsinn (Youngmind) an electronic journal summarizing evidence related to interventions for  
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5 children.

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7 **Willy-Tore Mørch** is a professor emeritus at The Arctic University of Norway. Mørch have  
8  
9 worked at The Regional Centre for Child and Youth Mental Health and Child Welfare - North  
10  
11 Norway as a professor of environmental therapy since 1994, and as a professor of child and  
12  
13 adolescent mental health since 2008. He is specialist in clinical psychology, and his research  
14  
15 interest include implementation of evidence-based interventions, implementation research and  
16  
17 effect evaluations. Mørch was the head of The Incredible Years, Norway since 1999 until  
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19 2014.  
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## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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Evaluation of the Incredible Years Teacher Classroom Management Program in a regular  
Norwegian school setting

Merete Aasheim<sup>\*a</sup>, Charlotte Reedtz<sup>b</sup>, Bjørn Helge Handegård<sup>c</sup>, Monica Martinussen<sup>d</sup>,  
and Willy-Tore Mørch<sup>e</sup>

<sup>a</sup>Regional Centre for Child and Youth Mental Health and Child Welfare - (RKBU-North), Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway. Tel.: +47 776 45884, email: [merete.aasheim@uit.no](mailto:merete.aasheim@uit.no)

<sup>b</sup>RKBU-North, Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway. Tel.: +47 776 45866, email: [charlotte.reedtz@uit.no](mailto:charlotte.reedtz@uit.no)

<sup>c</sup>RKBU-North, Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway. Tel.: +47 776 45851, email: [bjorn.helge.handegaard@uit.no](mailto:bjorn.helge.handegaard@uit.no)

<sup>d</sup>RKBU-North, Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway. Tel.: +47 776 45881, email: [monica.martinussen@uit.no](mailto:monica.martinussen@uit.no)

<sup>e</sup>RKBU-North, Faculty of Health Sciences, UiT The Arctic University of Norway, 9037 Tromsø, Norway. Tel.: +47 776 45 854, email: [willy-tore.morch@uit.no](mailto:willy-tore.morch@uit.no)

\*Correspondence concerning this article should be addressed to Merete Aasheim.



## Abstract

This study examined whether the Incredible Years (IY) Teacher Classroom Management (TCM) program implemented as a school-wide preventive intervention at 1<sup>st</sup> to 3<sup>rd</sup> grade in a regular school setting reduces the development of problem behavior and improve social competence. Using a quasi-experimental pre-post design, the IY TCM was implemented in 21 schools and compared with 22 matched schools that did not receive the program. A total of 241 1<sup>st</sup> to 3<sup>rd</sup> grade teachers and 1,518 students aged 6 to 8 years took part in the trial. Mixed-model analyses found small positive effects on changes in students' social competence ( $d_w = 0.19$ ), while effects on change in students problem behavior were less than small ( $d_w < 0.20$ ). When the program is implemented as school-wide universal preventive intervention, results suggest a small preventive impact of the IY TCM program in regular school settings for some of the outcomes measured in the study.

Keywords:

Problem behavior, Social competence, School-wide, Prevention

Evaluation of the Incredible Years Teacher Classroom Management Program in a Regular  
Norwegian School Setting

Behavioral problems in school are associated with educational and social disadvantages and are one of the most prevalent, severe, and persistent problems that inhibit the realization of students' abilities. Such problems may have both immediate and long-term consequences for the student, including such as underachievement, mental health problems, school dropout, future unemployment, and general social exclusion (Ford et al., 2012; Scott, Knapp, Henderson, & Maughan, 2001). There are huge costs to the public sector associated with behavioral problems, particularly in the education system (Snell et al., 2013). Measures aimed at preventing and reducing problem behavior and coping issues are central to ensuring that all students experience optimal development and positive learning outcomes at school. Preventive interventions in school settings can be of great importance as public health interventions (Ford et al., 2012). Dysfunctional patterns of family interaction often translate into problems at school, underlining the need to target behavioral problems not only at home but also in day-care and school settings (Drugli & Larsson, 2006; Fossum, Handegård, Martinussen, & Mørch, 2008; Ramsey, Patterson, & Walker, 1990). Students who exhibit problem behavior frequently go off-task, display aggression towards others, or refuse to cooperate, all of which adversely affects their own learning potential as well as that of the students around them (Bartlett, Holditch-Davis, Belyea, Halpern, & Beeber, 2006; Efrati, Virtzer & Margalit, 2009; Moffitt & Scott, 2009). Students' oppositional and negative behavior may be reinforced by teachers' ineffective classroom behavior management practices, where the teacher is trapped into coercive exchanges with the student because of compliance to students' demands (Patterson, Reid, & Dishion, 1992; Webster-Stratton, Reid, & Hammond, 2001; Webster-Stratton, Reid, & Stoolmiller, 2008).

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4 Social competence, emotional self-regulation, and absence of problem behavior are  
5 important components of the foundations of interpersonal adjustment and academic success  
6 (Drugli, Klökner, & Larsson, 2011; Snyder et al., 2011; Webster-Stratton et al., 2008). In  
7 addition to their educational benefits, an essential developmental task for students is to learn  
8 how to interact in socially appropriate ways. Social skills are invaluable in almost every  
9 interaction that a student encounters in the school environment, and are a prerequisite for  
10 academic learning since they involve self-regulation, the ability to give and receive help, and  
11 the skills of working with, listening to, and communicating with others. Students who lack  
12 these skills are likely to suffer socially, and to develop problem behaviors that impair their  
13 academic progress (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Classrooms  
14 provide excellent settings for targeting students' behavior, and teachers are natural  
15 implementers who can have a significant influence on their behavior (Greenwood,  
16 Kratochwill, & Clements, 2008; Reid, Webster-Stratton, & Beauchaine, 2001). However, the  
17 risk of developing behavioral problems may be increased in poorly managed classrooms  
18 (Conroy, Sutherland, Haydon, Stormont, & Harmon, 2009; Reid et al., 2001; Reinke,  
19 Herman, & Dong, 2016; Webster-Stratton et al., 2008).

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39 The Incredible Years (IY) Teacher Classroom Management (TCM) program aims to  
40 strengthen teachers' use of evidence-based classroom management strategies in order to  
41 reduce early-onset problem behavior and promote students' social competence. The IY TCM  
42 program has been the subject of comprehensive empirical examinations in various  
43 combinations with the IY parent and IY child programs: e.g. in Head Start centers with high-  
44 risk students, students from low socio-economic backgrounds, and in schools that receive a  
45 higher level of support in terms of pupil-teacher ratios, special school grants and extra support  
46 for students. Previous studies that measured child outcomes have been linked to reductions in  
47 conduct problems, aggression, hyperactivity and antisocial behavior, as well as improvements  
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4 in on-task behavior, increased prosocial behaviors and school readiness (Baker-Henningham,  
5 Scott, Jones, & Walker, 2012; Baker-Henningham, Walker, Powell, & Gardner, 2009; Reinke  
6 et al., 2016; Webster-Stratton et al., 2001; Webster-Stratton, Reid, & Hammond, 2004;  
7 Webster-Stratton et al., 2008). A few studies have also evaluated the impact of the IY TCM  
8 program as a stand-alone intervention aimed at changing student behavior. McGilloway et al.  
9 (2010) found that when teachers increased their use of positive IY TCM classroom  
10 management strategies in combination with reduced use of negative classroom management  
11 strategies, student behavior and socio-emotional adjustment improved, particularly among  
12 those considered initially to be at most risk. In addition, Hutchings, Daley, Jones, Martin, and  
13 Gwyn (2007) and Hutchings, Martin-Forbes, Daley, and Williams (2013) found significant  
14 reductions in the total number of commands (e.g. negative instructions) given to children,  
15 which in turn led to an increase in the rate of compliance (e.g. children paid more attention  
16 and were more likely to cooperate with their teachers), after the IY TCM intervention.  
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### 32 **The Norwegian school context**

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34 Norway has a mandatory school system for children aged six to sixteen. About 633  
35 000 students are enrolled in the primary and lower secondary schools. Of the 8% (68% boys)  
36 who receive special education, 39% received it as part of ordinary classes, and not in  
37 segregated settings. About 7% of the students have another first language than Norwegian and  
38 received special education in Norwegian in parallel with their ordinary education. The schools  
39 are divided into the categories small (< 200 students), medium (201-350 students) and large  
40 (351-780 students) (Statistics Norway, 2017). In primary school, the average ratio of students  
41 to teachers is 16:1. Schools are mostly public and free of charge, and the local authorities are  
42 responsible for primary and lower secondary education. The stages are based on a single  
43 national curriculum, which is based on the concept of equality, inclusion, and adapted  
44 education for all.  
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## The Current Study

Convincing findings have been found for the IY TCM program in 3- to 8-year-old children in various disadvantageous school settings, both in combination with the IY child and/or the IY parent program, and as a stand-alone intervention (Baker-Henningham et al., 2012; Baker-Henningham et al., 2009; Hutchings et al., 2007; Hutchings et al., 2013; McGilloway et al., 2010; Reinke et al., 2016; Webster-Stratton et al., 2001, 2004; Webster-Stratton et al., 2008). This study is one of the first universal preventive evaluations of the IY TCM program implemented as a school-wide intervention in 1<sup>st</sup> to 3<sup>rd</sup> grade to students aged 6 to 8 years. The training was delivered simultaneously to the entire first- to third-grade teaching staff, and to after-school service staff. We formulated the following hypotheses: the IY TCM program, when provided as a school-wide preventive intervention in a regular school setting would a) reduce the development of problem behavior and b) improve students' social competence. Group differences in the level of change in problem behavior and social competence that favored the students in the IY TCM group were anticipated.

