Title page
Evaluation of the Anger Management Intervention Program, the Mini-Diamond, Targeted Primary School students: A Controlled Trial with Focus on Well-being

Janni Niclasen¹
Thea Amholt²
Rhonwyn Ann Carter³
Jesper Dammeyer⁴

¹ Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital, Hovedvejen, entrance 5, 1st floor, Nordre Fasanvej 57, 2000 Frederiksberg, Denmark

² Research Unit for Active Living, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Campusvej 55, 5230 Odense, Denmark

³ Department of Communication and Psychology, University of Aalborg, Teglgårdsplads 1, 9000 Aalborg, Denmark

⁴ Department of Psychology, University of Copenhagen, Øster Farimagsgade 2A, 1353 København, Denmark
Abstract
Anger and aggressive behaviour are part of everyday school-life and have been reported to be negatively associated with student well-being and academic performance. School-based interventions, developed to target anger and aggressive behaviour, are scarce. One such Danish intervention, the so-called Mini-Diamond, has been developed and implemented in several Danish municipalities. The aim of the current study was to evaluate the potential effects of the Mini-Diamond on student well-being in a controlled trial. Outcome measures included aspects of child- and parent-rated student well-being, including school connectedness, learning self-efficacy, and bullying. All children in grades 0-2 in Rødovre (intervention) and Herlev (control) municipalities participated and filled out the same questionnaires. No effects of the Mini-Diamond intervention were found on any of the outcomes. Potential reasons for this are discussed, including the possibility that there is no effect of the Mini-Diamond intervention on well-being, together with limitations and implications of the current study.

Keywords
Well-being, anger management, aggression, Mini-Diamond, school-based intervention, Mini-Diamanten, children, BørnUngeLiv, skolesundhed.dk, Diamantforløbene
Introduction
The World Health Organisation (WHO) defines well-being as “a state... in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2014). Well-being is thus of central importance to life, and high levels of well-being are associated with a decreased risk of mental disorders (Pynoos et al., 1999), higher educational attainment (Suldo et al., 2011), higher levels of quality of life (Ryan & Deci, 2017) and lower levels of aggressive behaviour (Greene & Ablon, 2005). Furthermore, well-being in childhood is critical to the developmental course of a person, and childhood adversity is highly associated with poor well-being in adulthood (Kessler et al., 2010; Poulton et al., 2002).

Because children and adolescents spend a large percentage of their waking hours at school, the school context has become one of the most important settings for promoting the mental health of young people. Low levels of well-being is also associated with negative and aggressive behavior, as well as anger in school contexts (J. Bradshaw et al., 2017; Fleming & Jacobsen, 2010). Anger has been defined as a strong feeling of displeasure and antagonism, motivated by a sense of injury or devaluation, and the experience of anger leads to the desire to fight, harm or conquer an opponent (Frijda et al., 1989; Roseman et al., 1994). Based on this definition, anger is not only an unpleasant experience for the angry person due to the discomfort, but also harmful for those to whom the anger is directed, due to the impending negative consequences. Not surprisingly, anger is associated with a large number of negative outcomes in childhood and adolescence, including lower academic performance, poor interpersonal relationships, anxiety, depression, substance abuse and health-related problems (Flanagan et al., 2010; Sofronoff et al., 2007; Suls, 2013; Zeman et al., 2002). For example, Suls (2013) reported that anger is associated with somatic symptoms including exaggerated autonomic functions, reduced heart rate variability, platelet aggregation, inflammation, and cardiovascular diseases.
Given the negative consequences associated with anger, researchers, clinicians and practitioners have developed a number of school-based intervention programs which aim to reduce the levels of aggressive behaviour among students. These programs are often theoretically anchored in cognitive behavioural or socioemotional learning frameworks (Ho et al., 2010). Accordingly, these intervention programs typically include components such as relaxation exercises, problem-solving training, role play and imagery techniques. The aim of these components is to teach students to better understand their emotions and control their behaviour. With the availability of such interventions, the most critical question is how effective are they? Lee & DiGiuseppe (2018) provided some insight into answering this question, by reviewing the existing meta-analyses of anger and aggressive treatments. Specifically, they found that intervention programs targeting anger showed moderate effectiveness, both among non-clinical groups and psychiatric populations, suggesting that such interventions are somewhat effective.

