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Examining emotion regulation, parental differences, and symptom reduction at 12-months follow-up

Doctoral thesis

NTNU
Norwegian University of Science and Technology
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Summary

Background: Children experiencing anxious and/or sad feelings that persist over time and interfere with daily function are at risk for developing internalizing disorders. Even at the subclinical level, internalizing symptoms interfere with healthy development and might cause functional impairment. Emotion regulation is suggested as a transdiagnostic factor across anxious and depressive symptoms and a potential target for preventive interventions. This thesis aims to examine emotion regulation in association with children's anxious and depressive symptoms and the long-term effects of the transdiagnostic preventive intervention EMOTION on anxious and depressive symptoms. **Method**: The data applied in this thesis stem from the Coping Kids study in Norway, with which the newly developed transdiagnostic preventive intervention EMOTION is examined in a cluster randomized controlled trial (RCT). The sample included N = 795 children aged between 8 and 12 years old (M = 10 years, SD = 0.90, 58.1% girls). **Results**: The results from the first study are twofold. A negative association between anxious and depressive symptoms and emotion regulation was confirmed. Second, the results indicated a differentiating effect of parental gender on the association between emotion regulation and depressive symptoms. The results from the second study showed a significant improvement in emotion regulation in children receiving the EMOTION intervention. The results from the third study showed a significant reduction in internalizing symptoms in the intervention group 12 months post-intervention. **Conclusion**: The results strengthen the argument for the importance of emotion regulation as a transdiagnostic factor in internalizing symptoms and indicate that the EMOTION intervention is effective both in improving children's emotion regulation and in long-term symptom reduction. Furthermore, the results from the first study contribute to

the field by suggesting the importance of including both maternal and paternal reports in research.

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Contents

List of abbreviations:

CAS-CBT	Competence and adherence scale for cognitive behavioral therapy
CBT	Cognitive behavioral therapy
EASQ	Early Adolescence Stress Questionnaire
EC	Effortful control
EMA	Ecological momentary assessment
ER	Emotion regulation scale
ERC	Emotion Regulation Checklist
HSCL-10	Hopkins Symptoms Checklist – short version
L/N	Liability – negativity scale
MASC-C/P	Multidimensional Anxiety Scale for Children, Child/Parent version
NA	Negative affect
RCT	Randomized controlled trial
REC	Regional ethics committee
RTM	Regression towards the mean
SAD	Social anxiety disorder
SES	Socioeconomic class
SMFQ-C/P	Mood and Feelings Questionnaire – short version, Child/Parent version

SSL	Super Skills for Life
UP-A	Unified Protocol for the Treatment of Emotional Disorders – in Adolescents
UP-C	Unified Protocol for the Treatment of Emotional Disorders – in Children

Clarifications

In the present thesis, children are defined as individuals between the ages of 0 and 12, and adolescents are between the ages of 12 and 19. However, the term youth is used to describe persons under the age of 18.

The term anxious and depressive symptoms is used to describe subclinical symptoms, whereas symptoms severe enough to be defined as anxious or depressive disorders are described as disorders.

List of articles

1) Loevaas, M.E.S., Sund, A.M., Patras, J., Martinsen, K., Hjemdal, O., Neumer, S-P., Holen, S., & Reinfjell,T. (2018) Emotion regulation and its relation to symptoms of anxiety and depression in children aged 8-12 years: does parental gender play a differentiating role? BMC psychology, Vol.6(1), pp.42. doi: 10.1186/s40359-018-0255-y

2) Loevaas, M., Sund, A.M., Lydersen, S., Neumer, S-P., Martinsen, K., Holen, S., Patras, J., Adolfsen, F., & Reinfjell, T. (2019) Does the Transdiagnostic EMOTION Intervention Improve Emotion Regulation Skills in Children? Journal of Child and Family Studies, 2019, Vol.28(3), pp.805-813. doi: 10.1007/s10826-018-01324-1

3) Loevaas, M., Lydersen, S., Sund, A.M., Neumer, S-P., Martinsen, K., Holen, S., Patras, J., Adolfsen, F., Rasmussen, L-M. & Reinfjell, T. (submitted 2019) A 12-month follow-up of a transdiagnostic indicated prevention of internalizing symptoms in school-aged children: The results from the EMOTION study.

1. General introduction

1.1. Internalizing symptoms in children and adolescents

Growing up, all youths experience occasional fear and sadness; however, some of these experiences are persistent over time and interfere with daily function (Garber & Rao, 2014; Vasey, Bosmans, & Ollendick, 2014).

Developmental normative anxieties follow developmental phases and are closely related to cognitive development. Typically, smaller children experience separation anxiety and fear of monsters, whereas older children and adolescents experience social anxiety and fear of performance evaluations (Muris, 2007). Anxiety disorders are defined as excessive fear and anxiety with related behavioral and functional disturbance, persistent beyond developmentally appropriate periods (American Psychiatric Association., 2013). For example, fear of separation from caregivers is developmentally appropriate in toddlers but not school-aged children or adolescents.

The diagnostic criteria of anxiety in children and adolescents do not differ from those of adults, but the content is related to age-specific challenges, and functionality criteria should be assessed in accordance with age and developmental maturity (American Psychiatric Association., 2013; Zagoloff & Bernstein, 2017). To qualify for a diagnosis, the duration of symptoms should be 6 months or longer for all anxiety disorders, except for separation anxiety, for which a duration of 4 weeks is required in children (American Psychiatric Association., 2013). Children and adolescents might display anxious symptoms that are somewhat different from those of adults, for example, tantrums or anger, and somatic complaints such as stomachache and headache are common (American Psychiatric Association., 2013; McLellan & Hudson, 2017; Zagoloff & Bernstein, 2017).

Diagnostic criteria for depressive disorders include affective, physical and cognitive symptoms that present for a two-week period. Specific to children and adolescents, depressed mood can be displayed as irritability, and as an alternative to the weight-loss criteria in adults, failure to reach expected weight gain should be considered in children and adolescents (American Psychiatric Association., 2013; Powell, Ocean, & Stanick, 2017). Some researchers state that symptoms in youths have more unique features, for example, that dysphoria (including sadness, anhedonia and associated emotional distress) are the core features of juvenile depression and that depressed youths more often suffer from hypersomnia than insomnia and tend to experience more fluctuations in mood than depressed adults (Kovacs & Yaroslavsky, 2014; Powell et al., 2017). Furthermore, if children or adolescents' school performance decreases, this might be a sign of concentration difficulties, an inherent part of depression, and refusal to engage in previously joyful activities might also indicate depressive mood (Powell et al., 2017).

Although both fearful and sad feelings are a normal part of life, anxious and depressive symptoms (collectively termed internalizing symptoms) negatively affect numerous youths (Gonzalez-Tejera et al., 2005; Mychailyszyn, Mendez, & Kendall, 2010). Polanczyk, Salum, Sugaya, Caye, and Rohde (2015) found the worldwide prevalence of any anxiety disorder in youths to be 6.5% and that of any depressive disorders to be 2.6%. Similarly, almost 10% of youths will experience any anxiety or depressive disorder before the age of 16 (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Norwegian studies have reported prevalence as high as 9.4% for current depression in early teens, including mild depression (Sund, Larsson, & Wichstrøm, 2011) and up to 14% for anxious symptoms in teenagers (Leikanger, Ingul, &

Larsson, 2012). Anxiety disorders seriously affect both social and school achievements, and functional deterioration increases with comorbid symptoms (Mychailyszyn et al., 2010; Swan & Kendall, 2016). Similarly, functional impairments are documented in youths suffering from depression (Gonzalez-Tejera et al., 2005). A prevalence rate of up to 30% has been found for both depressive and anxious subclinical symptoms, and even at a subclinical level, these symptoms are associated with functional impairment and increased suicidal risk in adolescents, in addition to an increased risk of developing full-blown internalizing disorders (Balazs et al., 2013; Comer, Gallo, Korathu-Larson, Pincus, & Brown, 2012; Gonzalez-Tejera et al., 2005). Although prevalence varies across studies, there is no doubt that both anxious and depressive symptoms affect numerous youths and are considered a major public health problem (Costello et al., 2003; Polanczyk et al., 2015). Furthermore, a large portion of children affected by anxious and depressive symptoms are not in contact with mental health services (Bajeux et al., 2018; Chavira, Stein, Bailey, & Stein, 2004; Lu, 2017; Sund et al., 2011). Together, these facts emphasize the need for prevention interventions targeting vulnerable children (Mychailyszyn, Brodman, Read, & Kendall, 2012).

1.1.2 Preventing internalizing symptoms in youth

Preventive interventions are implemented prior to disorder onset. This type of intervention holds the potential to stop symptom development, avoid a clinical disorder, delay disorder onset and/or reduce functional impairment (Stockings et al., 2016; Werner-Seidler, Perry, Calear, Newby, & Christensen, 2017). Preventive interventions are recommended at an early age because symptoms that occur at an early age can have a negative effect on normal development (Bernaras, Jaureguizar, & Garaigordobil, 2019; Gonzalez-Tejera et al., 2005; Mychailyszyn et al., 2010; Swan & Kendall, 2016). For example,

internalizing symptoms in youths are associated with impairment in social and romantic relationships in adulthood (Swan & Kendall, 2016). It is possible that anxiety and/or depression lead to withdrawal from friends and social situations in childhood and adolescence, resulting in the loss of important social experience and learning, which continues to restrain the individual in adulthood.

Prevention programs targeting depression and anxiety in youth are probably cost-effective, but research is scarce, and the results are difficult to generalize across countries (Lee et al., 2017; Mendelson & Eaton, 2018; Mihalopoulos, Vos, Pirkis, & Carter, 2011). Long-term results are especially lacking and are an important part in evaluating cost-effectiveness (Mendelson & Eaton, 2018). For preventive interventions to have a beneficial population benefit, only a small effect size is needed, as these interventions likely contribute to reducing the onset of disorders and, thereby, reducing treatment costs (Mendelson & Eaton, 2018; Werner-Seidler et al., 2017). Another important argument for considering small effect sizes as important in prevention research is that these studies target a subclinical population, with less improvement potential than treatment interventions targeting clinical populations. As a consequence, the pre–post difference in prevention studies is necessarily smaller than the pre-post difference in treatment studies (Neumer, Costache, & Hagen, 2017). Furthermore, a preventive intervention would be considered effective if it hinders an age-expected increase in symptoms, such as an increase in depressive symptoms in early teenage years. In this example, the reduction in symptoms could be zero, but compared with a waitlist control group, youths receiving the intervention could still experience fewer symptoms than the control group (in which symptoms increase) as a result of the intervention (Fernandez-Martinez et al., 2019).

Internalizing symptoms in youth show stability over time and a high rate of relapse (Kovacs, Obrosky, & George, 2016; Lavigne, Hopkins, Gouze, & Bryant, 2015). Depression rates peek in adolescence, especially in girls (Hankin et al., 2015), supporting late childhood as a suitable time for preventive intervention (Kovacs et al., 2016). Anxiety disorders, or anxious symptoms, repeatedly show the highest prevalence of all psychopathological problems in childhood (Costello et al., 2003; Pagliaccio et al., 2015). In addition, subclinical symptoms of either anxiety or depression bidirectionally increase the risk of developing full blown disorders (Cummings, Caporino, & Kendall, 2014; Lavigne et al., 2015). Research also shows that the vast majority of psychopathology debuts in childhood or adolescence (Kessler et al., 2005), indicating childhood as an especially important life period for prevention prior to disorder onset. Combined, these arguments emphasize the importance of effective prevention programs targeting late childhood.

1.1.3 Inconclusive longitudinal research results

Prevention interventions are classified into three intervention levels: indicated, selected and universal. Indicated preventions target youth experiencing high levels of symptoms, but still not high enough to classify for a diagnosis. Universal interventions target the population level, and selected interventions target people with known risk factors (Stockings et al., 2016). Generally, larger effect sizes are found in indicated interventions than in universal interventions (Stockings et al., 2016).