## Method

### Participants

In connection to this study, the municipalities that had previously implemented the IY Parenting program were invited by IY Norway to participate in the study and to implement the IY TCM program. Employees in the education agencies were trained as IY TCM program group leaders, and informed the schools about the implementation and research study of the IY TCM program. Recruitment continued through five consecutive years, from fall 2009 to fall 2013. Twenty-four municipalities implemented the IY TCM program in total. Twenty-five schools from these municipalities applied to IY Norway to implement the program and participate in the study. As a part of the study inclusion criteria, readiness for program implementation with approval from at least 80% of the school staff, as well as agreement with

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4 school-wide implementation in the 1<sup>st</sup> to 3<sup>rd</sup> grades, needed to be met. Twenty-one of the 25  
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6 schools that applied satisfied the inclusion criteria. The IY TCM training was provided free of  
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8 charge. Four schools that did not meet the predefined inclusion criteria and were allocated to  
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10 the comparison group, were offered IY TCM implementation immediately the year after  
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12 participation. In order to minimize contamination of the program, 19 schools were recruited to  
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14 the comparison group from municipalities that had not implemented IY. These schools were  
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16 offered a modest financial compensation for not receiving the IY TCM training immediately.  
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18 On request, the municipalities and schools were given implementation support from IY  
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20 Norway after ended study period. The comparison group was matched with the IY TCM  
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22 group according to geographic location and school size. For the 43 schools included at pre-  
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24 assessment, mean class size were 19.7 ( $SD = 8.8$ ). None of the 43 schools were actively  
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26 attending or had attended any other evidence-based school behavior intervention programs  
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28 during the previous year. The flow of participants through each stage of the study is illustrated  
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30 in Figure 1.  
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34 <Insert Figure 1 here>  
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37 The number of teachers 1<sup>st</sup> to 3<sup>rd</sup> grade was 567. One teacher per class who was in  
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39 daily contact with the students was asked to participate as respondent. These resulted in 241  
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41 teachers; 139 in the intervention and 102 in the comparison group. The number of students in  
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43 the 1<sup>st</sup> to 3<sup>rd</sup> grades was 3,331. In order to reduce data dependency and to maximize the  
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45 effective sample size, as well as to limit teacher burden, a statistician, who was blind to the  
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47 characteristics of the schools (3rd author BHH), randomly selected seven students per class  
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49 for the assessment. For example, if a class consisted of 21 students, a random number  
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51 sequence list from 1-21 was generated electronically. Thereafter each teacher matched the  
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53 first seven random numbers from the list with the student's alphabetical order. This resulted  
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55 in 829 randomly selected students in the intervention and 689 randomly selected students in  
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4 the comparison group. Teachers who participated as respondents received a small financial  
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6 compensation for the time they spent on completing the questionnaires. A sub-sample of 83  
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8 students (6%) scored equal to or above the 90th percentile on the Sutter-Eyberg Student  
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10 Behavior Inventory-Revised (SESBI-R) scale ( $> 144$ ), which is equal to the clinical range.  
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12 The findings for the high-risk students are presented in Kirkhaug et al. (2016). Table 1  
13  
14 presents demographic information for the schools, teachers, and students in the study. Apart  
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16 from one significant difference between groups in terms of student ethnicity ( $p < .001$ ), none  
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18 of the other demographical variables showed significant group differences at the .05 level.  
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21 <Insert Table 1 here>  
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### 23 Procedure

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25 This study had a quasi-experimental pre-post design with a continuous enrollment of  
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27 intervention and comparison schools. Prior to the pre-assessment and the first IY TCM  
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29 training, information about the IY TCM program and data collection procedures was  
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31 presented to teachers and staff. Pre-assessment (Time 1) took place during the fall, one to  
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33 three weeks ahead of the first IY TCM training, and post-assessment (Time 2) was carried out  
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35 in the spring of the same academic year, one to three weeks after the final IY TCM training.  
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37 The period between the two assessments was typically between eight and nine months.  
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39 Parents were informed about the IY TCM program and the study, including the data  
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41 collection procedures, through written information or verbally during parent meetings, and  
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43 were requested to consent to their children's participation. Provided parental consent, the  
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45 teacher filled out questionnaires about the student. The questionnaires were only available in  
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47 Norwegian, so students whose parental did not speak Norwegian were excluded. The study  
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49 population included 5.5% non-Norwegians. In order to ensure confidentiality, the names of  
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51 the schools, teachers and students were anonymized using ID-codes. Parents could withdraw  
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4 their child from the study at any time without further explanation. The questionnaires were  
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6 returned in pre-paid envelopes or completed using the Internet survey tool Quest Back.  
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8 The study was approved by the Regional Committee for Medical and Health Research  
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10 Ethics, Norway. Approval/reference number: 200803705-7/MGA006/400.  
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### 12 **The Intervention**

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14 The IY TCM program was developed as a preventive intervention designed to  
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16 strengthen teacher's classroom management strategies in order to reduce early-onset problem  
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18 behavior, aggression and noncooperation in students, and promote students social competence  
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20 and school-readiness. A basic premise of IY TCM training is that positive teacher-student  
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22 interaction precedes effective teaching strategies, and that teachers' attention should be  
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24 directed far more frequently to positive student behaviors in classroom environments than to  
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26 negative behaviors (Webster-Stratton, 2012). Six topics are covered, with one workshop for  
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28 each topic, in which each workshop builds upon the content of the previous one, and are  
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30 delivered as follows: (i) building positive relationships between students and teacher; (ii)  
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32 teacher attention, coaching, encouragement and praise; (iii) motivating students through  
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34 incentives; (iv) reducing inappropriate behavior - ignoring and redirecting; (v) reducing  
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36 inappropriate behavior - follow-through with consequences; (vi) emotional regulation, social  
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38 skills, and problem solving. Two experienced and qualified group leaders trained the teachers  
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40 and staff simultaneously in groups (20 in each group), through six full-day workshops over an  
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42 eight- to nine- month period (about one workshop per month), 42 hours in total. The training  
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44 started in the fall and was completed during the following spring. Teachers were instructed to  
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46 practice the principles of the program during the month following each training session and to  
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48 report on their experiences at the start of the following session. The group leaders provided  
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50 teachers and staff with guidance during the month after each workshop. As part of the  
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52 training, the textbook; *How to Promote Social and Emotional Competence in Young Children*  
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(Webster-Stratton, 1999), was provided to teachers and staff. Fidelity in training was promoted by means of checklists completed by both group leader- and teacher, as instructed in the program manual, in order to ensure evidence-based implementation of the program (Webster-Stratton, 2011). Teachers also completed a user satisfaction questionnaire at the end of the training.

To become a qualified group leader, a 21-hour mandatory IY TCM training course provided by IY Norway had to be completed. A higher education qualification (bachelor's or master's degree) in teaching, special education, psychology, health, or social studies, in addition to suitable personal characteristics, were also required. To maintain approval as a qualified group leader, the group leaders have to deliver the training program at least once or twice (or in one or two schools, depending on school size) per year on average, which also was the requirement before they could complete the training for this study. All the group leaders were trained by the same two IY TCM mentors (certified in both the Parenting and the TCM program by the program originator), and supervised by the same two mentors through the data-acquisition period.

### Measures

The *Sutter-Eyberg Student Behavior Inventory-Revised* (SESBI-R; Eyberg, 1999) was used to evaluate the current frequency and severity of various student behaviors. The 38-item scale describes common behavior problems rated by teachers, such as “teases or provokes other students”; “has difficulty staying on task”; and “fails to listen to instructions”. On the Intensity Scale, the frequency of behaviors is rated using a seven-point Likert scale: 1 = never, 2 - 3 = seldom, 4 = sometimes, 5 - 6 = often, and 7 = always. On the Problem scale, teachers assess whether or not the behavior is currently a problem for the teacher using a yes-no (1 - 0) scale. The scores were summed across all items on both the Intensity scale (ranging from 38 to 266) and the Problem scale (ranging from 0 to 38). Clinical cut-off values were as

provided by Kirkhaug, Drugli, Mørch, and Handegård (2012). Cronbach's alphas for the baseline data were .97 for the Intensity scale and .95 for the Problem scale.

The *Teacher Report Form* (TRF; Achenbach & Rescorla, 2001) measures different behavioral difficulties, including the Aggression, Attention problem and Academic Performance subscales employed in this study. The TRF Academic Performance scale evaluates students' overall and current academic functioning, where teachers assess the student in six different academic subjects of the teacher's choosing, rating them on a scale from 1 to 5 (1 = far below average to 5 = far above average). The average of these scores constitutes the TRF Academic Performance score. In addition, teachers were asked to rate the degree of emotional and behavioral problems observed in students, either currently or during the past two months, using a 0 - 2 scale (0 = not true as far as you know; 1 = somewhat or sometimes true; 2 = very true or often true). For the TRF scores, Cronbach's alpha was calculated on the baseline data in this study. The alphas for the TRF Internalizing subscales in this study were 0.79 (Anxious/Depressed), 0.72 (Withdrawn/Depressed), and 0.53 (Somatic Complaints), while for the TRF Externalizing subscales, the alphas were 0.94 (Aggressive Behavior) and 0.83 (Rule-Breaking behavior). For TRF Attention Problem, the alpha was 0.91, for Social Problems 0.73, and for Thought Problems 0.77. Mean test-retest reliability was 0.90 across all TRF scales for US samples by Achenbach and Rescorla (2001).