The importance of the school as a setting for mental health promotion is reflected in the increasing number of programmes that successfully promote academic, social and emotional competence, and significantly reduce school dropout rates, as well as reducing a range of negative health and social outcomes. One such program is the American Coping Power Program. The Coping Power Program was developed in the 1990s and is a preventive skills-training program targeting aggressive children. It can be delivered both in groups and individually in different settings, including schools. It is based on a contextual, social-cognitive model and the full version consists of multiple components, including parent and child modules. Studies have shown that the Coping Power Program produced lower rates of covert delinquent behaviour and substance use at the 1-year follow-up, compared to a control group. The full version of the program, including both parent and child components, has been found to be more efficient that the child-only intervention (Lochman & Wells, 2004). The Coping Power Program can be delivered both as a universal and a preventive program. In a randomised controlled trial, it was concluded that it can be delivered in school settings at both universal and targeted prevention levels with positive effects in reducing children’s behavioural problems and improving school grades (Muratori et al., 2016).
In a Danish context two school-based interventions, which focus on anger management, have been introduced by the National Board of Social Services (Socialstyrelsen, 2019). The two programs are Positiv Adfærd i Læring og Samspil (PALS) and Aggression Replacement Training (ART). PALS is a Nordic version of the American developed School-Wide Positive Behaviour Support program (SWPBS) (Sprague & Walker, 2005). The aim of PALS is not solely focused on reducing anger and aggressive behaviour but also more broadly aims to develop, strengthen and support a positive, inclusive and proactive school culture, that can be converted into action in the learning environment (Socialstyrelsen, 2016). In a Norwegian context PALS has been evaluated in a number of studies, for example in a quasi-experimental design in four elementary schools, two years after implementation. The authors concluded that there was an immediate moderate to large reductions in teacher observed problem behaviour, while the students reported that the classroom climate was less encouraging (Sørlie & Ogden, 2007). The National Research Centre for Welfare in Denmark (VIVE) has in a Danish context conducted a pilot research project to evaluate the effect of PALS at 11 Danish schools. The authors reported no statistically significant effect of PALS on either school absence or academic achievement (Christensen & Olsen, 2012). Other international and American studies have, however, reported on the positive effects of SWPBS on both well-being and academic achievement (Bradshaw et al., 2008; Bradshaw et al., 2017). ART is also an American program, developed in the 1980s, and which mostly targets older children and adolescence (Socialstyrelsen, 2017). Contrary to PALS, ART directly targets anger management. It is a cognitive behavioural intervention, developed to reduce aggressive and violent behaviour, by equipping students with tools to tackle anger, and increase their social competencies (Moynihan, 2008). Specifically, it is a multimodal program focusing on three components; Social skills, Anger Control Training and Moral Reasoning. Two non-Danish RCT studies evaluating ART have shown that children and adolescents receiving the ART intervention subsequently showed significantly less anger, and accordingly, less aggressive behaviour and better social skills (Holmqvist et al., 2009; Langeveld et al., 2012). However, a major concern about the PALS and ART programs is the cultural context in which they are developed. Although American culture in some respect is similar to Western European culture, there are notable differences between
American and Danish educational systems and school cultures. Specifically, whereas the American education system is characterised by a focus on rewards and punishment, the Danish educational culture distinguishes itself by focusing on well-being, student-centred learning activities such as discussions between teacher and students rather than teacher-based instruction, and peer cooperation is favoured over classmate competition (Dolin et al., 2007).

Taking these differences as well as the nature of the Danish educational culture and practice into account, it is problematic to make use of American programs in a Danish school context. Instead, it is necessary to develop a local anger management intervention, which meets the specific needs of Danish students. One such intervention has been developed and is known as the Diamond Interventions (Diamantforløbene, 2019). The Diamond Interventions consist of separate anger management programs for younger (0.-3. grade), young (4.-6. grade) and older (7.-9. grade) school children. The intervention targeted towards the younger school children is called the Mini-Diamond (Mini-Diamanten). The Mini-Diamond aims to teach students to manage their anger, improve their overall well-being, strengthen their understanding of themselves and others, and to regulate their emotions. This is done through exercises focusing on mentalisation, bodily reactions, sensations and concrete actions (Dressler & Obel, 2017a). The Mini-Diamond was developed in 2011 and has been implemented in several schools across Denmark. However, the effect of the Mini-Diamond intervention has not yet been evaluated. Therefore, the aim of the current study was to evaluate the effect of the Mini-Diamond intervention on student well-being among 0.-2. grade students in two Danish municipalities, in a controlled intervention.