Research generally indicates a small effect of prevention programs for youths immediately after the intervention for both anxious and depressive symptoms, across universal, selected and indicated interventions (Johnstone, Kemps, & Chen, 2018; Martinsen

et al., 2018; Neumer et al., 2017; Rasing, Creemers, Janssens, & Scholte, 2017; Stockings et al., 2016). The results from long-term follow-up are more ambiguous, and fewer studies have investigated this time frame than that immediately after the intervention (Neumer et al., 2017; Rasing et al., 2017; Werner-Seidler et al., 2017). The results from two large meta-analyses suggest that longitudinal effects are promising but inconclusive (Stockings et al., 2016; Werner-Seidler et al., 2017). Werner-Seidler et al. (2017) combined universal, selected and indicated interventions in follow-up categories of 6-12 months and over 12 months. The results indicated that symptoms of both anxiety and depression in children were reduced; and this reduction was sustained for at least 12 months, but these effects diminished over time. Overall, small effect sizes with moderate heterogeneity were found across studies. In contrast, Stockings et al. (2016) reported result from indicated interventions separately and found a reduction in symptoms that was sustained for up to 6-9 months for both depressive symptoms and combined categories of internalizing symptoms, but that disappeared by 12 months. Universal preventions did show an effect at 12-month follow-up. The study by Stockings et al. (2016) did not find a significant symptom reduction in anxious symptoms at any assessment point. The different results in these two meta-analyses might be due to Werner-Seidler et al. (2017) not separating universal, selected and indicated preventive intervention or to differences in inclusion criteria between the meta-analyses. One important factor that both research groups highlight is that there are few studies that result in ambiguous conclusions (Stockings et al., 2016; Werner-Seidler et al., 2017). Several other studies have found similar ambiguous conclusions with regard to the longitudinal effect of indicated prevention targeting anxious symptoms in children, and more research is needed due to inconsistencies in the findings and the small number of studies (Fisak, Richard, & Mann, 2011; Neumer et al., 2017; Rasing

et al., 2017; Stockings et al., 2016; Werner-Seidler et al., 2017). In accordance with this, Bernaras et al. (2019) reviewed the prevention program targeting only depressive symptoms and concluded that long-term results were unclear, suggesting much work remains before we have the knowledge to prevent both anxious and depressive symptoms in youths successfully.

Reviews and meta-analysis covering the prevention of internalizing symptoms in children and adolescents identifies substantial inconsistencies in reported effects. Several factors possibly contribute to this heterogeneity, for example, mixing studies focusing on different age spans, different intervention levels (e.g., universal, selective and indicated), different targets (e.g., anxious and depressive symptoms in combined or separate studies), and different symptom measurements (Johnstone et al., 2018; Werner-Seidler et al., 2017). The substantial heterogeneity represents a challenge because it suggests that there are yet unknown important features contributing to the variation in the effects. To fill this gap in knowledge, several of the latest reviews and meta-analyses conduct moderation analyses to increase knowledge regarding which features are influencing effect sizes (Bernaras et al., 2019; Fisak et al., 2011; Werner-Seidler et al., 2017).

Although prevention programs using techniques other than cognitive behavioral therapy (CBT) exist, for example, interpersonal therapy or mentalization-based programs, the vast majority of programs examined in the youth population have a CBT focus (Bernaras et al., 2019; Werner-Seidler et al., 2017). The use of psychotherapeutic strategies in structured programs (such as CBT) is associated with successful prevention (Fisak et al., 2011; Werner-Seidler et al., 2017). CBT has also repeatedly been found to be effective in treating anxious

and depressive symptoms in youths (Mychailyszyn et al., 2012; Weisz et al., 2017), and even long-term results for treatment are positive (Rith-Najarian et al., 2019). There are also promising results for technology-delivered treatment interventions (for example, treatment delivered via an app for smartphones or web-based platforms) for internalizing disorders in youths; however, as presented in a recent review, these interventions have smaller effects than traditionally delivered treatment (Grist, Croker, Denne, & Stallard, 2018). Another factor associated with success in prevention is delivery by mental health professionals, as opposed to delivery by, for example, school personnel (Fisak et al., 2011; Werner-Seidler et al., 2017).

Children's ages do not seem to moderate prevention effect. However, these results should be interpreted with caution, especially for children under the age of 10, due to there being few studies and large variation in the age-span between studies (Fisak et al., 2011; Werner-Seidler et al., 2017). Child gender is rarely examined as a moderator for prevention in large reviews and meta-analyses (Bernaras et al., 2019; Johnstone et al., 2018; Rasing et al., 2017; Stockings et al., 2016; Werner-Seidler et al., 2017), which is surprising because gender differences are often found in the prevalence and trajectories of both anxiety and depression (Hankin et al., 2015; Ohannessian, Milan, & Vannucci, 2017). By examining anxiety prevention only, Fisak et al. (2011) found no moderation effect of gender.

The effect of including parents in the intervention is unclear, possibly due to the high heterogeneity across studies (Barmish & Kendall, 2005; Breinholst, Esbjørn, Reinholdt-Dunne, & Stallard, 2012). Although parent involvement was not analyzed as a moderator or mediator, Werner-Seidler et al. (2017) noted that 58% of the studies included in their review did not include parents. This number is surprisingly high, considering that several parental

factors (such as parental mental health and parenting behavior) influence children's risk for internalizing symptoms, suggesting that parents should be important in the prevention (Yap et al., 2016). In support of the importance of parental involvement, there are some positive results of programs focusing primarily on parents, notably the majority of these programs target preschool children (Yap et al., 2016). Regarding treatment, a recent review showed an association between parental involvement and increased effect size, both post-treatment and at follow-up (Sun, Rith-Najarian, Williamson, & Chorpita, 2019).

In summary, preventive interventions targeting anxious and/or depressive symptoms in youth are promising, but there is room for improvement in the interventions, and more research is needed on different areas such as the format and quality of the intervention, age groups, and implementation issues such as logistics and cooperation with local communities. More research on the long-term effects is especially important, as well as studies designed to identify factors associated with successful longitudinal prevention.

1.2 Theoretical framework

1.2.1 Transdiagnostic perspective

Similarities in both etiology, theoretical explanations and intervention strategies, combined with high comorbidity, have fueled the transdiagnostic understanding of and interventions for internalizing symptoms (Cummings et al., 2014). The term "transdiagnostic" alludes to theoretical explanations and interventions designed to target shared aspects, or mutual underlying difficulties, of separate diagnoses or symptom categories, for example, one intervention targeting both anxious and depressive symptoms simultaneously (Ehrenreich-May & Chu, 2014). Transdiagnostic theory is based on a dimensional, rather than categorical, understanding of mental disorders, in which the idea is

that there are underlying processes cutting across traditional disorder categories. These processes could include some general underlying factor common to all mental health issues or factors common to only some dimensions of symptoms. Transdiagnostic factors are assumed to be important both in developing and maintaining internalizing disorders, and to generate lasting changes, interventions should target the underlying factor rather than just the disorder-specific symptoms (Harvey, 2014; Werner & Gross, 2010).

Anxious and depressive symptoms are highly comorbid, and different developmental pathways explaining this comorbidity in youth have been proposed. For example, negative consequences from symptoms of one disorder increase the likelihood of developing the other disorder (Cummings et al., 2014), e.g., the anxious child's avoidance of social situations causes loneliness and limits positive experiences, which leaves the child at risk for depression. In this example, the same underlying transdiagnostic factor could contribute to maintaining both the anxious and depressive symptoms, for example, an underlying deficit in emotion regulation.

Another theory trying to explain the high comorbidity is that both symptoms of anxiety and depression derive from common underlying factors, e.g., transdiagnostic factors, including biological, genetics and psychological risk factors, in addition to individual experiences and learning (Barlow, Allen, & Choate, 2004; Cummings et al., 2014). Parental depression, attachment security, child temperament, stress and low socioeconomic status (SES) are all shared risk factors of depressive and anxious symptoms in children and adolescents (Côté et al., 2018; Hopkins, Lavigne, Gouze, LeBailly, & Bryant, 2013). Taking this into consideration, it should be possible to target both symptom categories in one intervention. In support of this, both preventive and treatment interventions targeting

either depressive or anxious symptoms show crossover effects for symptoms in the other category, suggesting some element of the interventions being effective for both symptom categories (Garber et al., 2016). In other words, there are transdiagnostic elements in the existing interventions.

The diatheses–stress model is used to explain why some individuals develop psychopathology, and in CBT, both anxious and depressive symptoms are theorized as stemming from diatheses combined with stress (Kendall et al., 2014). The diatheses-stress model can be defined as transdiagnostic in that it offers an etiological explanation for both disorders. The diatheses–stress hypothesis explains why not all individuals experiencing similar stressors develop symptoms or develop different symptoms, as not all individuals have the diathesis necessary for the development of such symptoms. This hypothesis is in accordance with the explanations for the comorbidity presented above. The vulnerability factor could be singular or multifactorial, for example, a genetic predisposition for depression and/or anxiety combined with suboptimal learning of emotion regulation skills and stress from environmental factors such as living with a depressed parent. All the shared risk factors presented above work in combination, and as a result, children would develop depressive and/or anxious symptoms.

CBT is based on the notion that behaviors, thoughts and feelings are connected, and changes in one will produce changes in the others. This connection is described as the cognitive triangle and is used in all CBT treatments in the section of psychoeducation. The cognitive triangle is thereby an example of a transdiagnostic element in CBT treatment. However, which thoughts, behaviors and feelings should be focused on is tailored to the

specific diagnosis and individual in question (Kendall et al., 2014). The general structure of most CBT treatments is as follows: psychoeducation, coping skills training, problem solving training, cognitive restructuring and behavioral strategies. This structure and these principals are transdiagnostic across most diagnostic specific CBT manuals (Kendall et al., 2014) and, evidently, also in the transdiagnostic CBT manual EMOTION, which is described later in this thesis. CBT has been proven effective for a wide variety of specific diagnoses, possibly some of the CBT features included in all CBT treatments have effective elements suitable for several diagnoses, for example, learning patient coping skills aimed at improving emotional regulation (Kendall et al., 2014).

Although there are many commonalities between anxious and depressive symptoms, research also continuously finds differences supporting these as strongly related, but separate, constructs (Hopkins et al., 2013; Snyder et al., 2009). Both anxious and depressive symptomatology are developed from multidomain risk factors, and although the vast majority of these factors are common for both disorders, Hopkins et al. (2013) found specific factors related to anxiety and depression development in preschool children. For example, parental depression was associated with both symptom categories, but the association was mediated only by children's negative affect (NA) in depression, whereas both NA and effortful control (EC) (defined as the regulatory aspect of temperament, including the regulation of emotions, behavior and attention) mediated the association between parental depression and child anxious symptoms. Furthermore, EC emerged as being particularly important in early emerging anxious symptoms but not depressive symptoms (Hopkins et al., 2013). Others have found differentiating results between

different anxiety disorders, such as worse treatment responses being seen for social anxiety disorder (SAD) than for other anxiety diagnoses, indicating there might be some important differences between disorders or symptoms categories that need to be considered (Kennedy, Tonarely, Sherman, & Ehrenreich-May, 2018; Kodal et al., 2018). Despite these differences, transdiagnostic theory holds that there are enough similarities between anxious and depressive symptoms for a transdiagnostic intervention to be effective for both symptom categories simultaneously.