We used the *Social Skills Rating System* (SSRS; Gresham & Elliott, 1990) version for the elementary school teacher, which contains 30 items, including subscales for Cooperation, Assertion and Self-Control. Cooperation comprises behaviors such as helping others, sharing and complying with rules, whereas assertion includes initiating behaviors, such as asking others for information and responding to the actions of others. Behaviors that emerge in conflict situations, such as responding appropriately to teasing, and behaviors that arise during non-conflict situations, such as taking turns and compromising, are including in the Self-

## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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4 Control subscale. The teachers rated how often each social skill occurred using a 1 - 4 scale  
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6 (1 = never to 4 = very often). The alphas were calculated using baseline data and were found  
7  
8 to be .91 for the Cooperation subscale, .88 for the Assertion subscale, and .87 for the Self-  
9  
10 Control subscale. The SSRS total score (ranging from 0 - 90) was computed across all items  
11  
12 and used in the analysis. The SSRS is a well-validated assessment tool and the test-retest  
13  
14 reliability of the SSRS has been found to be high (Elliott, Gresham, Freeman, & McCloskey,  
15  
16 1988; Ogden, 2003).  
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**Statistics**

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21 Before the main analysis was conducted, independent t-tests and Pearson's chi-  
22  
23 squared tests were used to test for group differences on demographic variables. The data were  
24  
25 hierarchically organized, with students (level 1) nested within teachers (level 2). Linear mixed  
26  
27 model (LMM) analysis was used to test for group differences on baseline scores, and for  
28  
29 group differences in change in student behavior from pre- to post-assessment, as this is a  
30  
31 suitable method for analyzing hierarchical data. Intra-class correlations (ICCs) were  
32  
33 calculated to estimate the degree of dependency within teacher that this clustering causes. ICC  
34  
35 calculations were based on change scores, since change scores were used as dependent  
36  
37 variables in the main analyses.  
38  
39

40  
41 In order to deal with missing data, multiple imputation was used for the analyses,  
42  
43 creating 20 complete sets of data. The imputation was performed on both pre- and post-  
44  
45 assessment student variables. The imputation model included demographic variables and all  
46  
47 relevant student variables. In the imputation of missing pre- and post-data, all other pre- and  
48  
49 post-student variables were used as predictors. Under the assumption of MAR (data missing  
50  
51 at random), performing multiple imputation of data is an appropriate and flexible way of  
52  
53 handling missing data and was therefore done in order to ensure that the pre- and post-  
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55 analyses reflected the entire student population that participated in this study (Stuart, Azur,  
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4 Frangakis, & Leaf, 2009). Effect sizes ( $d_w$ ) were computed as standardized group differences  
5  
6 in pre-post mean change using the pooled within-cluster sample standard deviation (Hedges,  
7  
8 2007). A significance level of .05 was adopted for all tests.  
9

## 10 **Results**

### 11 **Attrition**

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13 At pre-assessment, 227 (94%) of 241 teachers participated as respondents, and 1396  
14  
15 (92%) of 1518 possible students were included. Drop-out was due to lack of parental consent  
16  
17 or delayed arrival of consent forms from parents, as well as insufficiently completed  
18  
19 questionnaires, and amounted seven teachers and 85 students in the intervention, and seven  
20  
21 and 37 respectively in the comparison group. In both pre- and post-assessments, 212 (88%)  
22  
23 teachers and 1214 (80%) students were included. A different dropout pattern at post-  
24  
25 assessment was found between the conditions, in that, 167 students in the intervention and 15  
26  
27 students in the comparison group had missing data. Drop-out in the intervention group was  
28  
29 due to withdrawal of one school; which included seven teachers and 49 students, and teachers  
30  
31 on leave of absence or changing their jobs; these last included five teachers and 28 students.  
32  
33 Drop-outs were also due to missing replies, incomplete questionnaires, or protocol errors,  
34  
35 which resulted in a further 90 students missing in the intervention group, and three teachers  
36  
37 and 15 students in the comparison group (see Figure 1). When students who had missing data  
38  
39 at post-assessment were compared with students who had both pre- and post-assessment data,  
40  
41 students who had missing data at post-assessment differed significantly on SESBI-R Intensity  
42  
43 ( $t = -3.36, p = .02$ ), SESBI-R Problem ( $t = -2.24, p = .03$ ), and TRF Attention ( $t = -3.02, p$   
44  
45  $= .003$ ) at pre-assessment. However, no interaction effects between the intervention group and  
46  
47 the dropout group on outcome variables at pre-assessment were found, indicating that pre-  
48  
49 assessment differences in the dropout groups were similar in the intervention group and the  
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51 control group.  
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**Group effects in students' problem behavior measured with SESBI-R and TRF.**

There were no significant differences between the conditions at pre-assessment on SESBI-R scores. For group effects in student problem behavior measured with SESBI-R, significant group differences in pre-post change on SESBI-R Intensity and on SESBI-R Problem were found, although the effect sizes were small. Calculations of the intra-class correlations (ICC) suggested that 22% of the variance on SESBI-R Intensity and 14% of the variance on SESBI Problem might be due to clustering effects among teachers (see Table 2). When we test for moderating effects of the level of behavior problems (high/low), a significant interaction between treatment group and high-risk status on SESBI-R Intensity was detected. Study of this interaction showed a significantly higher treatment effect for high-risk students compared to those not in the high-risk group (9.9 point pre-post change difference,  $t = -2.13$ ,  $p = .03$ ).

For TRF scores, there were no significant differences between the conditions at pre-assessment. For group effects in students' behavioral difficulties measured with TRF, there was a significant group difference in pre-post change on TRF Total. Examination of the TRF subscales revealed significant group differences in pre-post change on Attention Problems, but not in change on Aggressive Behavior or on Academic Performance. For the TRF scores, the effect sizes were small. ICCs calculations on the TRF change scores ranged from 0.6 to 0.14 (see Table 2). The change scores on TRF Attention Problem also correlated highly with SESBI-R Intensity scores ( $r = .65$ ).

**Group effects on students' social competence measured with SSRS.**

There were significant differences between the conditions on the subscales SSRS Cooperation and Self-Control at pre-assessment (see Table 2). For group effects in social competence, a significant group difference in pre-post change on SSRS Total was found. The SSRS subscale results showed significant group differences in change on SSRS Cooperation

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4 and SSRS Self-control. The preventive effect sizes on the SSRS scores were higher than the  
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6 SESBI-R and the TRF scores, although, the effects were in the small range ( $d_w = 0.11 - 0.20$ ).  
7  
8 Calculations of the ICCs on SSRS change scores varied from 0.19 to 0.40 (see Table 2).  
9  
10 Testing for moderating effects of the level of behavior problems, as well as of grade and  
11  
12 gender, revealed a significant interaction between treatment group and grade on SSRS Total  
13  
14 ( $F = 3.26, p = .04$ ). While this interaction revealed a significantly larger treatment effect in 2<sup>nd</sup>  
15  
16 grade compared to 3<sup>rd</sup> grade ( $t = -2.55, p = .01$ ), the treatment effects in 1<sup>st</sup> grade compared to  
17  
18 the 2<sup>nd</sup> and 3<sup>rd</sup> grades were not significant. For further details about group differences in pre-  
19  
20 post changes, and the sizes of the effect, see Table 2.  
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23 <Insert Table 2 here>  
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### 26 Discussion