Materials and methods

The Mini-Diamond Intervention
The Mini-Diamond intervention is presented in a manual and is theoretically based on developmental psychology, neuropsychology, trauma theory, systemic theory and emotion-focused therapy. Methodologically the intervention draws on mindfulness, mentalisation and narrative techniques.
Different activities have been developed based on these theories and methods and they constitute the core of the intervention. The Mini-Diamond intervention consists of eight modules of each 1.5 hours duration (i.e. two school lessons per module) (Dressler & Obel, 2017b). Each module focuses on different aspects of anger management including the body, actions, thoughts and feelings, as well as the interaction between them. All exercises include a focus on emotional regulation, bodily regulation or mentalisation/reflection. The individual modules alternate between different learning forms, exercises and activities (Table 1).

The Mini-Diamond is implemented by local instructors within each school and each class (Dressler & Obel, 2017b). The instructors are either fully trained teachers or teaching assistants (pedagogues). These instructors have all completed a short, two-day course (12 hours in total). On the course, the instructors are introduced to the theoretical basis of the intervention and are taken through the individual exercises as specified in the manual. At each school a number of instructors, typically teachers or teaching assistants are responsible for implementing the Mini-Diamond. This means that at a particular school these instructors carry out the Mini-Diamond. In some classes the instructors are also the main teacher or teaching assistant of that particular class, whereas in other classes they are not.

**Participants**

Students from grades 0 to 2 (approx. 6 to 8 years old) participated actively in the study, while the students and their parents filled out questionnaires as part of the study. These students came from all of the schools in two municipalities (Rødovre and Herlev), both of which are suburbs in the greater Copenhagen area. The two municipalities were similar in size and sociodemographic characteristics and were thus considered comparable. As the Mini-Diamond intervention was developed in the municipality of Rødovre, it was a mandatory condition of the present study that this municipality served as the intervention municipality. Hence, the study was designed as a controlled trial with the comparable municipality of Herlev serving as the control.

In Rødovre municipality 889 students from 20 classes at 6 schools received the Mini-Diamond intervention. In contrast, 830 students from 19 classes at 3 schools from Herlev municipality
participated in the study without receiving the intervention; i.e. they functioned as a control group in the present study.

In both municipalities the participating students filled out the same questionnaires one week prior to the beginning of the intervention (Time 1), one week after the end of the intervention (Time 2), and again at the end of the school year, i.e. within a two-week period immediately prior to the summer vacation, for a long-term follow up (Time 3). In Rødovre municipality a total of 889 students filled out the questionnaire at Time 1, a total of 980 students filled out the same questionnaire at Time 2, and 942 completed the questionnaire at Time 3. Correspondingly, 830 students from Herlev filled out the same questionnaires at Time 1, a total of 717 students filled out the questionnaire at Time 2, and a total of 641 students filled it out at Time 3.

In addition, all parents of the students in both municipalities were also invited to participate in the study. In Rødovre municipality, a total of 118 parents participated at Time 1, a total of 258 parents participated at Time 2, and 87 parents filled out the questionnaire at Time 3. In Herlev municipality, a total of 283 parents completed the questionnaire at Time 1, a total of 225 parents participated at Time 2, and 129 parents filled out the questionnaire at Time 3.