1.2.2 Transdiagnostic preventive research

There are only a few studies previously published examining the effect of transdiagnostic preventive intervention for anxious and depressive symptoms in youths. Investigating mindfulness-based transdiagnostic prevention, Johnson, Burke, Brinkman, and Wade (2016) found no effects targeting symptoms of anxiety, depression and eating disorders in adolescents (M = 13.63, SD = 0.43, N = 308). García-Escalera et al. (2019) published a small trial containing 28 adolescents (M = 14.67, SD = 0.87) receiving the transdiagnostic Unified Protocol for the Treatment of Emotional Disorders - in Adolescents (UP-A) intervention as a universal preventive intervention, targeting both depressive and anxious symptoms. Youths reported a reduction in anxious, but not depressive, symptomatology. Although caution should be taken in the interpretation of the results, due to the small sample size and lack of a control group, the results indicate that this intervention is more suitable for anxious symptoms than depressive symptoms. Using an indicated transdiagnostic prevention program based on interpersonal theory, La Greca, Ehrenreich-May, Mufson, and Chan (2016) found positive results postintervention for SAD and depression in adolescents (aged 13 – 18 years). Adolescents in their sample reported

elevated levels of SAD or depression combined with experiences of peer victimization. However, due to the small sample size (N = 14) and lack of a control group, these conclusions are dubious. Martinsen et al. (2018) found positive effects for both anxious and depressive symptoms in children (aged 8 - 12 years) immediately after the indicated transdiagnostic prevention program, EMOTION. The large sample size in this study (N = 795 children) and its randomized controlled trial (RCT) design are important strengths over previously published results in the field. Further positive results were found for emotional problems (depressive and anxious symptoms) in the study by Essau, Sasagawa, Jones, Fernandes, and Ollendick (2019) after testing the transdiagnostic prevention program Super Skills for Life (SSL) as an indicated intervention in a real-world setting. Positive results were found for emotional problems in children (aged 8 – 12 years) across informants (child, parent and teacher) both at post-intervention and at the 6-month follow-up. A relatively large sample size (N = 205) strengthens these results; however, the study did not include a control group, and there was no specific measure of depressive symptoms included. The Spanish version of the SSL program has also recently shown positive results, preventing both anxious and depressive symptoms in a sample of 119 children (aged 8 – 12 years) at both post-intervention and at 12-month follow-up (Fernandez-Martinez et al., 2019). The quasi-experimental design with no control group suggests that interpretations should be considered preliminary.

Similar to prevention, there are few transdiagnostic treatments targeting anxiety and depression in youth. Chu et al. (2016) conducted a small study (N = 35) of a transdiagnostic treatment targeting anxiety and depression in adolescents (aged 12 – 14 years) emphasizing anti-avoidance exposure and showed promising results for both symptom categories. Likewise, the Unified Protocol for Treatment of Emotional Disorders adapted for children

(aged 7-13 years) (UP-C) and adolescents (aged 12 – 17 years) (UP-A) are used in some smaller treatment studies, targeting anxiety disorders with comorbid depression, showing positive results (Bilek & Ehrenreich-May, 2012; Ehrenreich-May et al., 2017; Kennedy, Bilek, & Ehrenreich-May, 2018).

1.2.3 Emotion regulation

Difficulties with emotion regulation are proposed as an important transdiagnostic vulnerability across internalizing disorders (Barlow et al., 2004). Harvey (2014) defines transdiagnostic factors as any factor used to understand two or more connected but distinct phenomena and identifies emotion regulation as one such transdiagnostic factor.

The concept of emotion is difficult to define, as it includes a large spectrum of responses, but the definition by Gross and Thompson (2007) is widely accepted; "Emotions are a person-situation transaction that compels attention, has particular meaning to an individual in light of currently active goals, and gives rise to a coordinated yet flexible multisystem response to the on-going personal-situation transaction" (Gross & Thompson, 2007, p. 5). This definition includes both the range of different emotions (joy, sadness, anger, etc.) and the different magnitudes of the emotions (e.g., from glad to ecstatic or from annoyed to furious).

Symptoms are a shifting phenomenon, with prevalence varying both between individuals and within an individual over time (Costello et al., 2003; Polanczyk et al., 2015). Depressive symptoms include the dysregulation of dysphoria and sadness, and symptoms of anxiety include the dysregulation of fear (American Psychiatric Association., 2013). Emotion regulation, however, includes the regulation of the entire spectrum of emotional reactions,

both positive and negative, in both increasing and decreasing directions (Gross, 2013; Thompson & Goodman, 2010). Emotion regulation is a broader concept than symptoms of anxiety and depression. Emotion regulation difficulties thereby fit the definition of a transdiagnostic factor important for understanding symptoms of both anxiety and depression.

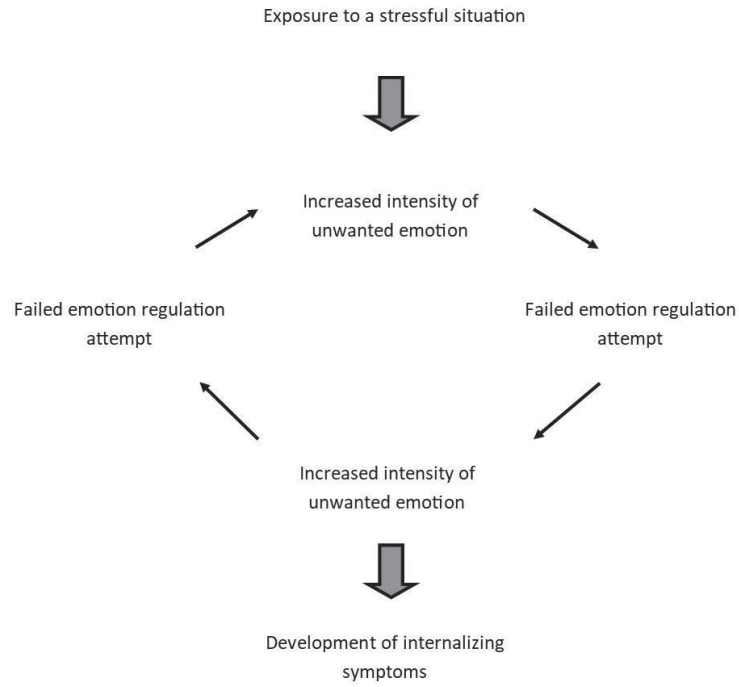
Emotion regulation refers to a person's ability to alter their emotions in accordance with the situation and his or her personal goals (Gross, 2013; Thompson & Goodman, 2010). There is still debate regarding the concept of emotion regulation, and different definitions exist. The regulation of emotions in accordance with the context or personal goals is a widely accepted definition, and this definition includes a separation of the emotion regulation process from the emotional response (Thompson & Goodman, 2010). In a recent review of the field on emotion regulation related to a developmental perspective, Sabatier, Restrepo Cervantes, Moreno Torres, Hoyos De Los Rios, and Palacio Sañudo (2017), define the concept of emotion regulation as "a series of internal and external, conscious and unconscious, voluntary and involuntary processes, responsible for evaluating and modifying emotional responses in their physiological, cognitive and behavioral component processes, always with the goal of achieving personal goals and fulfilling social acceptance" (Sabatier et al., 2017, p. 77 – 78). This definition illustrates the many facets and the multimodality of emotion regulation.

According to the process model of emotion regulation (Gross, 1998), emotion regulation can be used to influence different stages of the emotional process: 1) situation selection, for example, avoiding the feared situation; 2) situation modification, for example, bringing a good friend as support when doing something scary; 3) attentional deployment and

distraction, for example, thinking about something fun when nervous; 4) cognitive restructuring, for example, changing one's interpretation of a negative situation from "They ignore me, I'm not welcome" to "They are interested in something else, I'm curious as to what"; and 5) response modulation, for example, suppressing the emotional response. The process model illustrates that emotions are dynamic, and different emotion regulation strategies can be employed at the different stages of the emotional process (McRae & Shiota, 2017). Another important aspect of this theory is that it illustrates how much emotion influences our lives and which situations and circumstances a person peruses or avoids (Esbjorn, Bender, Reinholdt-Dunne, Munck, & Ollendick, 2012).

The process of gaining control over emotional reactions and age-appropriate progress in the flexibility and complexity of emotional regulation is important for adaptive development through childhood and adolescence (Gross, 2013; Izard, Fine, Mostow, Trentacosta, & Campbell, 2002; Thompson & Goodman, 2010). The development of emotion regulation is dependent on both factors related to the child (e.g., temperament) and the environment (e.g., experiencing stressors). A child with a reactive temperament experiences strong emotions, both positive and negative, and strong emotional reactions are challenging to regulate (Thompson & Goodman, 2010). Stressful situations generally induce stronger emotions, which are challenging to regulate (Thompson & Goodman, 2010). The inability to regulate maladaptive feelings when exposed to stress over time amplifies a downward spiral where ineffective emotional regulation increases the intensity of the unwanted emotions, which, in turn, are even more challenging to regulate (Barlow et al., 2004). See Figure 1 for an illustration.

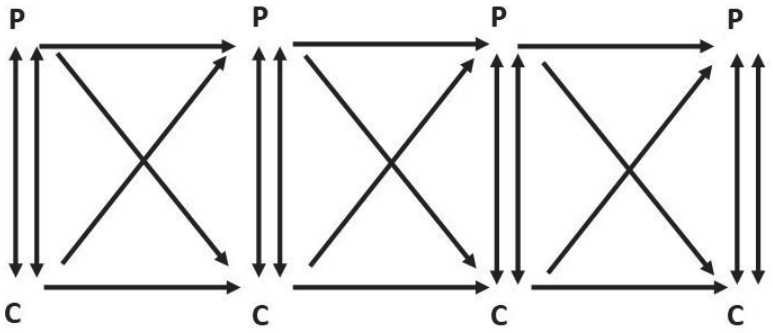
Figure 1. Possible interplay between emotion regulation and stressful experiences



Although different strategies of emotion regulation are adaptive in different situations and the flexibility of strategies is important, some regulation strategies are categorized as being less adaptive, in general. Regulation strategies such as rumination, avoidance and suppression are associated with heightened levels of internalizing symptoms and are often referred to as maladaptive strategies. Whereas cognitive reappraisal, problem solving and acceptance are associated with fewer symptoms and are often termed adaptive emotion regulation strategies (Schäfer, Naumann, Holmes, Tuschen-Caffier, & Samson, 2017).

From infancy, children are completely dependent upon caregivers to regulate their emotions for them. As children grow, they use caregivers as models and are thereby dependent on caregivers' abilities to regulate their own emotions in addition to caregivers' abilities to regulate the child directly (Huberty, 2012). Emotional regulation originates in interaction with language, social and cognitive development (Izard et al., 2002). In addition, individuals develop emotion regulation within a broader context, influenced by family factors, social factors and cultural factors. Cultures differ in which emotional reactions are considered acceptable and to what degree emotional reactions are expressed, as well as in which regulation strategies are used (Grabell et al., 2015; Huberty, 2012; Tahmouresi, Bender, Schmitz, Baleshzar, & Tuschen-Caffier, 2014). As such, the development of emotion regulation is a complex transactional process. Maladaptive emotions could be both positive and negative, and there could be both too few and too many emotional reactions (Gross, 2013; Thompson & Goodman, 2010). Maladaptive development in any of the areas mentioned above could promote regulatory difficulties in the child and thereby make them vulnerable to developing internalizing symptoms (Izard et al., 2002). Figure 2 illustrates the transactional relationship between parent and child.

Figure 2. The transactional model displaying possible reciprocal influence between parent (P) and child (C) in the childs development of emotion regulation (From Sameroff, 2009)



Several studies have reported an association between emotion regulation and internalizing symptoms in youth, suggesting that these associations are robust and important for the further development of interventions (Compas et al., 2017; Schneider, Arch, Landy, & Hankin, 2016). Longitudinal studies have confirmed the association and suggested that poor emotion regulation predicts psychopathology in children (Gonçalves et al., 2019; Kim-Spoon, Cicchetti, & Rogosch, 2013; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011). Schäfer et al. (2017) conducted a meta-analysis and found similar associations between symptoms of anxiety and depression and emotion regulation strategies in a nonclinical sample of adolescents, indicating that difficulties with emotion regulation are present before symptoms develop into disorders. Similarly, longitudinal research has reported that emotional dysregulation (including emotional understanding, the dysregulation of sadness and anger, and rumination) predicted change in youth anxiety over time. The dysregulation of anger and sadness and rumination predicted depressive

symptoms in adolescents. However, no relationship was found between depression and emotional understanding (McLaughlin et al., 2011). Deficits in emotion regulation are found in youths at risk for depression, and emotion regulation is proposed as essential for early prevention targeting these youths (Kovacs, Joormann, & Gotlib, 2008; Kovacs & Yaroslavsky, 2014).