27  
28 The aim of this quasi-experimental pre-post control group study was to evaluate the  
29  
30 universal preventive impact of the Incredible Years Teacher Classroom Management  
31  
32 program. The program was implemented as a universal school-wide preventive intervention in  
33  
34 21 schools, with the aim of reducing the development of problem behavior and improving  
35  
36 social competence in students. Our first hypothesis, that the IY TCM program would reduce  
37  
38 the development of problem behavior, was to some extent supported. There was a significant  
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40 group difference in favor of the IY TCM group on the intensity of problem behavior, and a  
41  
42 moderation analysis indicated that the program had a larger effect on students with elevated  
43  
44 intensity scores at pre-assessment than on students with lower scores at pre-test. The total  
45  
46 score for change in social, emotional and behavioral problems, including the scores for the  
47  
48 subscale TRF Attention Problem, was significant, in favor of the IY TCM group. The  
49  
50 SESBI-R is a general measure of behavior problems, although Kirkhaug et al. (2012)  
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52 suggested that the SESBI-R has two separate, measurable factors, of which the first reflects  
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4 oppositional behavior and the second attentional difficulties. Hence, the finding for TRF Total  
5 corresponds with the findings for the SESBI-R Intensity scores.  
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9 The second hypothesis, that training teachers in the IY TCM program would improve  
10 student social competence, was also partially supported. However, the pre-assessment scores  
11 on SSRS Cooperation and Self-Control were less favorable in the IY TCM group than the  
12 comparison group, while the scores for both groups were almost equal at post-assessment.  
13  
14 The significance of the effects of the IY TCM on SSRS Cooperation and SSRS Self-Control  
15 might be questioned. The fact that the IY TCM schools applied for implementation in the  
16 program and participation in the study may explain this finding. The self-recruitment may be  
17 due to a need to address existing but general issues, and this may have led to a higher level of  
18 awareness when their students' behavior at pre-assessment was being evaluated. Whether the  
19 difference in change for SSRS Total is due to an actual effect of the program on social skills  
20 for students in the IY TCM group or to a regression towards the mean, may therefore be a  
21 matter of interpretation (Barnett, Van Der Pols, & Dobson, 2015; Shadish, Cook, &  
22 Campbell, 2002).  
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37 However, when the intensity of problem behavior is reduced among the high-risk  
38 group of students in a class, it seems fair to suggest that the whole class may have profited  
39 from a reduction in problem behavior in some students. The treatment effect on the intensity  
40 of problem behavior in the high-risk group of students was about 10 points higher than among  
41 the rest of the students. These changes may have positively affected the high-risk group of  
42 students own potential to learn as well as that of the students around them. Collectively, the  
43 students who dropped out between pre- and post-assessment scored less favorably on SESBI-  
44 R intensity, SESBI Problem and TRF Attention at pre-assessment. This could have reduced  
45 the overall effects of the intervention, since changes in the study were larger among students  
46 with elevated intensity scores at pre-assessment, compared to those with lower scores at pre-  
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4 test. Additionally, the main outcomes were more evident when the IY TCM program was  
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6 evaluated in a younger kindergarten cohort within the same study as ours where the children's  
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8 mean age was, 4.4 ( $SD = 0.9$ ) (Fossum, Handegård, & Britt Drugli, 2017), as compare to the  
9  
10 mean age for students in our study who was 7.3 ( $SD = 0.9$ ). In the Fossum, Handegård, and  
11  
12 Britt Drugli (2017) study, significant preventive effects on change in children's problem  
13  
14 behavior, aggressive behavior, internalization and attention problems, as well as improvement  
15  
16 in social competence were found.  
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20 Furthermore, unlike the IY Dina Dinosaur Social Skills and Problem Solving  
21  
22 Curriculum, the IY TCM training cover the socio-emotional curriculum only in one of the  
23  
24 training days. The effects of the TCM program have been shown to be more explicit when the  
25  
26 TCM training is carried out in combination with the Dina Dinosaur training, both in general,  
27  
28 and especially for children who initially scored high on problem behavior and low on social  
29  
30 competence (Webster-Stratton et al., 2008; Baker-Henningham, et al., 2009). However, when  
31  
32 interventions are examined in disadvantageous school settings, the effects are often greater  
33  
34 than effectiveness trials that are carried out in normal school settings (Durlak et al., 2011;  
35  
36 Weare & Nind, 2011). Most Norwegian students behave well (Nordahl, Mausethagen, &  
37  
38 Kostøl, 2009), and students in this study scored within the typical range of Norwegian  
39  
40 children on problem behavior. Mean scores in the Kirkhaug et al. (2012) study on SESBI-R  
41  
42 Intensity ( $M = 83.8$ ,  $SD = 38.6$ ), and mean scores in Larsson (2011) study on TRF Total  
43  
44 ( $M = 15.5$ ,  $SD = 19.0$ ) were less favorable, than compared to the mean SESBI-R Intensity  
45  
46 scores ( $M = 78.7$ ,  $SD = 34.1$ ) and the mean TRF Total scores ( $M = 10.0$ ,  $SD = 16.0$ ) in our  
47  
48 study. The implementation of the program was also naturalistic and with restricted control  
49  
50 regarding fidelity of the intervention. Large effect sizes were therefore not to be expected.  
51  
52 Our effect sizes were in the range of 0.08 to 0.20, yet even small effects in statistical terms  
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54 may lead to improvements in the ability of students to engage in positive relationships with  
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4 their schools, which in itself is known to be a protective factor against long-term behavioral  
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6 problems. Thus, these small effects may have practical importance for many students in the  
7  
8 long run (Weare & Nind, 2011). Higher levels of fidelity and implementation monitoring may  
9  
10 improve the findings, which could in turn strengthen the preventive effects of IY TCM in  
11  
12 regular school settings in Norway (Durlak & DuPre, 2008; Greenberg & Abenavoli, 2017;  
13  
14 Sørli & Ogden, 2015).

### 17 **Limitations**

19 This study has a number of limitations that need to be taken into consideration. First,  
20  
21 the implementation of the IY TCM program was dependent on locally available and qualified  
22  
23 group leaders. Since extensive predefined criteria for the implementation of the TCM  
24  
25 program, as recommended by IY Norway, had to be fulfilled before study participation,  
26  
27 schools needed to apply to IY Norway for program implementation. The recruitment of  
28  
29 intervention schools was therefore based entirely on applications from individual schools.  
30  
31 This meant that a truly randomized, controlled trial was difficult to achieve. In order to  
32  
33 minimize threats to validity such as diffusion (contamination), recruitment of schools to the  
34  
35 comparison group was carried out in municipalities that lacked IY implementation. The  
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37 schools in the intervention group received the IY TCM program free, whereas the schools in  
38  
39 the comparison group received a minor financial compensation instead of implementation of  
40  
41 the program. The situation for the comparison schools was therefore different from that of the  
42  
43 IY TCM schools. Slightly elevated pre-scores in the intervention group suggests that some of  
44  
45 the schools which sent a request for implementation of the program (self-recruitment) may  
46  
47 have realized that they had issues with student behavior and that they could benefit from  
48  
49 implementing the IY TCM program. Hence, a potential selection threat due to the sampling  
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51 strategy may have affected our results. An alternative design might have been a step-wedge  
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4 design, but that was discarded because it would have resulted in an excessive burden for the  
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6 participants.

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8 Secondly, the implementation process was partly in the hands of the local authorities  
9  
10 involved, and access to information about the fidelity was not accessible, due to practical  
11  
12 limitations. The Norwegian Directorate of Health funds the IY Norway, and the authorities  
13  
14 meet expenses in connection with organizing curriculum, groups and training of group  
15  
16 leaders. At the time of the study, the fundraiser wished clear boundaries to exist between the  
17  
18 implementation of IY TCM in Norway and its research projects, in order to facilitate the  
19  
20 independence of research and implementation. This made it difficult to collect valid data from  
21  
22 the implementation process, and we cannot know for certain whether the program was  
23  
24 delivered in a less than optimal manner than required by the manual.  
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27  
28 Third, it is a significant limitation that teachers were the only source of reports of  
29  
30 student behavior. Changes may therefore reflect teachers' perceptions rather than actual  
31  
32 changes in behavior. However, teacher observations of students in the classroom or in the  
33  
34 school environment may reveal difficulties that cannot be observed otherwise or elsewhere.  
35  
36 Teachers are also able to compare their students with other students of the same age and  
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38 developmental level, and are important informants regarding how well students function at  
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40 school (Lurie, 2006). Nevertheless, observational data would have improved the robustness of  
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42 the study and the findings.  
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45 Fourth, a different dropout pattern between the intervention and comparison  
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47 conditions was found. However, interaction effects between the intervention group and the  
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49 dropout group on outcome variables at pre-assessment were not confirmed. The situation of  
50  
51 the comparison schools was different from that of the IY TCM schools, which may have  
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53 encouraged more sustained participation at post-assessment. In order to compensate for the  
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55 missing data, multiple imputation was used to ensure that the pre-post analyses reflected the  
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4 whole of the student population that participated in this study. Analyses performed on  
5  
6 imputed data are relatively stringent, and our tests confirmed the results of the LMM analyses  
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8 of the original data, which improves the generalizability of the findings (Stuart et al., 2009).  
9

10 Finally, there was no long-term follow-up in this study, therefore, no evidence as to  
11  
12 whether changes in student behavior would be sustained in the future. Furthermore, the short  
13  
14 pre-post intervention period may have limited the opportunity for teachers to implement  
15  
16 everything they had learned from the IY TCM training. Previous research suggests that  
17  
18 behavioral changes realized through classroom interventions may take longer to develop than  
19  
20 those achieved in clinical settings; thus, preventive school-wide interventions may need to be  
21  
22 implemented consistently over time in order to produce more convincing outcomes (Sørli &  
23  
24 Ogden, 2015; Weare & Nind, 2011).  
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### 28 **Conclusions and Implications for School Practice**

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30 The findings from this study may provide important implications for promoting  
31  
32 effective classroom environments in school. The IY TCM program was delivered as a school-  
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34 wide universal preventive intervention simultaneously to the entire group of students with  
35  
36 varying degrees of risk and within a limited period of time, hence, large effect sizes were not  
37  
38 expected (Greenberg & Abenavoli, 2017). Differential effects from universal preventive  
39  
40 school interventions may also be due to differences in implementation quality (Sørli &  
41  
42 Ogden, 2015), which may explain the lack of more robust findings in our study. To ensure  
43  
44 positive program effects and sufficient implementation support, continuous monitoring of  
45  
46 factors that contribute to sustained implementation quality, as well as strategies to develop  
47  
48 effective partnerships between educational practitioners and local authorities (e.g. the local  
49  
50 Educational and Psychological Counseling Service), are needed. Decisions by politicians and  
51  
52 school administrators on issues regarding the implementation of evidence-based universal  
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54 preventive interventions in schools are therefore an important issue. Findings in the present  
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4 study may suggest that the IY TCM program delivered as a school-wide universal preventive  
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6 intervention, provides an opportunity to influence all students effectively, including students  
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8 initially most at risk for developing problem behavior, compared to interventions that address  
9  
10 only a limited group of teachers, classes or students (Durlak et al., 2011; Greenberg &  
11  
12 Abenavoli, 2017).