**Outcome Measures**

**Student questionnaire**
The implementation of the intervention and the filling out of the questionnaires took place within the two municipalities, and within the specific contexts of the individual schools. Consideration was given to the intervention taking place at individual schools and being implemented by teachers and teaching assistants without prior knowledge about and experiences with research. In addition, it was considered to be of great importance that the setup was as easy as possible for them to implement during hectic school days. We therefore decided to include a well-being measure from, what was then known as skolesundhed.dk (now BørnUngeLiv). By means of this platform, we could also easily contact the parents of the students via the same data platform without violating GDPR standards.
Students responded to a well-being questionnaire from an online platform, skolesundhed.dk. Skolesundhed.dk was developed in 2007 with the aim of providing Danish municipalities with a data platform or tool that could be used in work with school-aged children and their families (Skolesundhed.dk, 2019). Skolesundhed.dk provides a tool to work in a structured way regarding students physical, mental and social health. Skolesundhed.dk is owned by the participating municipalities and developed in collaboration between the municipalities and the Danish Committee for Health Education (Komiteen for Sundhedsoplysning, 2019). When the individual municipalities work in a clinical or practical setting with skolesundhed.dk, they can choose between a list of modules and only include the questions that are of relevance for them.

For the present research project, we first identified questions related to well-being included in Skolesundhed.dk (Table 2). Based on content we grouped the identified items in three categories: School Connectedness, Learning Efficiency, and Bullying. A total of 13 items assessed School Connectedness and a sample item is “Do you feel secure at school”. A total of five items assessed Learning Efficiency and sample item is “Do you feel like learning something at school?”. Finally, four items tapped into Bullying and a sample item is “Are you teased by someone from another class, to the point where you get upset?”. Students responded to each item on a 3-point Likert-like scale, including 0 (no), 1 (sometimes), and 2 (yes). Higher scores on the three scales were considered positive and indicated a better connection with school, a higher perceive learning efficacy, and less perceived bullying related behaviours, respectively. In order to verify the three scales, we carried out a Confirmatory Factor Analysis (CFA) on data at Time 1. The results of this CFA supported the subdivision in the three scales (Table 3). Model fits were good $SRMR = 0.037$ and $RMSEA = 0.044$ (Hu & Bentler, 1999).

**Parent questionnaire**
The parents of the students in both municipalities were also asked to fill out a general well-being questionnaire designed to assess their children’s well-being from a parent perspective. As with the
student questionnaire, items from skolesundhed.dk were included if they were hypothesised to be associated outcome with the Mini-Diamond intervention. In skolesundhed.dk the list of questions in the parent questionnaire was much more comprehensive compared to the student questionnaire, including a much broader spectrum of topics, e.g. pregnancy related questions, food and sleeping habits, health and diseases and use of medication relating to the specific child. The full questionnaire consists of almost 200 questions. For the present study we chose to include items related to general school well-being, and three items related to general health conditions, enuresis and somatic symptoms, respectively. Because the parent questions were already clustered into themes from the original skolesundhed.dk questionnaire it was considered redundant to carry out a CFA for the parent questionnaire.

The general school well-being scale consisted of six questions and included items such as “How is your child currently at school?”, “Is your child happy to go to school?” and “Does your child have at least one good friend at school?”. Parents responded to each item on a 4-point Likert-like scale ranging from 1 (not at all) to 4 (very much). Higher scores on this scale indicated higher levels of parent-reported child well-being. The general health condition scale consisted of one opening question “Has your child visited any medical specialists or health professionals?”. If the parents responded “Yes” to this question they were asked to response “yes” (1) or “no” (0) to a list of medical specialists, including health professionals and psychologists. A summed score for the total number of specialists that the child had visited was considered an indicator of the general health condition of the child. A higher score on this variable indicated a poorer general health. The scale related to enuresis-related symptoms consisted of one opening item: “During the last three months, has your child more than once: “wet their bed at night?” , “wet their pants during the day?”, and “had a stool accident in their pants?”. Parent could tick “yes” (1) or “no” (0) to the questions. The items were summed to indicate the severity of enuresis problems, with a higher score indicating more enuresis-related problems. The final scale, which related to somatic symptoms, consisted of one opening question: “Has your child complained more than once within the last three months about”: “having a headache?”, “having a stomach ache?”, “having bad stomach ache?”, and “having medication at least once a week for a
period exceeding three months?”. Parent were asked to tick “yes” (1) or “no” (0) for each symptom. The total number of symptoms were summed to indicate the severity of somatic symptoms with a higher score indicating more somatic symptoms.