1.2.4 Informant differences

In research concerning child and adolescent psychopathology, having multiple informants is viewed as the gold standard (for example, child, parent and teacher reports); since the goal is to broaden our understanding of a given phenomenon, the more information we can gather about the phenomenon, the better the outcome will be (De Los Reyes & Kazdin, 2005; Noordhof, Oldehinkel, Verhulst, & Ormel, 2008). One problem with different informants is that they tend to produce different information, and low to moderate agreement across informants is generally found for both anxious and depressive symptoms (Bajeux et al., 2018; De Los Reyes & Kazdin, 2005; Duhig, Renk, Epstein, & Phares, 2000). Concerning child and adolescent psychopathology, the empirical evidence is inconclusive regarding parental or child self-reporting of symptoms as the preferred alternative. However, both parent and child do provide important, and potentially supplemental, information (De Los Reyes & Kazdin, 2005; Schofield, Parke, Coltrane, & Weaver, 2016).

The field has no clear answer as to what causes informant differences because the results are inconclusive (De Los Reyes & Kazdin, 2005; Schofield et al., 2016). One theory that tries to explain informant differences holds that, together, attribution differences

between the observer and the object of observation (e.g., attribution differences between the parent and child reporting upon the child's behavior), different perspectives and the negative focus in clinical assessments contribute to informant differences (De Los Reyes & Kazdin, 2005). Schofield et al. (2016) proposed viewing informant discrepancies as informative, as opposed to an error. If informant discrepancies are viewed as reflecting variance in children's behavior, discrepancies become informative, and the value of multiple informants is even higher. In support of informant discrepancy as informative in itself, discrepancies between parent and adolescence reports of adolescent internalizing symptoms are associated with increased problems in adolescence (Stein et al., 2018).

Reporter differences are not only found between parents and children but also between parents reporting upon the same child, with a tendency towards more problems being reported by mothers than fathers (Alakortes, Fyrstén, Carter, Moilanen, & Ebeling, 2015; Duhig et al., 2000). Evidence points towards parental differences in how they facilitate adolescent emotional regulation; maternal support and paternal control have been associated with successful emotion regulation in adolescents (Van Lissa et al., 2019). Cassano, Perry-Parrish, and Zeman (2007) found that mothers responded to their child's sadness with expressed encouragement and problem focused-strategies, whereas fathers responded with minimization. If parents differ in how they influence children's emotion regulation, children may display different regulatory behaviors depending on which parent is present. For example, if a child expects minimization from their father when expressing sadness but encouragement and problem-focused strategies from their mother, over time, this child might express more sadness when interacting with their mother, while, to a higher degree, suppressing sadness when interacting with their father (e.g., the child is using different strategies depending on the surroundings). Consequently, informant differences

between parents regarding their child's emotion regulation reflect actual differences in that child's emotion regulation capacities (Schofield et al., 2016). Parental differences are also found regarding internalizing symptoms in children, supporting both maternal and paternal informants as being important. For example, Majdandzic, Möller, de Vente, Bögels, and van Den Boom (2014) found that fathers challenging the behavior (encouraging the child to go outside his or her comfort zone) of their kids protected them against anxiety development, whereas mothers challenging their behavior was associated with increased anxiety in the child. This dichotomy suggests that there are important differences in how parental behavior influences the child's development. Hence, paternal and maternal reports could provide more information when examined separately, as opposed to one parental report.

These findings of parental differences underline the importance of investigating maternal and paternal factors separately. Research regarding children is traditionally exclusive to relying on mothers as informants. Paternal data are rarely included, although evidence showing that both parents uniquely contribute to their child's development is emerging (Cassano et al., 2007; Dadds et al., 2018; De Los Reyes & Kazdin, 2005). The inclusion of both paternal and maternal informants will possibly broaden our understanding of the phenomenon of emotion regulation, as well as its relationship with internalizing symptoms.

1.3. Aims of the thesis

The overall aim of the present thesis was to increase knowledge regarding emotion regulation and its association with children's anxious and depressive symptoms and the long-term effects of a transdiagnostic preventive intervention for anxious and depressive symptoms in school-aged children.

Study 1: The aim of this study was twofold: first, to examine the association between anxious and depressive symptoms in children and emotion regulation in a Norwegian sample, and second, to examine whether the association between children's anxious and depressive symptoms and emotion regulation differed depending on the informant being the mother or father.

Study 2: The aim of this study was to examine the potential effect of the EMOTION intervention on children's emotion regulation.

Study 3: The aim of this study was to examine the effects of the EMOTION intervention on anxious and depressive symptoms at the 12-month follow-up.

2. Method

2.1 Design

The data in all three articles of the present thesis are derived from the Norwegian Coping Kids study (Patras et al., 2016). The Coping Kids study is a national clustered RCT study developed to test the effect of a new transdiagnostic prevention program, EMOTION, in children aged 8 to 12 years old who are experiencing high levels of anxious and/or depressive symptoms. EMOTION is the first transdiagnostic intervention for internalizing symptoms developed for Norwegian youth.

The data in the Coping Kids study were collected from 2014 to 2017, with the enrollment of new children every semester. For each child, the data were collected at three time-points: preintervention, post intervention (within two weeks) and 12 months after the intervention. The present thesis presents data from all three time-points. All data collection was performed electronically. The data were collected in schools at three sites across Norway, ensuring that both rural and urban areas were included in the sample.

Schools volunteered to participate in the project, and randomization was performed at the school level. The schools were matched on size and geographical area before randomization. Due to feasibility considerations and to avoid contamination between control and intervention subjects within the same school, the schools were kept as either an intervention or a control school through the project. Half-day seminars were held in all participating schools to educate school personnel on recognizing and managing internalizing symptoms in schoolchildren.

Power calculations were performed prior to the main study to ensure a sufficiently large sample to detect small differences and to account for within-cluster dependence, and the inclusion of approximately 560 children was estimated to be sufficient (Patras et al., 2016).

Fidelity to the EMOTION program was monitored by videotaping and scoring 17% of the group sessions using CAS-CBT (Competence and Adherence for Cognitive Behavioral Therapy), and total adherence on CAS-CBT ranged from 0 = none to 6 = thorough (Bjaastad et al., 2016). The results indicated adherence to the program (M = 3.59 SD = 1.26). Attendance was registered by group leaders; children attended 89.9% of the child sessions, and parents attended 80% of parental sessions (Martinsen, 2018; Rasmussen, 2019).

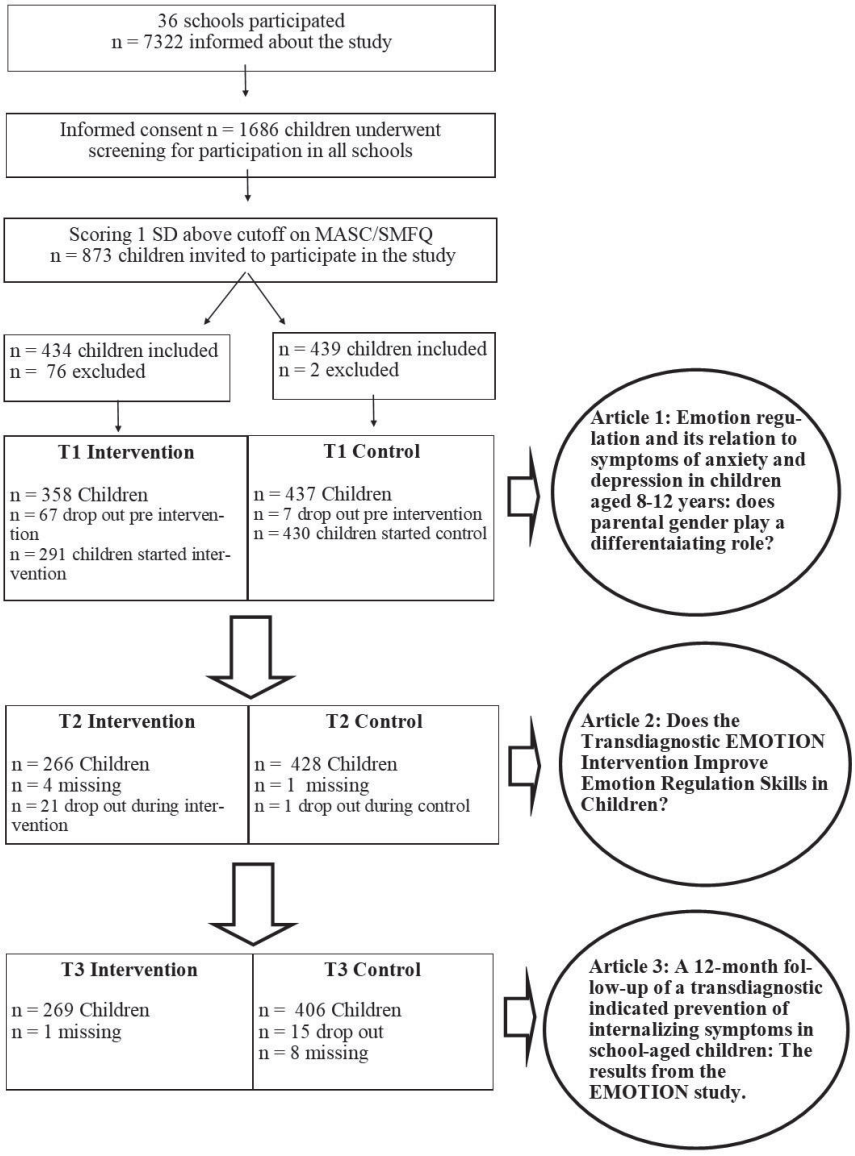
2.2 Recruitment and participants

The Coping Kids study was presented to school leaders who volunteered their school to participate. A total of 36 schools participated, randomized into 18 schools in the control condition and 18 schools in the intervention condition. A school contact was chosen at each school, and this person was responsible for handing out information and for all the practicalities necessary to screen children and run child groups, all in close cooperation with representatives from the Coping Kids study. After schools volunteered to participate in the study, children in the eligible classes were given age appropriate information about the study from the school contact. Written information was distributed to all the eligible children (n 7322). The study was also presented at parental meetings by a representative from the project group, and written information about the study and screening process were sent to all parents of children in the eligible age span (8 – 12 years old, corresponding to grades 3, 4, 5 and 6). Participation in screening required expressed interest from the child and written consent from the caregiver. Screening was performed during school hours, and 1692 children underwent screening.

Inclusion in the study was based on child self-report of anxious and/or depressive symptoms, and the cut-off was set to one SD above the population mean (Angold, Erkanli, Silberg, Eaves, & Costello, 2002; Thor Ólason, Blöndahl Sighvatsson, & Smári, 2004). Due to self-report of elevated anxious and/or depressive symptoms above the predetermined cut-off, 873 children were invited to participate in the study. Caregivers of the participating children were then invited to answer questionnaires electronically, providing both demographic data and baseline measurements of the child's symptoms. For children with more than one caregiver, both caregivers were encouraged to participate. In cases where both caregivers of one child participated, the parents themselves decided who answered as the main caregiver and who answered as the supplemental caregiver. However, children were included in the study regardless of caregiver participation. The data from the supplemental caregiver (mainly fathers) were only used in study one of the present thesis; in studies two and three, only data from the main caregiver were used.

Seven children were excluded due to the exclusion criteria (e.g., mental retardation, autism, or severe behavior disturbance/not potentially benefiting from group intervention): five in the intervention condition and two in the control condition. In the intervention condition, an additional 71 children were randomly excluded due to a lack of resources (lack of group leaders). Thus, 795 children started the intervention, and 624 of these children had at least one caregiver participating in the study. A flowchart of participants throughout the study, including article overview, is presented in figure 3.