### 15 **Future Research**

16  
17 The quality of teacher-student relationships has been shown to have a significant  
18  
19 influence on students' learning and to play an important role in their functioning, both  
20  
21 academically and socially (Baker, 2006; Drugli et al., 2011). Moreover, teachers' involvement  
22  
23 with parents and parents' ability to collaborate with teachers have also been shown to be  
24  
25 important predictors of student functioning and achievement at school (Desforges &  
26  
27 Abouchaar, 2003; Webster-Stratton et al., 2008; Wyrick & Rudasill, 2009). The IY TCM  
28  
29 training directly targets teachers rather than students; thus, our findings may reflect the  
30  
31 reasonable assumption that changes in student behavior result from changes in teacher  
32  
33 behavior. Whether training teachers in the IY TCM program led to change in teacher-student  
34  
35 relationships and parent involvement as well as to changes in teacher behavior after  
36  
37 implementation of the IY TCM program will be examined in future analyses. Prevention  
38  
39 effects often emerge after some delay, clearly, long-term follow-up is required in future  
40  
41 research in order to detect sustained preventive impact of the program, as well as, whether  
42  
43 enhanced implementation quality would improve effects of the program.  
44  
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46

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## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

1

Evaluation of the Incredible Years Teacher Classroom Management Program in a regular  
Norwegian school setting

## Abstract

This study examined whether the Incredible Years (IY) Teacher Classroom Management (TCM) program implemented as a school-wide preventive intervention at 1<sup>st</sup> to 3<sup>rd</sup> grade in a regular school setting reduces the development of problem behavior and improve social competence. Using a quasi-experimental pre-post design, the IY TCM was implemented in 21 schools and compared with 22 matched schools that did not receive the program. A total of 241 1<sup>st</sup> to 3<sup>rd</sup> grade teachers and 1,518 students aged 6 to 8 years took part in the trial. Mixed-model analyses found small positive effects on changes in students' social competence ( $d_w = 0.19$ ), while effects on change in students problem behavior were less than small ( $d_w < 0.20$ ). When the program is implemented as school-wide universal preventive intervention, results suggest a small preventive impact of the IY TCM program in regular school settings for some of the outcomes measured in the study.

Keywords:

Problem behavior, Social competence, School-wide, Prevention

## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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Evaluation of the Incredible Years Teacher Classroom Management Program in a Regular  
Norwegian School Setting

Behavioral problems in school are associated with educational and social disadvantages and are one of the most prevalent, severe, and persistent problems that inhibit the realization of students' abilities. Such problems may have both immediate and long-term consequences for the student, including such as underachievement, mental health problems, school dropout, future unemployment, and general social exclusion (Ford et al., 2012; Scott, Knapp, Henderson, & Maughan, 2001). There are huge costs to the public sector associated with behavioral problems, particularly in the education system (Snell et al., 2013). Measures aimed at preventing and reducing problem behavior and coping issues are central to ensuring that all students experience optimal development and positive learning outcomes at school. Preventive interventions in school settings can be of great importance as public health interventions (Ford et al., 2012). Dysfunctional patterns of family interaction often translate into problems at school, underlining the need to target behavioral problems not only at home but also in day-care and school settings (Drugli & Larsson, 2006; Fossum, Handegård, Martinussen, & Mørch, 2008; Ramsey, Patterson, & Walker, 1990). Students who exhibit problem behavior frequently go off-task, display aggression towards others, or refuse to cooperate, all of which adversely affects their own learning potential as well as that of the students around them (Bartlett, Holditch-Davis, Belyea, Halpern, & Beeber, 2006; Efrati, Virtzer & Margalit, 2009; Moffitt & Scott, 2009). Students' oppositional and negative behavior may be reinforced by teachers' ineffective classroom behavior management practices, where the teacher is trapped into coercive exchanges with the student because of compliance to students' demands (Patterson, Reid, & Dishion, 1992; Webster-Stratton, Reid, & Hammond, 2001; Webster-Stratton, Reid, & Stoolmiller, 2008).

## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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4 Social competence, emotional self-regulation, and absence of problem behavior are  
5 important components of the foundations of interpersonal adjustment and academic success  
6 (Drugli, Klökner, & Larsson, 2011; Snyder et al., 2011; Webster-Stratton et al., 2008). In  
7 addition to their educational benefits, an essential developmental task for students is to learn  
8 how to interact in socially appropriate ways. Social skills are invaluable in almost every  
9 interaction that a student encounters in the school environment, and are a prerequisite for  
10 academic learning since they involve self-regulation, the ability to give and receive help, and  
11 the skills of working with, listening to, and communicating with others. Students who lack  
12 these skills are likely to suffer socially, and to develop problem behaviors that impair their  
13 academic progress (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Classrooms  
14 provide excellent settings for targeting students' behavior, and teachers are natural  
15 implementers who can have a significant influence on their behavior (Greenwood,  
16 Kratochwill, & Clements, 2008; Reid, Webster-Stratton, & Beauchaine, 2001). However, the  
17 risk of developing behavioral problems may be increased in poorly managed classrooms  
18 (Conroy, Sutherland, Haydon, Stormont, & Harmon, 2009; Reid et al., 2001; Reinke,  
19 Herman, & Dong, 2016; Webster-Stratton et al., 2008).

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39 The Incredible Years (IY) Teacher Classroom Management (TCM) program aims to  
40 strengthen teachers' use of evidence-based classroom management strategies in order to  
41 reduce early-onset problem behavior and promote students' social competence. The IY TCM  
42 program has been the subject of comprehensive empirical examinations in various  
43 combinations with the IY parent and IY child programs: e.g. in Head Start centers with high-  
44 risk students, students from low socio-economic backgrounds, and in schools that receive a  
45 higher level of support in terms of pupil-teacher ratios, special school grants and extra support  
46 for students. Previous studies that measured child outcomes have been linked to reductions in  
47 conduct problems, aggression, hyperactivity and antisocial behavior, as well as improvements  
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4 in on-task behavior, increased prosocial behaviors and school readiness (Baker-Henningham,  
5 Scott, Jones, & Walker, 2012; Baker-Henningham, Walker, Powell, & Gardner, 2009; Reinke  
6 et al., 2016; Webster-Stratton et al., 2001; Webster-Stratton, Reid, & Hammond, 2004;  
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8 Webster-Stratton et al., 2008). A few studies have also evaluated the impact of the IY TCM  
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10 program as a stand-alone intervention aimed at changing student behavior. McGilloway et al.  
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12 (2010) found that when teachers increased their use of positive IY TCM classroom  
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14 management strategies in combination with reduced use of negative classroom management  
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16 strategies, student behavior and socio-emotional adjustment improved, particularly among  
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18 those considered initially to be at most risk. In addition, Hutchings, Daley, Jones, Martin, and  
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20 Gwyn (2007) and Hutchings, Martin-Forbes, Daley, and Williams (2013) found significant  
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22 reductions in the total number of commands (e.g. negative instructions) given to children,  
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24 which in turn led to an increase in the rate of compliance (e.g. children paid more attention  
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26 and were more likely to cooperate with their teachers), after the IY TCM intervention.  
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### 32 **The Norwegian school context**

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34 Norway has a mandatory school system for children aged six to sixteen. About 633  
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36 000 students are enrolled in the primary and lower secondary schools. Of the 8% (68% boys)  
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38 who receive special education, 39% received it as part of ordinary classes, and not in  
39  
40 segregated settings. About 7% of the students have another first language than Norwegian and  
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42 received special education in Norwegian in parallel with their ordinary education. The schools  
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44 are divided into the categories small (< 200 students), medium (201-350 students) and large  
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46 (351-780 students) (Statistics Norway, 2017). In primary school, the average ratio of students  
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48 to teachers is 16:1. Schools are mostly public and free of charge, and the local authorities are  
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50 responsible for primary and lower secondary education. The stages are based on a single  
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52 national curriculum, which is based on the concept of equality, inclusion, and adapted  
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54 education for all.  
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## The Current Study

Convincing findings have been found for the IY TCM program in 3- to 8-year-old children in various disadvantageous school settings, both in combination with the IY child and/or the IY parent program, and as a stand-alone intervention (Baker-Henningham et al., 2012; Baker-Henningham et al., 2009; Hutchings et al., 2007; Hutchings et al., 2013; McGilloway et al., 2010; Reinke et al., 2016; Webster-Stratton et al., 2001, 2004; Webster-Stratton et al., 2008). This study is one of the first universal preventive evaluations of the IY TCM program implemented as a school-wide intervention in 1<sup>st</sup> to 3<sup>rd</sup> grade to students aged 6 to 8 years. The training was delivered simultaneously to the entire first- to third-grade teaching staff, and to after-school service staff. We formulated the following hypotheses: the IY TCM program, when provided as a school-wide preventive intervention in a regular school setting would a) reduce the development of problem behavior and b) improve students' social competence. Group differences in the level of change in problem behavior and social competence that favored the students in the IY TCM group were anticipated.