**Analytical Strategies**
Because of the EU General Data Protection Regulation (GDPR), we were not able to collect and code data for the individual pupils at an individual level for the present study. In other words, the students were nested within their classes and likewise nested within their schools. As a result, all data were coded at a class level. For all analyses the three data waves (T1, T2 and T3) were treated at a class level, and as a consequence, multilevel modelling was performed. Accordingly, the multilevel models were performed with class as a level 1 variable, and school as a level 2 variable. All analyses were performed by means of the NLME package in R (Pinheiro et al., 2011). Additionally, because the multiple analyses performed for the current study might inflate the probability of type I errors, a stricter alpha value (i.e. 0.01) was adopted as significance level.

**Results**
Table 3 presents reliability (α) for the three student scales (i.e. school connectedness, learning efficacy and bullying) and the one parent scale (i.e. parent reported general school well-being) at Time 1. In Table 3 the descriptive statistics, i.e. means and standard deviations for the four scales at the three time points (T1, T2 and T3) for both Rødovre municipality (the intervention group) and Herlev municipality (the control group) are also shown. As shown, the reliabilities (α) for the scales of the four outcome variables ranged from 0.50 to 0.79, which were considered poor to good. The lowest Alpha’s were observed for the bullying scales. However, because one scale may have larger variance this might affect the true value of alpha negatively, and it hence may be larger (Deng & Chan, 2017).
We then tested the potential effects of the Mini-Diamond intervention on the three student-rated scales; i.e. student-rated School Connectedness, student-rated Learning Efficacy, and student-rated Bullying. We investigated both the potential effect at Time 2 (i.e. immediately after the end of the intervention) and at Time 3 (i.e. immediately before the summer vacation for a potential long-term effect) compared to Time 1. The effects were investigated at a class level by comparing the outcomes within the different classes in Rødovre and Herlev. When one controlled for the initial class differences in School Connectedness between the two municipalities, none were observed, \(b = .06, t (7) = 0.84, p = .43\) at Time 2, indicating that the intervention did not influence School Connectedness in the short term. To evaluate the potential long-term effect of the intervention, the same analyses were carried out with Time 3 as outcome measure. These results were likewise non-significant \((b = -.03, t (7) = -1.20, p = .27)\) indicating that the intervention had no long-term impacts on the classes' School Connectedness. Similar non-significant results were obtained for the other three outcome variables including classes' Learning Efficacy at Time 2 \((b = .11, t (7) = 1.07, p = .32)\) and Time 3 \((b = -.05, t (7) = -1.78, p = .12)\), and classes' Bullying at Time 2 \((b = .03, t (7) = 1.20, p = .27)\) and Time 3 \((b = .07, t (7) = 2.58, p = .04)\). The results indicate that the intervention had no effect on any of the included student outcomes either in the short or long term.

We finally tested the potential effect of the intervention on the parent-rated outcomes. Apart from the scale measuring parent-rated general school well-being, we also investigated the potential effects on General Health Conditions, Enuresis-related Symptoms and Somatic Symptoms. We compared the parent ratings for the four domains in the two municipalities, controlling for the baseline values of the variables. As with the student-rated outcomes, all results were non-significant at both Times 2 and 3. For parent-rated child general school well-being in different classes, the results were insignificant at Time 2 \((b = -.21, t (4) = -2.48, p = .07)\) and Time 3 \((b = -.02, t (4) = -.17, p = .88)\), Children’s General Health Condition for Time 2 \((b = -.03, t (4) = -2.07, p = .11)\) and Time 3 \((b = .02, t (4) = .63, p = .56)\); Enuresis-related Symptoms at Time 2 \((b = .01, t (4) = .73, p = .51)\) and Time 3 \((b = -.02, t (4) = -.72, p = .5)\); and finally for Somatic Symptoms at Time 2 \((b = .001, t (3) = .02, p = .99)\) and Time 3 \((b = -.11, t (2) = -1.00, p = .42)\). Thus, the results indicated that the Mini-Diamond intervention did not have an
effect on either of the self-reported nor parent-reported outcomes included in the present study, neither in the short nor long term.