Figure 3. Overview of participants thru the study and articles (Feb. 2014— June 2017)



Note: In the intervention condition; four children were sick at T2, but present at T3.
The figure are based upon Figure 1, article three of the present thesis (Loevaas et al., submitted).

A total of 78.5% of children had at least one caregiver participating in the study. The caregiver sample consisted of mothers (n= 550) and fathers (n= 298) (including both the main and supplemental caregiver reports). The majority of our sample reported Norway as their place of birth (95.3% of the children, 88.8% of mothers and 88.9% of fathers), and most children lived with both their parents (71.3%). The mean age of children at preintervention was ten years old (SD = 0.90), and 58.1% were girls. Eighty-one percent of parents reported family income equal to or above the median income level in Norway (Angold et al., 2002; Statistics of Norway, 2016), and 71% reported education at college/university level, which was higher than the general education rate in Norway (between 36 and 49% report education on the college/university level) (Statistics of Norway, 2017). Table 1 shows baseline descriptive information of the thesis` total sample, split by respondent.

Table 1. Descriptive information split by respondent

		Child	Mother	Father
		N 795	N 550	N 298
Place of birth	Norway	95.3 %	88.8 %	89.2%
	Western-European	1 %	2.3 %	2.7 %
	Nordic	1.6 %	2.6 %	1.4 %
	Other	2.1 %	6.3 %	6.7 %
Living arrangement	Mother and Father	71.3 %		
	Joint custody (split fifty-fifty between parents)	9.4 %		
	Mother only /Mother and stepparent	13.3 %		
	Father only/ Father and stepparent	2.5 %		
	Other	3.5 %		
Parental education level	College/University		68.0 %	70.4 %
	High school		21.7 %	20.7 %
	Not finished High School		11.3 %	10.4 %

2.3 Attrition

Due to data sampling electronically, no single items were missing from the data material. To increase the response rate, children who were absent from school on the day of data collection were offered the option to answer the questionnaire as soon as possible. This option was given both at post-intervention and at follow-up.

Parents who initially signed informed consent and agreed to participate in the study were contacted with e-mails containing a link to the electronic questionnaires, and reminders were sent to nonresponders. A research assistant phoned the nonresponding parents as a last reminder. To further increase the response rate among parents, a drawing for gift certificates (a value of 1000 NOK, at a national ticket distributer of cultural arrangement) included those who completed the data collection.

One important strength of the Coping Kids study is a high response rate at all time points. Comparisons between completers (defined as subjects with data for at least two time-points) and dropouts from the study were performed, and no significant differences were found regarding anxious or depressive symptoms, which was true across all reporters (Table 2).

Table 2. Comparisons between completers and drop-outs split by symptom measurements

	Completes			Drop-outs			*p*
	N	M	SD	N	M	SD	
MASC-C	705	61.76	14.07	90	63.64	13.48	.213
MFQ-C	705	9.88	5.06	90	9.87	4.87	.992
MASC-P	521	43.46	15.36	106	41.63	14.72	.266
MFQ-P	514	5.68	4.82	109	5.22	4.77	.375

Note: SMFQ-C/P = Mood and Feelings questionnaire – short version, child/parent version. MASC-C/P = Multidimensional Anxiety scale for children, child/ parent version.

Participation in the study only required child data at T1. Parents who failed to answer at T1, but had children participating in the study, were requested to participate at T2 and T3. Due to this, there were 624 parents participating at T1, but 627 parents participating in the study overall.

2.4 Ethics

The study was approved by the regional ethics committee (REC), Region South and East Norway (Registration number: 2013/1909; Project title: Coping Kids: a randomized controlled study of a new indicated preventive intervention for children with symptoms of anxiety and depression).

The legal guardian of all children provided written informed consent before children participated in the study. In addition, expressed informed interest from the children themselves was required. As the Coping Kids study targets children, special ethical

considerations were taken, and the project was performed in accordance with the requirements of the WMA Declaration of Helsinki (The World Medical Association, 2019) and the Norwegian Health Research Act (Helseforsikringsloven, 2009). A pilot study of EMOTION was conducted prior to the main study, and the results from the pilot indicated low stigma and high user satisfaction (Martinsen, Kendall, Stark, & Neumer, 2016).

2.5 Measures

The Multidimensional Anxiety Scale for Children (MASC) (March, Parker, Sullivan, Stallings, & Conners, 1997), child and parent versions, was used to measure children's anxious symptoms. The MASC is a self-report schema for anxiety symptoms in the two previous weeks. The MASC consists of 39 items, covering four subscales of anxiety symptoms in addition to the total score. The MASC measures physical symptoms, harm avoidance, social anxiety and separation/panic. In the present thesis, only the total score is reported. The total score ranges from zero to 117 points, and higher scores indicate higher levels of anxiety symptoms. The MASC is validated for children from eight to 18 years old, both in Norway (Martinsen, Holen, et al., 2017) and internationally (March et al., 1997). Internal reliability and diagnostic discrimination was also established in a Norwegian sample for both child and parent reports (Villabo, Gere, Torgersen, March, & Kendall, 2012). The internal consistency of the total MASC scale, child and parent versions, was acceptable at all time points (child: α =.84 at pre, .91 at post, and .91 at follow-up. Parent: α = .72 at pre, .81 at post, and .92 at follow-up) in the Coping Kids study.

The short version of the Mood and Feelings Questionnaire (SMFQ) (Angold, Costello, Messer, & Pickles, 1995), child and parent versions, was used to measure child depressive

symptoms. In addition, we added one question from the long version of the MFQ (Angold, Costello, Pickles, & Winder, 1987) covering suicidal ideation. The SMFQ is a self-report measurement of child and adolescent depressive symptoms, validated from the age of 8 to 18 years old (Angold et al., 1995). The SMFQ includes 13 questions about depressive mood in the previous two weeks, scored on a three-point scale. The total sum score ranges between one and 26 points. A high score indicates higher levels of symptoms. High retest reliability and discriminant and convergent validity have been confirmed for the MFQ in a Norwegian sample (Sund, Larsson, & Wichstrom, 2001), and Norwegian norms are available for the SMFQ (Larsson, Ingul, Jozefiak, Leikanger, & Sund, 2016). The internal consistency of the SMFQ was acceptable at all time points in the Coping Kids study (Child version: α = .81 at pre, .87 at post, and .88 at follow-up. Parent version: α = .88 at pre, .87 at post, and .92 at follow-up).

The Emotion Regulation Checklist (ERC) (Shields & Cicchetti, 1997) assesses children's general emotion regulation as reported by parents. Parents are asked to rate the frequency of their children's emotion regulation-relevant behaviors on a three-point scale; the time period is not specified. The questionnaire consists of 24 questions divided into two subscales, and the results are presented as the mean item scores for each subscale. The liability/negativity (L/N) subscale assesses inflexibility, liability and dysregulation. High scores reflect dysregulation. The emotion regulation subscale (ER) assesses positive emotion regulation capacities, appropriate emotional expression, empathy and self-awareness. Low scores indicate dysregulation. Shields and Cicchetti (1997) demonstrated satisfactory discriminant and construct validity, and the ERC was later validated in European sample

(Molina et al., 2014). The internal consistency of the ERC subscales was tested both at baseline and post-intervention and was deemed acceptable (ER subscale: T1 α = .72, T2 α = .81; L/N subscale: T1 α = .72, T2 α = .81).

The Hopkins Symptom Checklist (HSCL-10) is the short version of the HSCL (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). The HSCL-10 is a self-report questionnaire assessing adult mental health. HSCL-10 reliability and correlation with HSCL-25 were validated in a Norwegian sample (Strand, Dalgard, Tambs, & Rognerud, 2003). The results are presented as sum scores, with higher scores indicating more mental health issues. The internal consistency for the HSCL-10 at baseline was α = .85 and .87 for paternal and maternal reports, respectively.

The Early Adolescence Stress Questionnaire (EASQ) consists of 22 items describing potential stressors. Parents are to indicate by yes/no answer if their child has experienced the given stressor in the past 12 months (Sund, Larsson, & Wichstrom, 2003). Both acute and chronic stressors are included. The EASQ is based on several questionnaires regarding youth stressors, with additional items adjusted to children and adolescents in Norway. In the Coping Kid study, the EASQ was modified, i.e., using only items relevant for the present age group. The results are presented as sum scores, with higher scores indicating more stressors having been experienced.

Table 3 presents an overview of the measurements used in the three articles in the present thesis.

Table 3. Overview of measurements used in article one, two and three

	SMFQ Child and parent version	MASC Child and parent version	ERC	HSCL-10	EASQ
Article one	X	x	x	x	x
Article two			x		
Article three	X	x			

Note: SMFQ = Mood and Feelings questionnaire – short version. MASC = Multidimensional Anxiety scale for children. ERC = Emotion regulation checklist. HSCL-10 = Hopkins symptom checklist. EASQ = Early adolescence stress questionnaire.

2.6 The EMOTION program

The transdiagnostic EMOTION program (Kendall, Stark, Martinsen, O'Neil, & Arora, 2013; Martinsen, Kendall, Stark, Rodriguez, & Arora, 2014) is grounded in CBT and is based on the two existing programs: the Coping Cat for Childhood Anxiety program (Kendall & Hedtke, 2006b) and Taking ACTION program for depression (Stark et al., 2007). CBT in children has repeatedly been found to be effective for targeting internalizing symptoms, used both as preventive and treatment intervention (Mychailyszyn et al., 2012; Rasing et al., 2017; Weisz et al., 2017; Werner-Seidler et al., 2017).

The EMOTION program consists of 20 child sessions and 7 parental sessions in which children participate in four sessions (Table 4 presents session by session content for both child and parental groups).

Table 4. EMOTION session inventory

Child group		Parental group		
Sessions	Theme	Sessions	Theme	Participating
		1	Introduction	Parents and children
1	Introduction	2	Positive parenting	Parents only
2	Recognizing emotions, coping and goal setting	3	Positive reinforcement and psychoeducation	Parents and children
5-9	Problem solving	4	Exposure and behavioral activation	Parents only
11	Exposure, Cognitive restructuring	5	Problem solving, Exposure and behavioral activation	Parents and children
12 - 17	Exposure, positive self-schema and cognitive restructuring	6	Exposure behavioral activation and cognitive restructuring	Parents only
18 -20	Integration of skills, exposure and Closure	7	Cognitions, and closure	Parents and children

(Martinsen, Kendall, Stark, Rodriguez, & Arora, 2017)

Two group leaders led groups of three to seven children, with each session lasting approximately 45 minutes. Group leaders were primarily health care workers, and no experience using CBT was required. Group leaders received a three-day seminar covering basic CBT for children, and the seminar also included a detailed introduction to the

EMOTION manual. Ten hours of supervision was provided to the group leaders by an experienced CBT therapist, delivered throughout the intervention.

In the first ten sessions, the focus in the EMOTION intervention is on building group coherency, psychoeducation, identifying individual goals and learning new skills to manage anxious and depressive feelings. Emotion regulation, problem solving and improving children's self-confidence are some of the key elements. In the second half of the program, behavioral activation and exposure tasks are repeated and practiced, including the specific building of the fear hierarchy and exposure tasks targeting anxious symptoms and strategies to improve mood and behavioral activation to target depressive symptoms. All children participate in all exercises; nevertheless, there is room for individual adaption in accordance with each child's personal goals. The EMOTION program emphasizes age-appropriate adaptions of cognitive behavioral material, in which the children are taught new skills through fun exercises. For example, the cognitive triangle is explained and illustrated by allowing the children to play emotional detectives who use clues from cognitions, behaviors and bodily sensations to determine how one is feeling, and an emotion thermometer is used to help children evaluate the intensity of their feelings. Games are played in sessions to illustrate how the children can change their mood by engaging in fun activities, and children learn to handle negative self-talk by talking back to the mocking monster (which is an externalization of the children`s negative self-talk) (Martinsen, Kendall, et al., 2014).