## Method

### Participants

In connection to this study, the municipalities that had previously implemented the IY Parenting program were invited by IY Norway to participate in the study and to implement the IY TCM program. Employees in the education agencies were trained as IY TCM program group leaders, and informed the schools about the implementation and research study of the IY TCM program. Recruitment continued through five consecutive years, from fall 2009 to fall 2013. Twenty-four municipalities implemented the IY TCM program in total. Twenty-five schools from these municipalities applied to IY Norway to implement the program and participate in the study. As a part of the study inclusion criteria, readiness for program implementation with approval from at least 80% of the school staff, as well as agreement with

## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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4 school-wide implementation in the 1<sup>st</sup> to 3<sup>rd</sup> grades, needed to be met. Twenty-one of the 25  
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6 schools that applied satisfied the inclusion criteria. The IY TCM training was provided free of  
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8 charge. Four schools that did not meet the predefined inclusion criteria and were allocated to  
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10 the comparison group, were offered IY TCM implementation immediately the year after  
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12 participation. In order to minimize contamination of the program, 19 schools were recruited to  
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14 the comparison group from municipalities that had not implemented IY. These schools were  
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16 offered a modest financial compensation for not receiving the IY TCM training immediately.  
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18 On request, the municipalities and schools were given implementation support from IY  
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20 Norway after ended study period. The comparison group was matched with the IY TCM  
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22 group according to geographic location and school size. For the 43 schools included at pre-  
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24 assessment, mean class size were 19.7 ( $SD = 8.8$ ). None of the 43 schools were actively  
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26 attending or had attended any other evidence-based school behavior intervention programs  
27  
28 during the previous year. The flow of participants through each stage of the study is illustrated  
29  
30 in Figure 1.  
31  
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33

34 <Insert Figure 1 here>  
35

36  
37 The number of teachers 1<sup>st</sup> to 3<sup>rd</sup> grade was 567. One teacher per class who was in  
38  
39 daily contact with the students was asked to participate as respondent. These resulted in 241  
40  
41 teachers; 139 in the intervention and 102 in the comparison group. The number of students in  
42  
43 the 1<sup>st</sup> to 3<sup>rd</sup> grades was 3,331. In order to reduce data dependency and to maximize the  
44  
45 effective sample size, as well as to limit teacher burden, a statistician, who was blind to the  
46  
47 characteristics of the schools (3rd author BHH), randomly selected seven students per class  
48  
49 for the assessment. For example, if a class consisted of 21 students, a random number  
50  
51 sequence list from 1-21 was generated electronically. Thereafter each teacher matched the  
52  
53 first seven random numbers from the list with the student's alphabetical order. This resulted  
54  
55 in 829 randomly selected students in the intervention and 689 randomly selected students in  
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## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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4 the comparison group. Teachers who participated as respondents received a small financial  
5  
6 compensation for the time they spent on completing the questionnaires. A sub-sample of 83  
7  
8 students (6%) scored equal to or above the 90th percentile on the Sutter-Eyberg Student  
9  
10 Behavior Inventory-Revised (SESBI-R) scale ( $> 144$ ), which is equal to the clinical range.  
11  
12 The findings for the high-risk students are presented in Kirkhaug et al. (2016). Table 1  
13  
14 presents demographic information for the schools, teachers, and students in the study. Apart  
15  
16 from one significant difference between groups in terms of student ethnicity ( $p < .001$ ), none  
17  
18 of the other demographical variables showed significant group differences at the .05 level.  
19  
20

21 <Insert Table 1 here>  
22

### 23 Procedure

24  
25 This study had a quasi-experimental pre-post design with a continuous enrollment of  
26  
27 intervention and comparison schools. Prior to the pre-assessment and the first IY TCM  
28  
29 training, information about the IY TCM program and data collection procedures was  
30  
31 presented to teachers and staff. Pre-assessment (Time 1) took place during the fall, one to  
32  
33 three weeks ahead of the first IY TCM training, and post-assessment (Time 2) was carried out  
34  
35 in the spring of the same academic year, one to three weeks after the final IY TCM training.  
36  
37 The period between the two assessments was typically between eight and nine months.  
38  
39 Parents were informed about the IY TCM program and the study, including the data  
40  
41 collection procedures, through written information or verbally during parent meetings, and  
42  
43 were requested to consent to their children's participation. Provided parental consent, the  
44  
45 teacher filled out questionnaires about the student. The questionnaires were only available in  
46  
47 Norwegian, so students whose parental did not speak Norwegian were excluded. The study  
48  
49 population included 5.5% non-Norwegians. In order to ensure confidentiality, the names of  
50  
51 the schools, teachers and students were anonymized using ID-codes. Parents could withdraw  
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4 their child from the study at any time without further explanation. The questionnaires were  
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6 returned in pre-paid envelopes or completed using the Internet survey tool Quest Back.  
7

8 The study was approved by the Regional Committee for Medical and Health Research  
9  
10 Ethics, Norway. Approval/reference number: 200803705-7/MGA006/400.  
11  
12

### 13 **The Intervention**

14  
15 The IY TCM program was developed as a preventive intervention designed to  
16  
17 strengthen teacher's classroom management strategies in order to reduce early-onset problem  
18  
19 behavior, aggression and noncooperation in students, and promote students social competence  
20  
21 and school-readiness. A basic premise of IY TCM training is that positive teacher-student  
22  
23 interaction precedes effective teaching strategies, and that teachers' attention should be  
24  
25 directed far more frequently to positive student behaviors in classroom environments than to  
26  
27 negative behaviors (Webster-Stratton, 2012). Six topics are covered, with one workshop for  
28  
29 each topic, in which each workshop builds upon the content of the previous one, and are  
30  
31 delivered as follows: (i) building positive relationships between students and teacher; (ii)  
32  
33 teacher attention, coaching, encouragement and praise; (iii) motivating students through  
34  
35 incentives; (iv) reducing inappropriate behavior - ignoring and redirecting; (v) reducing  
36  
37 inappropriate behavior - follow-through with consequences; (vi) emotional regulation, social  
38  
39 skills, and problem solving. Two experienced and qualified group leaders trained the teachers  
40  
41 and staff simultaneously in groups (20 in each group), through six full-day workshops over an  
42  
43 eight- to nine- month period (about one workshop per month), 42 hours in total. The training  
44  
45 started in the fall and was completed during the following spring. Teachers were instructed to  
46  
47 practice the principles of the program during the month following each training session and to  
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49 report on their experiences at the start of the following session. The group leaders provided  
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51 teachers and staff with guidance during the month after each workshop. As part of the  
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53 training, the textbook; *How to Promote Social and Emotional Competence in Young Children*  
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## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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(Webster-Stratton, 1999), was provided to teachers and staff. Fidelity in training was promoted by means of checklists completed by both group leader- and teacher, as instructed in the program manual, in order to ensure evidence-based implementation of the program (Webster-Stratton, 2011). Teachers also completed a user satisfaction questionnaire at the end of the training.

To become a qualified group leader, a 21-hour mandatory IY TCM training course provided by IY Norway had to be completed. A higher education qualification (bachelor's or master's degree) in teaching, special education, psychology, health, or social studies, in addition to suitable personal characteristics, were also required. To maintain approval as a qualified group leader, the group leaders have to deliver the training program at least once or twice (or in one or two schools, depending on school size) per year on average, which also was the requirement before they could complete the training for this study. All the group leaders were trained by the same two IY TCM mentors (certified in both the Parenting and the TCM program by the program originator), and supervised by the same two mentors through the data-acquisition period.

### Measures

The *Sutter-Eyberg Student Behavior Inventory-Revised* (SESBI-R; Eyberg, 1999) was used to evaluate the current frequency and severity of various student behaviors. The 38-item scale describes common behavior problems rated by teachers, such as “teases or provokes other students”; “has difficulty staying on task”; and “fails to listen to instructions”. On the Intensity Scale, the frequency of behaviors is rated using a seven-point Likert scale: 1 = never, 2 - 3 = seldom, 4 = sometimes, 5 - 6 = often, and 7 = always. On the Problem scale, teachers assess whether or not the behavior is currently a problem for the teacher using a yes-no (1 - 0) scale. The scores were summed across all items on both the Intensity scale (ranging from 38 to 266) and the Problem scale (ranging from 0 to 38). Clinical cut-off values were as

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4 provided by Kirkhaug, Drugli, Mørch, and Handegård (2012). Cronbach's alphas for the  
5  
6 baseline data were .97 for the Intensity scale and .95 for the Problem scale.  
7

8  
9 The *Teacher Report Form* (TRF; Achenbach & Rescorla, 2001) measures different  
10 behavioral difficulties, including the Aggression, Attention problem and Academic  
11 Performance subscales employed in this study. The TRF Academic Performance scale  
12 evaluates students' overall and current academic functioning, where teachers assess the  
13 student in six different academic subjects of the teacher's choosing, rating them on a scale  
14 from 1 to 5 (1 = far below average to 5 = far above average). The average of these scores  
15 constitutes the TRF Academic Performance score. In addition, teachers were asked to rate the  
16 degree of emotional and behavioral problems observed in students, either currently or during  
17 the past two months, using a 0 - 2 scale (0 = not true as far as you know; 1 = somewhat or  
18 sometimes true; 2 = very true or often true). For the TRF scores, Cronbach's alpha was  
19 calculated on the baseline data in this study. The alphas for the TRF Internalizing subscales in  
20 this study were 0.79 (Anxious/Depressed), 0.72 (Withdrawn/Depressed), and 0.53 (Somatic  
21 Complaints), while for the TRF Externalizing subscales, the alphas were 0.94 (Aggressive  
22 Behavior) and 0.83 (Rule-Breaking behavior). For TRF Attention Problem, the alpha was  
23 0.91, for Social Problems 0.73, and for Thought Problems 0.77. Mean test-retest reliability  
24 was 0.90 across all TRF scales for US samples by Achenbach and Rescorla (2001).  
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43 We used the *Social Skills Rating System* (SSRS; Gresham & Elliott, 1990 ) version for  
44 the elementary school teacher, which contains 30 items, including subscales for Cooperation,  
45 Assertion and Self-Control. Cooperation comprises behaviors such as helping others, sharing  
46 and complying with rules, whereas assertion includes initiating behaviors, such as asking  
47 others for information and responding to the actions of others. Behaviors that emerge in  
48 conflict situations, such as responding appropriately to teasing, and behaviors that arise during  
49 non-conflict situations, such as taking turns and compromising, are including in the Self-  
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Control subscale. The teachers rated how often each social skill occurred using a 1 - 4 scale (1 = never to 4 = very often). The alphas were calculated using baseline data and were found to be .91 for the Cooperation subscale, .88 for the Assertion subscale, and .87 for the Self-Control subscale. The SSRS total score (ranging from 0 - 90) was computed across all items and used in the analysis. The SSRS is a well-validated assessment tool and the test-retest reliability of the SSRS has been found to be high (Elliott, Gresham, Freeman, & McCloskey, 1988; Ogden, 2003).