Discussion
The aim of the current study was to investigate the potential effects of the Mini-Diamond anger-management intervention on student- and parent-rated child well-being. In the current study, we were not able to detect any effects of the intervention on any of the included outcome measures, including student-reported well-being, and parent-reported child well-being, child general health-condition, child enuresis-related symptoms and child somatic symptoms. The lack of effect may on the one hand, simply reflect that there is no effect of the Mini-Diamond intervention on the students’ well-being. It may on the other hand, however, also be related to a number of methodological factors. These potential explanations call for closer inspection and will be discussed below.

One the one hand, it may be that there simply is no (detectable) effect of the Mini-Diamond intervention. It is known from the literature that a number of factors, or active components as they are called, constitute the underlying reason that an intervention has the desired effect. In a number of reports, the authors identify different factors of importance regarding whether or not the desired effect is acquired after a given school-based intervention (Barry & Jenkins, 2007; Niclasen et al., 2016; Wistoft & Grabowski, 2010). These factors include the extensiveness of the intervention, parental involvement, implementation workers years of experience, well-being scores at baseline, and compliance to the intervention.

Regarding the first of these factors, extensiveness of the intervention, an overview of the evidence from systematic reviews highlights that comprehensive programmes that target multiple health outcomes in the context of a coordinated whole school approach are the most consistently effective strategies (Barry & Jenkins, 2007; Niclasen et al., 2016). For example, in a systematic review of universal approaches (i.e. interventions provided to all students in a school) to mental health
promotion in schools, positive evidence of effectiveness from programs that adopted a whole-school approach, were implemented continuously for more than a year and were aimed at the promotion of mental health as opposed to the prevention of mental disorder (Wells et al., 2003). None of this is unfortunately true of the Mini-Diamond intervention. The recommendation is to implement continuously and-long term for a minimum of one year. By contrast the Mini-Diamond only consists of eight modules of 1½ hours duration and is not implemented universally across at the schools. Considering that these are probably the most important factors, it is likely that this could explain why we were not able to detect any effect of the intervention. The authors of the abovementioned reports further conclude that long-term interventions, which promote positive mental health in all pupils, and that involve changes to the school environment, are likely to be more successful than brief class-based prevention programs (Wells et al., 2003). Again, this indicates a possible limitation of the Mini-Diamond intervention, in that it is designed to be neither long-term nor to change the whole school environment. Finally, the authors also recommend parental involvement, as well as recommending that a combination of universal (aimed at all children) and targeted (aimed at specific subgroups of children) programs would be required to cater for the needs of all children in a school (Niclasen et al., 2016; Wistoft & Grabowski, 2010).

Research also shows that the part played by the implementation workers is a factor of great importance. It is vital that the implementation workers are theoretically grounded and have many years of experience, and that they comply with the intervention (Niclasen et al., 2016). Implementation workers carry out the Mini-Diamond intervention after only a two-day introductory course to the intervention, and many had only a few years of teaching experience. Furthermore, the implementation workers were not always regular teachers for the classes in which they implemented the intervention. On some instances, the instructors carried out the intervention in their own classes, i.e. in classes in which they spend time on a daily basis, and they were therefore able to follow up and implement the intervention whenever suitable. For other instructors, they did not teach in that particular class and thus only frequented a particular class to introduce the intervention. In such cases, they could not follow-up, nor implement and re-introduce the intervention whenever needed.
Finally, not all implementation workers complied to the manual of the Mini-Diamond. In the manual it was stated that the eight modules should be implemented weekly on eight consecutive weeks. However, some implemented the full program within a three-week period, while others spend three months. To sum up, it seems that there were large variations, which is known to have an undesired effect on the outcome of the intervention (Ehlers & Olsen, 2017; Niclasen et al., 2016).

On the other hand, the lack of effect may also be related to a number of methodological factors, including self-rating performed by students aged 5-9, the use of questionnaires developed for clinical practice measuring general well-being rather than anger management and mentalisation per se, and low participation rates and reliabilities.