In the parental session, parents/caregivers are taught corresponding strategies in addition to a general focus on positive parenting. Between sessions, children and their parents are requested to fulfill a homework assignment. In agreement with the parents,

children receive small rewards for fulfilling homework assignments (Martinsen, Stark, Rodriguez, Kendall, & Arora, 2014).

2.7 Statistics

Descriptive data in all studies are presented in the individual articles, and comparisons between groups are performed by t-test for scale variables and Pearson's chi-squared test for dichotomous variables. Bivariate correlations between relevant variables were included in study one. In all three studies, *P* values < .05 are considered statistically significant, and 95% confidence intervals (CIs) are reported, when relevant. Child age and gender are controlled for in all analyses, when relevant.

The data in the first study are cross-sectional and are analyzed using hierarchical multiple regression analysis. Hierarchical multiple regression was chosen because it estimates the relationship between two or more variables, measured at one time point (Fagerland, Eide, & Laake, 2012). In addition, comparisons between maternal and paternal results were conducted using the Paternoster test (Paternoster, Brame, Mazerolle, & Piquero, 1998). The paternoster test compares unstandardized regression coefficients from regressions in two independent samples. Using the Paternoster test, we examined if, when holding all other factors equal, there is a statistically significant difference between maternal and paternal reporting of the association between emotion regulation and anxious/depressive symptoms in their children.

In studies two and three, longitudinal data are analyzed using a linear mixed model (LMM). LMMs were chosen to account for the clustering used in the RCT study. In both studies two and three, the LMM was performed with child nested within school and with

school as a second random effect. The results were essentially the same (Appendix B, Tables 1 and 2 display results with school as the second random effect). The statistics of all three studies in this thesis are performed in the ISB SPSS 24.

3. Results

3.1 Summary of the main results in the thesis

Article 1. *Emotion regulation and its relation to symptoms of anxiety and depression in children aged 8 – 12 years: does parental gender play a differentiating role?*

In the first study data was analyzed using hierarchical regressions with a sample of N = 602 children, N = 537 mothers and N = 289 fathers. The results were twofold. First, the results indicated a negative association between children's anxious symptoms (MASC) and emotion regulation (ERC: ER, L/N), as reported by parents: Maternal reports of child anxious symptoms: (L/N: $\beta = 0.24$, $p < 0.001$, ER: $\beta = -0.16$, $p < 0.001$), $\Delta R2 = 10.2\%$. Paternal reports of child anxious symptoms (L/N: $\beta = 0.30$, $p < 0.001$, ER: $\beta = -0.13$, $p < 0.05$), $\Delta R2 = 12.5\%$. Using the Paternoster test, parental gender did not differentiate the parental report of the association between child anxious symptoms and emotion regulation. Child self-report of anxious symptoms was not associated with emotion regulation, this was true for both maternal and paternal reports of emotion regulation.

Second, the results showed a negative association between depressive symptoms (SMFQ) and emotion regulation (ERC: ER, L/N) across all informants: maternal report of child depressive symptoms: (L/N: $\beta = 0.34$, $p < 0.001$, ER: $\beta = -0.25$, $p < 0.001$), $\Delta R2 = 21.6\%$. Paternal report of child depressive symptoms (L/N: $\beta = 0.53$, $p < 0.001$), $\Delta R2 = 28.0\%$. Child self-report of depressive symptoms was significantly associated only with maternal report of child emotion dysregulation (ERC L/N: $\beta = 0.12$, $p < 0.05$), $\Delta R2 = 1.8\%$.

Furthermore, the results indicated a differentiating effect of parental gender. In paternal reports, only emotional dysregulation (ERC L/N) was associated with depressive symptoms. In maternal reports, both emotional dysregulation and positive emotion regulation (ERC ER) were associated with child depressive symptoms. Results from the

paternoster test showed that paternal reports of ERC L/N, in comparison to maternal reports of ERC L/N, was significantly stronger associated with child depressive symptoms: Z = 2.8, p < 0.01.

The association between emotion regulation and anxious and depressive symptoms was further strengthened using reports from opposite parents, however displaying somewhat different emotional regulation profiles.

Article 2. *Does the Transdiagnostic EMOTION Intervention Improve Emotion Regulation Skills in Children?*

The result of mixed model analysis showed that (N 601) children's general emotion regulation, as reported by parents, improved more in the intervention group than in the control group from pre- to post intervention. This was true for both subscales of the ERC, the positive emotion regulation which increased (ER: Δ = .11, CI = 0.05 to .17, *p* <.001) and the emotional dysregulation which was reduced (L/N: Δ = .06, CI = 0.00 to .11, *p* = .040). The results suggest that the EMOTION intervention is probably effective in improving general emotion regulation in children.

Article 3. *A 12-month follow-up of a transdiagnostic indicated prevention of internalizing symptoms in school-aged children. The results from the EMOTION study*.

Comparing the intervention and control group using mixed model (N = 795), positive results were found for anxiety across all reporters from baseline to 12 months after the intervention (Child self-report: Δ = 4.56, CI = 1.83 to 7.29, *p* = .001. Parental reports: Δ =

2.50, CI = .26 to 4.74, p = .029). Caregivers, but not children, reported positive results for depression 12 months after the EMOTION intervention (Child self-report: Δ = .69, CI = -.22 to 1.60, p = .139. Parental report: Δ = 1.55, CI = .83 to 2.26, p = <.001).

From the postintervention to 12-month follow-up, there were no differences in changes in depressive or anxiety symptoms between the intervention and control groups. This was true across all reporters. The results suggest that the effect in the intervention group occurred during the active part of the intervention (pre to post) and was sustained throughout the 12-month follow-up. The results suggest that EMOTION intervention is probably effective at preventing both anxious and depressive symptoms in children over the long term.

4. Discussion

4.1. Emotion regulation and internalizing symptoms

4.1.1 Emotion regulation and anxious and depressive symptoms

The results from the first study in the present thesis highlight emotion regulation as an important transdiagnostic factor in internalizing symptoms in youth and as a potential target for interventions. The negative association between emotion regulation and internalizing symptoms reported in study one is consistent with the results of previous studies (Kovacs & Yaroslavsky, 2014; Schneider et al., 2016). Our results suggested that both emotional dysregulation and poor positive emotion regulation were associated with internalizing symptoms, findings that are in line with previous longitudinal research (Kim-Spoon et al., 2013; McLaughlin et al., 2011). However, this is the first Norwegian study confirming the association. As emotion regulation is influenced by culture (Grabell et al., 2015; Huberty, 2012; Tahmouresi et al., 2014), replication in different cultures is necessary.

As the results presented in paper one are based on cross-sectional data, we cannot state the direction of the relationship (Kraemer, Yesavage, Taylor, & Kupfer, 2000). Previous research has focused on emotional regulation as a risk factor for internalizing symptoms (Kovacs & Yaroslavsky, 2014; Schneider et al., 2016), and longitudinal studies support this causality, indicating that difficulty with emotion regulation increases the risk of psychopathology (Gonçalves et al., 2019; Kim-Spoon et al., 2013; McLaughlin et al., 2011). For example, emotion regulation difficulties in early teens have been shown to predict depressive symptoms both longitudinally and cross-sectionally (Gonçalves et al., 2019). Similarly, difficulties with emotion regulation at age 8 have been shown to predict an increase in internalizing symptoms at age 9 (Kim-Spoon et al., 2013). Nevertheless, emotion regulation difficulties due to internalizing symptoms are also a plausible interpretation of

the association. In support of this finding, De France, Lennarz, Kindt, and Hollenstein (2019) found that depressive symptoms predicted the use of the emotion regulation strategy suppression (an emotion regulation strategy involving actively inhibiting the emotional response) in youths, but the use of suppression did not predict depression.

There are several ways to interpret the association between internalizing symptoms and emotion regulation; possibly, different emotion regulation strategies are differently associated with various symptom categories. For example, as shown above, depression might predict the increased use of suppression (De France et al., 2019), but rumination could possibly predict depression (McLaughlin et al., 2011). Another plausible interpretation is that emotion regulation difficulties and internalizing symptoms develop as transactional relationships, e.g., developed through reciprocal influence of child and environment over time. For example, a child with a reactive temperament might experience more intense emotions and need more support from caregivers (e.g., the environment) to successfully regulate these emotions. However, this child is perceived as being more demanding by parents and might elicit more negative parental behavior; negative parental behavior then increases emotional intensity and the child's need for appropriate parental strategies. Transactional models are widely accepted to describe psychopathology in youth, as the complexity of child development is unlikely to be fully understood by simple one-dimensional cause and effect explanations (Sameroff, 2009).

4.1.2 Parental gender differences.

Traditionally, research regarding children almost exclusively relies on maternal reports to represent caregivers. However, as the inclusion of paternal reports is growing, gender differences between parents are emerging (Alakortes et

al., 2015; Bajeux et al., 2018; Van Lissa et al., 2019). The results from the first study showing that parental gender differentiated the reported relationships between children's depressive symptoms and emotion regulation might have been culturally influenced. In Norway, gender equality is high, and fathers are generally active in child nursing and upbringing (Statistics of Norway, 2018). It is possible that other parental differences could be found in cultures where gender roles are more traditional (e.g., mothers are responsible for child nursing and upbringing).

It is also plausible that a child's emotion regulation capacity relies on the caregiver that is present in the situation. Emotion regulation develops in transaction with caregivers (Huberty, 2012), and the reporter difference between parents might reflect actual differences in child's emotion regulation in the situation (Schofield et al., 2016). Studies have indicated a gender difference regarding which parental response is associated with successful emotion regulation in youths. For example, support from mothers and behavioral control from fathers is important in the development of adaptive emotion regulation during adolescence (Van Lissa et al., 2019). As such, the results showing gender differences in the parental reported association between their children's depressive symptoms and emotion regulation are expected.

Parental gender differences are also found in the association between parenting behavior and child anxiety (Majdandzic et al., 2014; Möller, Nikolić, Majdandžić, & Bögels, 2016). Combined with the findings from Van Lissa et al. (2019) described above, the hypothesis was that the association between emotion regulation and anxious symptoms also differed between maternal and paternal reports. However, the results presented in study one show no differentiating effects of parental gender upon the association between

emotion regulation and anxious symptoms in children. These findings could be interpreted as being caused by the sample of fathers being too small to detect differences, perhaps by Norwegian fathers being unique in some way, or perhaps by cultural differences such as high gender equality in Norway influencing fathering and the association with children's anxious symptoms. Another possibility is that there is no gender difference between parents in the association between children's emotion regulation and anxious symptoms, indicating that this association is equivalent across reporters. This viewpoint emphasizes the importance of researching anxious and depressive symptoms separately in the same study, as these symptom categories are related but separate constructs (Hopkins et al., 2013; Snyder et al., 2009). The results contribute to the field by suggesting there might be differences in how anxious and depressive symptoms are related to emotion regulation.

The findings from study one highlights the importance of including both parents in research when possible, as each parent might contribute unique information that strengthens and widens the understanding of the child's difficulties and resources. This nuanced information might have the potential to increase intervention effectiveness for youths and their families.

4.2 Emotion regulation and the EMOTION intervention

4.2.1 Changes in emotion regulation.

The results presented in paper two show that children participating in the EMOTION intervention showed more improvement in emotion regulation than children in the control group. Children in the present study were in an age range in which emotion regulation is normally developing and increases in flexibility and autonomy in the regulation of emotions are growing (Huberty, 2012). The intervention

group improved more in emotion regulation than the control group, indicating that the intervention group improved more in emotion regulation than expected from normal development. In the EMOTION intervention coping strategies are targeting emotion regulation, and children learn and practice these strategies in sessions with the other children and group leaders, for example, performing relaxation and breathing exercises when facing a stressful situation or playing a fun and energic game to reduce sadness. The opportunity to practice emotion regulation in a safe environment might be important for the positive results regarding emotion regulation. The in vivo activation and regulation of emotions is also an important part of a preschool program targeting emotional regulation that has shown positive results (Finlon et al., 2015; Izard et al., 2008).