**Statistics**

Before the main analysis was conducted, independent t-tests and Pearson's chi-squared tests were used to test for group differences on demographic variables. The data were hierarchically organized, with students (level 1) nested within teachers (level 2). Linear mixed model (LMM) analysis was used to test for group differences on baseline scores, and for group differences in change in student behavior from pre- to post-assessment, as this is a suitable method for analyzing hierarchical data. Intra-class correlations (ICCs) were calculated to estimate the degree of dependency within teacher that this clustering causes. ICC calculations were based on change scores, since change scores were used as dependent variables in the main analyses.

In order to deal with missing data, multiple imputation was used for the analyses, creating 20 complete sets of data. The imputation was performed on both pre- and post-assessment student variables. The imputation model included demographic variables and all relevant student variables. In the imputation of missing pre- and post-data, all other pre- and post-student variables were used as predictors. Under the assumption of MAR (data missing at random), performing multiple imputation of data is an appropriate and flexible way of handling missing data and was therefore done in order to ensure that the pre- and post-analyses reflected the entire student population that participated in this study (Stuart, Azur,

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4 Frangakis, & Leaf, 2009). Effect sizes ( $d_w$ ) were computed as standardized group differences  
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6 in pre-post mean change using the pooled within-cluster sample standard deviation (Hedges,  
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8 2007). A significance level of .05 was adopted for all tests.  
9

## 10 **Results**

### 11 **Attrition**

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15 At pre-assessment, 227 (94%) of 241 teachers participated as respondents, and 1396  
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17 (92%) of 1518 possible students were included. Drop-out was due to lack of parental consent  
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19 or delayed arrival of consent forms from parents, as well as insufficiently completed  
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21 questionnaires, and amounted seven teachers and 85 students in the intervention, and seven  
22  
23 and 37 respectively in the comparison group. In both pre- and post-assessments, 212 (88%)  
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25 teachers and 1214 (80%) students were included. A different dropout pattern at post-  
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27 assessment was found between the conditions, in that, 167 students in the intervention and 15  
28  
29 students in the comparison group had missing data. Drop-out in the intervention group was  
30  
31 due to withdrawal of one school; which included seven teachers and 49 students, and teachers  
32  
33 on leave of absence or changing their jobs; these last included five teachers and 28 students.  
34  
35 Drop-outs were also due to missing replies, incomplete questionnaires, or protocol errors,  
36  
37 which resulted in a further 90 students missing in the intervention group, and three teachers  
38  
39 and 15 students in the comparison group (see Figure 1). When students who had missing data  
40  
41 at post-assessment were compared with students who had both pre- and post-assessment data,  
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43 students who had missing data at post-assessment differed significantly on SESBI-R Intensity  
44  
45 ( $t = -3.36, p = .02$ ), SESBI-R Problem ( $t = -2.24, p = .03$ ), and TRF Attention ( $t = -3.02, p$   
46  
47  $= .003$ ) at pre-assessment. However, no interaction effects between the intervention group and  
48  
49 the dropout group on outcome variables at pre-assessment were found, indicating that pre-  
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51 assessment differences in the dropout groups were similar in the intervention group and the  
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53 control group.  
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**Group effects in students' problem behavior measured with SESBI-R and TRF.**

There were no significant differences between the conditions at pre-assessment on SESBI-R scores. For group effects in student problem behavior measured with SESBI-R, significant group differences in pre-post change on SESBI-R Intensity and on SESBI-R Problem were found, although the effect sizes were small. Calculations of the intra-class correlations (ICC) suggested that 22% of the variance on SESBI-R Intensity and 14% of the variance on SESBI Problem might be due to clustering effects among teachers (see Table 2). When we test for moderating effects of the level of behavior problems (high/low), a significant interaction between treatment group and high-risk status on SESBI-R Intensity was detected. Study of this interaction showed a significantly higher treatment effect for high-risk students compared to those not in the high-risk group (9.9 point pre-post change difference,  $t = -2.13$ ,  $p = .03$ ).

For TRF scores, there were no significant differences between the conditions at pre-assessment. For group effects in students' behavioral difficulties measured with TRF, there was a significant group difference in pre-post change on TRF Total. Examination of the TRF subscales revealed significant group differences in pre-post change on Attention Problems, but not in change on Aggressive Behavior or on Academic Performance. For the TRF scores, the effect sizes were small. ICCs calculations on the TRF change scores ranged from 0.6 to 0.14 (see Table 2). The change scores on TRF Attention Problem also correlated highly with SESBI-R Intensity scores ( $r = .65$ ).

**Group effects on students' social competence measured with SSRS.**

There were significant differences between the conditions on the subscales SSRS Cooperation and Self-Control at pre-assessment (see Table 2). For group effects in social competence, a significant group difference in pre-post change on SSRS Total was found. The SSRS subscale results showed significant group differences in change on SSRS Cooperation

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4 and SSRS Self-control. The preventive effect sizes on the SSRS scores were higher than the  
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6 SESBI-R and the TRF scores, although, the effects were in the small range ( $d_w = 0.11 - 0.20$ ).  
7  
8 Calculations of the ICCs on SSRS change scores varied from 0.19 to 0.40 (see Table 2).  
9  
10 Testing for moderating effects of the level of behavior problems, as well as of grade and  
11  
12 gender, revealed a significant interaction between treatment group and grade on SSRS Total  
13  
14 ( $F = 3.26, p = .04$ ). While this interaction revealed a significantly larger treatment effect in 2<sup>nd</sup>  
15  
16 grade compared to 3<sup>rd</sup> grade ( $t = -2.55, p = .01$ ), the treatment effects in 1<sup>st</sup> grade compared to  
17  
18 the 2<sup>nd</sup> and 3<sup>rd</sup> grades were not significant. For further details about group differences in pre-  
19  
20 post changes, and the sizes of the effect, see Table 2.  
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23  
24 <Insert Table 2 here>  
25