Firstly, the Mini-Diamond intervention was developed within a Danish school-context and targeted children in grades 0.-3., i.e. approx. 5-9-year-olds. It was, in the present study, evaluated by comparing well-being measures filled out by 5-8-year-olds in two comparable municipalities from the Greater Copenhagen region; i.e. Rødovre Municipality and Herlev Municipality. It is known from the literature, that children this young cannot sufficiently rate their own general mental well-being (Niclasen et al., 2018; Rockwool Fonden, 2015). They are very concrete in their thinking and they can only relate it to their current state, without being able to project into the past. This lack of ability to make a rating based on a broader period of time is also reason that most child self-rate questionnaires recommend a lower age boundary of 11 years (Gioia et al., 2002; Goodman, 2001). In other words, the ratings will more likely reflect their current state of well-being rather than their general state of well-being.

Secondly, and in extension of the above-mentioned limitation, the outcome measure included in the present study consisted of a number of items from the data platform skolesundhed.dk (Skolesundhed.dk, 2019) and was not a direct measure of anger and aggression but well-being. The questions in skolesundhed.dk were developed in collaboration with the participating Danish municipalities, with the aim of providing a practical tool to be used in work on social, emotional and
psychological well-being in the municipalities. In other words, this means that the included outcome measures are not standardised and have not previously been applied for research purposes. They are also not developed to measure progression or specific effect after an intervention. Thus, the outcome measure might not be sensitive enough to detect a potential effect of the Mini-Diamond intervention. Along the same line, the outcome measures only included indicators of general well-being and health, rather than for example, specific outcomes such as children mentalisation abilities or emotion regulation (Dressler & Obel, 2017b). In the present study we included child- and parent-rated well-being measures as a proxy for a reduction in aggressive behaviours and anger management. It may be that the included proxy measures did not act as a good proxy for a potential change in these behaviours. In this instance it can be argued that the included outcome measures do not sufficiently evaluate the aspects of the children’s bodily regulations, emotional regulations and mentalisation and reflections that is the focus of the Mini-Diamond intervention. Considering that the intervention is designed with the aim of improving these specific skills, rather than general well-being, it may be the reason for the lack of effect in the present study.

Thirdly, another possible reason for the lack of effect of the Mini-Diamond intervention are methodological related factors, including a low participation rate of the parents, poor Alpha reliability measures and analytical decisions. Regarding the participation rate, we were faced with a very low parent participation rate in the study (≈20%) which could have influenced the parent outcomes. It may be that only the socioeconomically prosperous families took their time to participate in the study and their children were characterised by high well-being scores at baseline and therefore did not significantly further improve their well-being score. Regarding the reliability measures, we found that in particular the bullying measures were poor. This may also have influenced the outcome of the statistical analyses. Finally, because of the EU GDPR and because the children were nested by nature in classes, we had to run all analyses at a class level rather than at an individual level. By running analyses at the class level, we lose power, which also may have contributed to the lack of a documented effect of the present intervention.
Above, we have listed potential reasons for the lack of outcome, to the design of and methodological problems of the intervention per se. Although these were indeed potential explanations for the lack of effect, it may also be related to the intervention itself. It may be that the Mini-Diamond intervention itself is simply not effective.

**Conclusion**
We welcome the attempt to develop an anger-management intervention within a Danish school context, something that is greatly needed. However, due to the lack of effect on well-being in the present study, we cannot recommend the implementation of the Mini-Diamond intervention per se. We found no effect of the intervention. Methodological shortcomings of the present study, including well-being being the chosen outcome and not anger and aggression, might however explain the lack of effect. Whole school programmes that target multiple health outcomes are recommended in the literature, and they seem like the most effective strategies. This is not true of the Mini-Diamond intervention. We recommend that a parental component is added and that there is a requirement that the instructors only implement the intervention is their own classes. If such factors are modified, then the intervention might succeed in the future in teaching children how to control their anger successfully.

**Declaration of Interests**
All the authors declare no conflicts of interests.

**Ethical Approval**
All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.
Funding
This study was funded by TrygFonden (grant numbers 114629 and 121941).

References


https://doi.org/10.1016/j.childyouth.2017.06.060


https://doi.org/10.1177/0013164416658325


https://www.saxo.com/dk/vredeshaandtering-for-unge_maria-dresslercamilla-obel_indbundet_9788771189612