Previously published results from the EMOTION intervention show positive effects on children's anxious and depressive symptoms (Martinsen et al., 2018); combined with the present findings of improved emotion regulation, the EMOTION intervention seems to be a good candidate for widespread implementation.

Improvements in emotion regulation might indicate a generalization of the skills learned. In the EMOTION intervention, children learn adaptive symptom management skills targeting emotions such as fear and sadness (Martinsen, Kendall, et al., 2014). The generalization of these skills would render the child better equipped to deal with strong or unwanted feelings of, for example, disappointment and anger. It is plausible that general improvement in emotion regulation skills is important for the sustainability of interventions targeting internalizing symptoms (Kennedy, Bilek, et al., 2018; Kovacs & Yaroslavsky, 2014). For example, the dysregulation of anger is associated with both anxiety and depression (Cassiello-Robbins & Barlow, 2016), and symptoms for both disorders include anger in

youths (Powell et al., 2017; Zagoloff & Bernstein, 2017). As such, improvement in general emotion regulation is important in the prevention of internalizing symptoms. Furthermore, improvement in emotion regulation might have a positive impact on other known risk factors for internalizing disorders. For example, emotion regulation is proposed as an important mechanism explaining the link between depression and peer rejection (Fussner, Luebbe, Mancini, & Becker, 2018).

4.2.2 Emotion regulation as an outcome measurement.

Programs developed to prevent and/or treat internalizing symptoms in youths often target emotion regulation based on a theory that maladaptive emotion regulation is a transdiagnostic risk factor for internalizing symptoms (Barlow et al., 2004; Kovacs & Lopez-Duran, 2012). In support of the importance of targeting emotion regulation, youths suffering from anxiety with comorbid depressive symptoms, compared to those with no comorbid symptomatology, have been found to struggle with more severe emotional regulation difficulties (Queen & Ehrenreich-May, 2014). Conversely, outcome measurements are often symptom reduction and not emotion regulation itself (Bilek & Ehrenreich-May, 2012; Ehrenreich-May et al., 2017; Myles-Pallister, Ehassan, Rooney, & Kane, 2014), leaving the potential change in the suggested transdiagnostic factor unexplored.

One recent exception to this, in addition to the present findings, is a smaller pilot RCT comparing the UP-C to the Coping Cat program (Kennedy, Bilek, et al., 2018). In addition to symptom reduction in both groups, they found positive effects on emotion regulation for the group receiving the UP-C intervention, both post-intervention and at the six-month follow-up. Children in this study were 6 to 12 years old, suffering from an anxiety diagnosis

with/or without comorbid depression. The results from study two in the present thesis differ from the findings of Kennedy, Bilek, et al. (2018) in that the focus is on prevention and not on diagnosed disorders, in addition to the inclusion of children suffering from anxious and depressive symptoms, in combination or alone. However, both studies support the hypothesis that interventions targeting internalizing symptoms also have the potential to improve children's emotion regulation. The UP-C and EMOTION programs have several similarities that potentially contribute to the positive results of improved emotion regulation, such as focusing on emotional psychoeducation, cognitive reappraisal as a means to change how you feel, and the merits of exposure and negative consequences of avoidance (Ehrenreich-May & Bilek, 2012; Martinsen, Kendall, et al., 2014). Suveg, Sood, Comer, and Kendall (2009) found improvement only in the regulation of worry, not other emotions (such as sadness or anger), following CBT for anxious youth. The transdiagnostic focus in both UP-C and EMOTION may have contributed to the improvement in emotion regulation.

4.3 Twelve-month follow-up results after EMOTION intervention

4.3.1 Follow-up results regarding anxious symptoms after EMOTION.

The results presented in the third article of this thesis show the positive effects on children's anxious symptoms sustained across all reporters after 12 months. This result suggests that EMOTION is an effective intervention for the prevention of anxious symptoms in children. The EMOTION intervention targets anxious symptoms in children through strategies such as building a fear hierarchy and exposure task strategies that are repeatedly found to be effective in reducing anxiety in children (Ale, McCarthy, Rothschild, & Whiteside, 2015; Peris et al., 2017). In a recent review by Rasing et al. (2017), no effects were found for CBT-

focused youth anxiety prevention, results that initially contradict the present findings. However, the included prevention programs in Rasing et al. (2017) did not use exposure tasks.

The results presented in study three in the present thesis indicate that prevention of anxious symptoms is possible with lasting effects in a sample of children, many of whom are also struggling with comorbid depressive symptoms. This work elaborates on existing transdiagnostic prevention research, as there is only two previously published study including follow-up data, i.e., Essau et al. (2019) and Fernandez-Martinez et al. (2019), presenting positive results for anxious and depressive symptoms at the 6 and 12 month follow-up, respectively. As neither of these two studies included a control group, the RCT design of the present study accentuate the importance of the findings.

The efficacy of transdiagnostic interventions for anxious symptoms is further supported by Kennedy, Bilek, et al. (2018), who, as previously described, reported a positive effect after a transdiagnostic treatment targeting anxiety with comorbid depression. Long-term effects of anxiety intervention are also supported by the findings of Silk et al. (2019) showing that youth who responded well to CBT for anxiety exhibited fewer depressive and anxious symptoms at the two-year follow-up. This result suggests that successfully targeting anxious symptoms in youth has positive extended effects on depression. Notably, the CBT intervention administered in the study by Silk et al. (2019) also included graduated exposure, strengthening the hypothesis that exposure is a vital ingredient when targeting anxious symptoms.

The extensiveness of the EMOTION intervention (with a total of 20 sessions for children and an additional 7 parental sessions) are similar to treatment interventions

targeting anxiety (Ehrenreich-May & Bilek, 2012; Kendall & Hedtke, 2006a). Although there is a risk of negatively influencing feasibility and implementation (Rasmussen et al., 2019), it might be that this level of extensiveness is necessary to produce lasting changes in child anxiety. However, the number of sessions has been found to be a nonsignificant outcome moderator for both anxiety prevention and treatment programs (Fisak et al., 2011; Mychailyszyn et al., 2012). In fact, even a single session prevention intervention has recently shown positive results for both anxious and depressive symptoms in adolescents at 9-month follow-up (Schleider & Weisz, 2018), suggesting session reduction should be possible without a reduced effect. The EMOTION intervention was revised after the present study, and obligatory child sessions were reduced from 20 to 16 (Martinsen, Kendall, et al., 2017). It is yet unknown whether this reduction influences the efficacy of the program.

4.3.2. Follow-up results regarding depressive symptoms after EMOTION.

The results presented in the third study of this thesis suggest that the EMOTION intervention has a positive effect on children's depressive symptoms 12 months after intervention, as reported by parents. From post-intervention to the 12-month follow-up, there were no differences in changes between the intervention and control groups, which was true across all reporters. The results suggest that the effect in the intervention group occurred during the active part of the intervention (pre to post) and was sustained throughout the 12-month follow-up.

The sample of children in the Coping Kids study includes children with comorbid anxiety symptoms, other studies has shown that comorbid anxiety symptoms potentially reduce intervention effect on depressive symptoms. For example, investigating moderators of long-term response to CBT prevention programs targeting depression in high-risk

adolescents, Garber et al. (2018) found that adolescents with lower anxiety, higher functioning, and nondepressed parents benefitted most from the intervention at the two-year follow-up. The positive results reported by parents at the 12-month follow-up suggest that it is possible to successfully target anxious and depressive symptoms in one intervention with positive long-term follow-up results. It is possible that a transdiagnostic intervention such as EMOTION is superior when targeting youth at risk for depression due to its high comorbidity with anxious symptoms. Which is in line with the suggestion of Garber et al. (2018) to further develop CBT prevention for depression.

In contrast to the parental reported outcome, child self-reported depressive symptoms showed no effect at 12-month follow-up. Children reported a reduction in depressive symptoms in both the intervention and control groups; however, there were no significant differences between the groups; therefore, we cannot attribute changes in the intervention group to the intervention.

The nonsignificant effects reported by children suggest there is need for improvement in the EMOTION intervention. Booster sessions are designed to resolve any problems the child has encountered in using the learned strategies in everyday life and to potentially work to reinforce the intervention (Rasing et al., 2017). Perhaps booster sessions are especially useful in targeting depressive symptoms, as depressive symptoms are episodic and reoccurring in nature and often reoccur sometime after intervention or treatment, especially when underlying risk factors remain unchanged (Rasing et al., 2017; Stockings et al., 2016). The results concerning booster sessions are mixed; it is possible that the heterogeneity of how booster sessions are conducted contributes to this (Gearing,

Schwalbe, Lee, & Hoagwood, 2013; Sun et al., 2019). In addition, as mentioned previously, the EMOTION intervention is extensive, and adding additional booster sessions might increase dropout rates.

Improvement in the EMOTION intervention might also include changes in the manual and the delivery of the program. For example, feedback from group leaders indicated that they found the task of setting goals regarding children's depressive problems challenging. It is possible that the EMOTION intervention could benefit from more extensive work with goal setting, especially for depressive problems. Further, research has indicated that the effective regulation of dysphoric mood is central for recovery from juvenile depression (Kovacs & Yaroslavsky, 2014). Although emotion regulation improved after the EMOTION intervention, as reported in the second study of the present thesis (Loevaas et al., 2019), it might be that these improvements diminished along with the child-reported reduction in depressive symptoms. Perhaps focusing on emotion regulation even more extensively would contribute to more sustainable prevention effects on depressive symptoms.

Other aspects of depressive components, such as revealing children's depressive thoughts and working on cognitive restructuring aimed at depressive thinking, should be emphasized further in the EMOTION intervention to improve its long-term effect on depressive symptoms. However, knowledge regarding active components in interventions targeting youths is very sparse (Fedewa et al., 2016; Kirsch, Keller, Tutus, & Goldbeck, 2018).

Primarily, health care workers, with limited pre-experience with CBT and intervention targeting depressive and anxious symptoms, led the groups in the EMOTION intervention. Meta-analysis has identified the professional background of the personnel delivering the intervention as one moderator of the outcome; that is, health professionals

produce larger effect sizes, both in treatment and preventive intervention (Fauskanger Bjaastad et al., 2018; Fisak et al., 2011; Mychailyszyn et al., 2012). Although the group leaders received training in general CBT, as well as specific training in the EMOTION manual, and received supervision through the intervention, we cannot rule out the possibility that a trained therapist with experience treating depressive symptoms would have produced larger effects for depressive symptoms.

4.3.3. Informant differences as an outcome moderator.

In a recent large meta-analysis, Weisz et al. (2017) reported the informant as the most potent moderator of treatment outcome. More specifically, no informant moderation effect was found regarding anxiety outcomes, but for depression and multiple problems, informants were the strongest outcome moderator. Corresponding results for anxiety, for which the informant was a nonsignificant moderator, were reported by Fisak et al. (2011). These studies are in line with the present findings of informant differences between the parent and child in the reporting of effects regarding depressive, but not anxious, symptoms. In contrast, in Weisz et al. (2017), the largest effect sizes for depressive symptoms were reported by youths themselves, and the second to largest were reported by parents. Essentially, the better the informant knew the youth, the larger the reported effect was. This is the opposite of the present finding regarding long-term results for depressive symptoms, in which parental reports, not child self-report, showed an effect. We cannot rule out that the effect reported by parents is due to parents not being aware of children's suffering. However, parents reported fewer symptoms than children across all measurements in the present study, which was true for both the intervention and control groups. Therefore, the parents not

seeing the children's symptoms cannot exclusively explain the steeper reduction in depressive symptoms reported by parents in the intervention group than by those in the control group.