### 26 Discussion

27  
28 The aim of this quasi-experimental pre-post control group study was to evaluate the  
29  
30 universal preventive impact of the Incredible Years Teacher Classroom Management  
31  
32 program. The program was implemented as a universal school-wide preventive intervention in  
33  
34 21 schools, with the aim of reducing the development of problem behavior and improving  
35  
36 social competence in students. Our first hypothesis, that the IY TCM program would reduce  
37  
38 the development of problem behavior, was to some extent supported. There was a significant  
39  
40 group difference in favor of the IY TCM group on the intensity of problem behavior, and a  
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42 moderation analysis indicated that the program had a larger effect on students with elevated  
43  
44 intensity scores at pre-assessment than on students with lower scores at pre-test. The total  
45  
46 score for change in social, emotional and behavioral problems, including the scores for the  
47  
48 subscale TRF Attention Problem, was significant, in favor of the IY TCM group. The  
49  
50 SESBI-R is a general measure of behavior problems, although Kirkhaug et al. (2012)  
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52 suggested that the SESBI-R has two separate, measurable factors, of which the first reflects  
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4 oppositional behavior and the second attentional difficulties. Hence, the finding for TRF Total  
5 corresponds with the findings for the SESBI-R Intensity scores.  
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8         The second hypothesis, that training teachers in the IY TCM program would improve  
9 student social competence, was also partially supported. However, the pre-assessment scores  
10 on SSRS Cooperation and Self-Control were less favorable in the IY TCM group than the  
11 comparison group, while the scores for both groups were almost equal at post-assessment.  
12 The significance of the effects of the IY TCM on SSRS Cooperation and SSRS Self-Control  
13 might be questioned. The fact that the IY TCM schools applied for implementation in the  
14 program and participation in the study may explain this finding. The self-recruitment may be  
15 due to a need to address existing but general issues, and this may have led to a higher level of  
16 awareness when their students' behavior at pre-assessment was being evaluated. Whether the  
17 difference in change for SSRS Total is due to an actual effect of the program on social skills  
18 for students in the IY TCM group or to a regression towards the mean, may therefore be a  
19 matter of interpretation (Barnett, Van Der Pols, & Dobson, 2015; Shadish, Cook, &  
20 Campbell, 2002).  
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36         However, when the intensity of problem behavior is reduced among the high-risk  
37 group of students in a class, it seems fair to suggest that the whole class may have profited  
38 from a reduction in problem behavior in some students. The treatment effect on the intensity  
39 of problem behavior in the high-risk group of students was about 10 points higher than among  
40 the rest of the students. These changes may have positively affected the high-risk group of  
41 students own potential to learn as well as that of the students around them. Collectively, the  
42 students who dropped out between pre- and post-assessment scored less favorably on SESBI-  
43 R intensity, SESBI Problem and TRF Attention at pre-assessment. This could have reduced  
44 the overall effects of the intervention, since changes in the study were larger among students  
45 with elevated intensity scores at pre-assessment, compared to those with lower scores at pre-  
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4 test. Additionally, the main outcomes were more evident when the IY TCM program was  
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6 evaluated in a younger kindergarten cohort within the same study as ours where the children's  
7  
8 mean age was, 4.4 ( $SD = 0.9$ ) (Fossum, Handegård, & Britt Drugli, 2017), as compare to the  
9  
10 mean age for students in our study who was 7.3 ( $SD = 0.9$ ). In the Fossum, Handegård, and  
11  
12 Britt Drugli (2017) study, significant preventive effects on change in children's problem  
13  
14 behavior, aggressive behavior, internalization and attention problems, as well as improvement  
15  
16 in social competence were found.  
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20 Furthermore, unlike the IY Dina Dinosaur Social Skills and Problem Solving  
21  
22 Curriculum, the IY TCM training cover the socio-emotional curriculum only in one of the  
23  
24 training days. The effects of the TCM program have been shown to be more explicit when the  
25  
26 TCM training is carried out in combination with the Dina Dinosaur training, both in general,  
27  
28 and especially for children who initially scored high on problem behavior and low on social  
29  
30 competence (Webster-Stratton et al., 2008; Baker-Henningham, et al., 2009). However, when  
31  
32 interventions are examined in disadvantageous school settings, the effects are often greater  
33  
34 than effectiveness trials that are carried out in normal school settings (Durlak et al., 2011;  
35  
36 Weare & Nind, 2011). Most Norwegian students behave well (Nordahl, Mausethagen, &  
37  
38 Kostøl, 2009), and students in this study scored within the typical range of Norwegian  
39  
40 children on problem behavior. Mean scores in the Kirkhaug et al. (2012) study on SESBI-R  
41  
42 Intensity ( $M = 83.8$ ,  $SD = 38.6$ ), and mean scores in Larsson (2011) study on TRF Total  
43  
44 ( $M = 15.5$ ,  $SD = 19.0$ ) were less favorable, than compared to the mean SESBI-R Intensity  
45  
46 scores ( $M = 78.7$ ,  $SD = 34.1$ ) and the mean TRF Total scores ( $M = 10.0$ ,  $SD = 16.0$ ) in our  
47  
48 study. The implementation of the program was also naturalistic and with restricted control  
49  
50 regarding fidelity of the intervention. Large effect sizes were therefore not to be expected.  
51  
52 Our effect sizes were in the range of 0.08 to 0.20, yet even small effects in statistical terms  
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54 may lead to improvements in the ability of students to engage in positive relationships with  
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4 their schools, which in itself is known to be a protective factor against long-term behavioral  
5 problems. Thus, these small effects may have practical importance for many students in the  
6 long run (Weare & Nind, 2011). Higher levels of fidelity and implementation monitoring may  
7 improve the findings, which could in turn strengthen the preventive effects of IY TCM in  
8 regular school settings in Norway (Durlak & DuPre, 2008; Greenberg & Abenavoli, 2017;  
9 Sørli & Ogden, 2015).

**Limitations**

19 This study has a number of limitations that need to be taken into consideration. First,  
20 the implementation of the IY TCM program was dependent on locally available and qualified  
21 group leaders. Since extensive predefined criteria for the implementation of the TCM  
22 program, as recommended by IY Norway, had to be fulfilled before study participation,  
23 schools needed to apply to IY Norway for program implementation. The recruitment of  
24 intervention schools was therefore based entirely on applications from individual schools.  
25 This meant that a truly randomized, controlled trial was difficult to achieve. In order to  
26 minimize threats to validity such as diffusion (contamination), recruitment of schools to the  
27 comparison group was carried out in municipalities that lacked IY implementation. The  
28 schools in the intervention group received the IY TCM program free, whereas the schools in  
29 the comparison group received a minor financial compensation instead of implementation of  
30 the program. The situation for the comparison schools was therefore different from that of the  
31 IY TCM schools. Slightly elevated pre-scores in the intervention group suggests that some of  
32 the schools which sent a request for implementation of the program (self-recruitment) may  
33 have realized that they had issues with student behavior and that they could benefit from  
34 implementing the IY TCM program. Hence, a potential selection threat due to the sampling  
35 strategy may have affected our results. An alternative design might have been a step-wedge  
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4 design, but that was discarded because it would have resulted in an excessive burden for the  
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6 participants.

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8 Secondly, the implementation process was partly in the hands of the local authorities  
9  
10 involved, and access to information about the fidelity was not accessible, due to practical  
11  
12 limitations. The Norwegian Directorate of Health funds the IY Norway, and the authorities  
13  
14 meet expenses in connection with organizing curriculum, groups and training of group  
15  
16 leaders. At the time of the study, the fundraiser wished clear boundaries to exist between the  
17  
18 implementation of IY TCM in Norway and its research projects, in order to facilitate the  
19  
20 independence of research and implementation. This made it difficult to collect valid data from  
21  
22 the implementation process, and we cannot know for certain whether the program was  
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24 delivered in a less than optimal manner than required by the manual.  
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27  
28 Third, it is a significant limitation that teachers were the only source of reports of  
29  
30 student behavior. Changes may therefore reflect teachers' perceptions rather than actual  
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32 changes in behavior. However, teacher observations of students in the classroom or in the  
33  
34 school environment may reveal difficulties that cannot be observed otherwise or elsewhere.  
35  
36 Teachers are also able to compare their students with other students of the same age and  
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38 developmental level, and are important informants regarding how well students function at  
39  
40 school (Lurie, 2006). Nevertheless, observational data would have improved the robustness of  
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42 the study and the findings.  
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45 Fourth, a different dropout pattern between the intervention and comparison  
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47 conditions was found. However, interaction effects between the intervention group and the  
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49 dropout group on outcome variables at pre-assessment were not confirmed. The situation of  
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51 the comparison schools was different from that of the IY TCM schools, which may have  
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53 encouraged more sustained participation at post-assessment. In order to compensate for the  
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55 missing data, multiple imputation was used to ensure that the pre-post analyses reflected the  
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4 whole of the student population that participated in this study. Analyses performed on  
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6 imputed data are relatively stringent, and our tests confirmed the results of the LMM analyses  
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8 of the original data, which improves the generalizability of the findings (Stuart et al., 2009).  
9

10 Finally, there was no long-term follow-up in this study, therefore, no evidence as to  
11  
12 whether changes in student behavior would be sustained in the future. Furthermore, the short  
13  
14 pre-post intervention period may have limited the opportunity for teachers to implement  
15  
16 everything they had learned from the IY TCM training. Previous research suggests that  
17  
18 behavioral changes realized through classroom interventions may take longer to develop than  
19  
20 those achieved in clinical settings; thus, preventive school-wide interventions may need to be  
21  
22 implemented consistently over time in order to produce more convincing outcomes (Sørli &  
23  
24 Ogden, 2015; Weare & Nind, 2011).  
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### 28 **Conclusions and Implications for School Practice**

29  
30 The findings from this study may provide important implications for promoting  
31  
32 effective classroom environments in school. The IY TCM program was delivered as a school-  
33  
34 wide universal preventive intervention simultaneously to the entire group of students with  
35  
36 varying degrees of risk and within a limited period of time, hence, large effect sizes were not  
37  
38 expected (Greenberg & Abenavoli, 2017). Differential effects from universal preventive  
39  
40 school interventions may also be due to differences in implementation quality (Sørli &  
41  
42 Ogden, 2015), which may explain the lack of more robust findings in our study. To ensure  
43  
44 positive program effects and sufficient implementation support, continuous monitoring of  
45  
46 factors that contribute to sustained implementation quality, as well as strategies to develop  
47  
48 effective partnerships between educational practitioners and local authorities (e.g. the local  
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50 Educational and Psychological Counseling Service), are needed. Decisions by politicians and  
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52 school administrators on issues regarding the implementation of evidence-based universal  
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54 preventive interventions in schools are therefore an important issue. Findings in the present  
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4 study may suggest that the IY TCM program delivered as a school-wide universal preventive  
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6 intervention, provides an opportunity to influence all students effectively, including students  
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8 initially most at risk for developing problem behavior, compared to interventions that address  
9  
10 only a limited group of teachers, classes or students (Durlak et al., 2011; Greenberg &  
11  
12 Abenavoli, 2017).

### 15 **Future Research**

16  
17 The quality of teacher-student relationships has been shown to have a significant  
18  
19 influence on students' learning and to play an important role in their functioning, both  
20  
21 academically and socially (Baker, 2006; Drugli et al., 2011). Moreover, teachers' involvement  
22  
23 with parents and parents' ability to collaborate with teachers have also been shown to be  
24  
25 important predictors of student functioning and achievement at school (Desforges &  
26  
27 Abouchaar, 2003; Webster-Stratton et al., 2008; Wyrick & Rudasill, 2009). The IY TCM  
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29 training directly targets teachers rather than students; thus, our findings may reflect the  
30  
31 reasonable assumption that changes in student behavior result from changes in teacher  
32  
33 behavior. Whether training teachers in the IY TCM program led to change in teacher-student  
34  
35 relationships and parent involvement as well as to changes in teacher behavior after  
36  
37 implementation of the IY TCM program will be examined in future analyses. Prevention  
38  
39 effects often emerge after some delay, clearly, long-term follow-up is required in future  
40  
41 research in order to detect sustained preventive impact of the program, as well as, whether  
42  
43 enhanced implementation quality would improve effects of the program.  
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## EVALUATION OF THE IY TCM PROGRAM IN NORWAY

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