It is more likely that the reporter difference regarding long-term results on depressive symptoms reflects different perspectives of the situation. In support of the importance of parental reports, Lewis et al. (2012) found that parental reports of child depressive symptoms were better at predicting the onset of mood disorders in children under the age of twelve than child self-reports of depressive symptoms. The interpretation of the different results reported by parents and children regarding depressive symptoms might, therefore, be best understood as improvements in some areas of depressive symptomatology, but not in others. Although children did not report any significant effect on depressive symptoms at 12-month follow-up, the reported effect from parents are important as even small reductions in depressive symptomatology in children have been found beneficial. For example, Keenan et al. (2008) found that the risk for later major depressive disorder doubled for each depressive symptom displayed by children experiencing subclinical depressive symptoms. This suggests clinical importance of even small reductions in depressive symptoms.

4.4. Methodological concerns

4.4.1 Strengths and limitations

All data in the current thesis are from the same large national naturalistic sample, collected with few exclusion criteria. This ensures the generalizability of the results. The use of primarily health care workers as group leaders, with groups located in schools, ensures high ecological validity. The sample includes children with anxious and/or depressive

symptoms, certifying generalizability to children struggling with either only anxious, only depressive or comorbid anxious and depressive symptoms, however, this factor also limits the generalization of the results to nonsymptomatic samples. There is a skewness in the sample towards higher SES, which reduces generalization to low SES populations; this is a potential weakness, since low SES is a risk factor for internalizing symptoms (Wadsworth & Achenbach, 2005). Approximately 22% (N = 171) of participating children in the present study had no parents participating. Only parents reported demographic information, and no data were collected about the nonresponding parents. Therefore, no information regarding SES was available for 22% of the child sample. It is possible that the children without participating parents form a subgroup of lower SES, and this missing data might contribute to the skewness in the sample.

The present sample includes children aged 8 - 12 years old. Werner-Seidler et al. (2017) report that only 21% of studies focusing on prevention targeted children under the age of 10, and most of these studies focused on anxiety prevention alone. These numbers suggest knowledge regarding part of the age group targeted in EMOTION (e.g., 8-12 years old) are especially needed, even more so regarding the prevention of depression. Hence, the results are an important contribution to the research field.

Using well-established questionnaires, both children and parents reported child anxious and depressive symptoms. The use of multiple reporters strengthens the conclusions that can be drawn from this research. Emotion regulation was the outcome measure in studies one and two, measured by the ERC (Shields & Cicchetti, 1997). The ERC is a questionnaire relying on parental reports of child emotion regulation behavior. In future research, additional measurements of children's emotional regulation, such as child self-

report, should be included, since discrepancies between different reporters are normal and exist in emotion regulation measures (Hourigan, Goodman, & Southam-Gerow, 2011). Strategies other than questionnaires should also be considered to measure emotion regulation. For example, ecological momentary assessment (EMA), in which participants answer short questions at random times of the day over a limited time period, for example, by being called by a research assistant, is promising. EMA has the advantage of limiting retrospective bias and potentially captures variability in emotion regulation over time (Rothenberg et al., 2019; Stone et al., 2018).

The inclusion of multiple informants would also eliminate the potential problem of shared method variance. The problem of shared method variance arises when the same informant reports all the variables at the same time. It is then possible that parts of the observed relationship between variables are due to the informant being the same person (Podsakoff, Mackenzie, Lee, Podsakoff, & Zedeck, 2003). In the first study of the present thesis, the problem of shared method variance was minimized by confirming the association between internalizing symptoms and emotion regulation when combining maternal and paternal reports. The problem of shared method variance is not relevant to studies two and three, as these studies are longitudinal.

The follow-up period in the Coping Kids study was 12 months. Although the length of the follow-up period represents an important strength of the study, as well as an important contribution to the field of research, there are some disagreements in the field regarding the recommended length of a long-term follow-up period. Whereas Werner-Seidler et al. (2017) and Johnstone et al. (2018) define long-term as a 12-month follow-up or longer, Rith-

Najarian et al. (2019) argues that a period of preferably two years is necessary to determine long-term effects.

The data in the present thesis are from a cluster RCT, the Coping Kids study. RCTs are viewed as the gold standard for intervention research. Randomization ensures equality among the groups on all known and unknown factors, and therefore, differences between the groups at the outcome can be attributed to only one group receiving the intervention (Machin & Fayers, 2010). In the Coping Kids study, there were statistically significant differences between the intervention and control groups on both depressive and anxious symptoms at baseline across all reporters. Randomization was performed at the school level, and due to feasibility concerns, the schools were kept as either an intervention or control school throughout the entire study. Groups were held at the intervention schools only. Therefore, participants recruited after the first semester knew the school's randomization status prior to screening, potentially resulting in children with more symptoms being recruited in intervention schools. Although this nonblinding of the conditions is a potential problem, running both intervention groups and control conditions in the same school without contaminating the conditions would have been a major concern.

Due to the differences between groups at baseline, it is possible that some of the results in studies two and three in the present thesis might be a product of the regression towards the mean (RTM) phenomenon. That is, over time, extreme scores tend to be naturally reduced, ending up closer to the population mean (Linden, 2013). RCT studies are designed to exclude the RTM effect, since, theoretically, both the intervention and control groups would be similarly influenced by RTM (Linden, 2013). In the present thesis, studies two and three investigate changes over time between the intervention and control groups. In both

studies, the data were analyzed using mixed models because this method adjusts for the baseline differences and, thereby, minimizes this potential problem (Thoresen, 2012). In addition, a mixed model is preferable for handling missing data, including children in the analysis with data for at least one measurement time point, as well as being unbiased under the missing at random assumption (Thoresen, 2012).

4.4.3. Clinical implications

In the first study, the results showed a differentiating effect of parental gender on depressive symptoms and emotion regulation. No differentiating effects were found regarding anxious symptoms. These findings emphasize the importance of including both caregivers in the research and clinical assessment of children, since caregivers potentially contribute unique information regarding their child's difficulties and resources.

Adaptive emotion regulation skills equip the child to deal with emotionally stressful situations in their life and, thereby, potentially reduce vulnerability to developing internalizing symptoms (Kennedy, Bilek, et al., 2018; Kovacs & Yaroslavsky, 2014). The finding that the EMOTION intervention increased children's emotion regulation capacity implies that these children learn tools to handle future emotionally stressful situations.

The EMOTION intervention is the first transdiagnostic preventive intervention developed for Norwegian children. The results from the second and third studies indicate positive results for internalizing symptoms and emotion regulation, suggesting that the EMOTION intervention is eligible for implementation in clinical practice. There are several clinical advantages of a transdiagnostic intervention. A transdiagnostic intervention covers both anxious and depressive symptoms simultaneously, and the clinician does not need to

choose which diagnosis to target. In addition, a transdiagnostic intervention has the advantage of simplifying implementation because clinicians only have to learn one intervention, and therefore, this intervention also has the potential to increase cost-effectiveness (Costello et al., 2003; Dozois, Seeds, & Collins, 2009; Harvey, 2014; Mychailyszyn et al., 2012; Queen & Ehrenreich-May, 2014).

The present thesis further accentuates the importance of including separate measurements of anxious and depressive symptoms in the same study, as there are potentially important differences in how these symptom categories are associated with adjoining phenomenon, such as emotion regulation. Although these are strongly related disorders, differences between them warrant therapists and researchers to be attentive to both concepts separately to provide the best care and understanding possible.

The results from the second and third study indicate small effects from the EMOTION intervention. However, in prevention research even small effects are potentially of clinical importance, as this likely contribute to reduced onset of later disorders and thereby reduces costs both for the individual and the society (Mendelson & Eaton, 2018; Werner-Seidler et al., 2017). Further, as the sample in the present thesis include children with subclinical symptoms of anxiety and/or depression, the difference between pre and post are inevitably small as there are only small deviations from normal population (Neumer et al., 2017).

4.4.4 Future research

In the present thesis, the long-term results, defined as the outcomes 12 months after intervention, of the EMOTION intervention were examined. In future research, an extended follow-up period would be interesting, as the effect of the intervention would preferably

last even beyond 12 months. Conducting a long-term study of the effect of the EMOTION intervention on children's emotion regulation would also be of high clinical value.

Mediation and moderation analyses of both symptom measurement and emotion regulation, identifying which parts of the intervention are essential for the effect, and for whom the intervention has effect, would be of interest to further develop and tailor the EMOTION intervention.

The intervention could also be further developed by including the use of new technology (for example virtual reality and web-based sessions), which has the possibility of making the intervention more feasible within municipal service settings. The inclusion of paternal reports and the investigation of potential differences between paternal and maternal reports of outcome measurement could also broaden the understanding of how to improve the prevention of internalizing symptoms in children.

5. Conclusion

The present thesis is important because internalizing symptoms represent a large public health problem, and research focusing on the prevention of these symptoms is of vital importance. The present thesis contributes to the field by advocating for the important role of emotion regulation as a transdiagnostic factor and by indicating possible gender differences between parental reports, suggesting that both parents should be included whenever possible. The results suggest that the EMOTION intervention is effective in both improving emotion regulation and reducing long-term internalizing symptoms in children. However, the effect of the intervention on child depressive symptoms should be considered

preliminary and should be further investigated, since only parental reports indicated an effect.

6. References

Alakortes, J., Fyrstén, J., Carter, A. S., Moilanen, I. K., & Ebeling, H. E. (2015). Finnish mothers' and fathers' reports of their boys and girls by using the Brief Infant-Toddler Social and Emotional Assessment (BITSEA). *Infant behavior & development, 39*, 136. doi:10.1016/j.infbeh.2015.02.016

Ale, C. M., McCarthy, D. M., Rothschild, L. M., & Whiteside, S. P. H. J. (2015). Components of Cognitive Behavioral Therapy Related to Outcome in Childhood Anxiety Disorders. *Clinical Child and Family Psychology Review, 18*(3), 240-251. doi:10.1007/s10567-015-0184-8

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders : DSM-5* (5th ed.). Washington, D.C: American Psychiatric Association.

Angold, A., Costello, E., J. , Messer, S., C., & Pickles, A. (1995). Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research, 5*(4), 237-249.

Angold, A., Costello, E., Pickles, E., & Winder, F. (1987). The development of a questionnaire for use in epidemiological studies of depression in children and adolescents. *London: Medical research Council.*

Angold, A., Erkanli, A., Silberg, J., Eaves, L., & Costello, E. J. (2002). Depression scale scores in 8-17-year-olds: effects of age and gender. *J. Child Psychol. Psychiatry, 43*(8), 1052-1063. doi:10.1111/1469-7610.00232

Bajeux, E., Klemanski, D. H., Husky, M., Leray, E., Chan Chee, C., Shojaei, T., . . . Development, H. (2018). Factors Associated with Parent–Child Discrepancies in Reports of Mental Health Disorders in Young Children. *49*(6), 1003-1010. doi:10.1007/s10578-018-0815-7

Balazs, J., Miklosi, M., Kereszteny, A., Hoven, C. W., Carli, V., Wasserman, C., . . . Wasserman, D. (2013). Adolescent Subthreshold-Depression and Anxiety: Psychopathology, Functional

Impairment and Increased Suicide Risk. *Journal of Child Psychology and Psychiatry, 54*(6), 670-677. doi:10.1111/jcpp.12016

Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy, 35*(2), 205-230. doi:10.1016/S0005-7894(04)80036-4

Barmish, A. J., & Kendall, P. C. (2005). Should Parents Be Co-Clients in Cognitive-Behavioral Therapy for Anxious Youth? *Journal of Clinical Child & Adolescent Psychology, 34*(3), 569-581. doi:10.1207/s15374424jccp3403_12

Bernaras, E., Jaureguizar, J., & Garaigordobil, M. (2019). Child and Adolescent Depression: A Review of Theories, Evaluation Instruments, Prevention Programs, and Treatments. *Frontiers in Psychology, 10*, 543. doi:10.3389/fpsyg.2019.00543

Bilek, E. L., & Ehrenreich-May, J. (2012). An Open Trial Investigation of a Transdiagnostic Group Treatment for Children with Anxiety and Depressive Symptoms. *Behavior Therapy, 43*(4), 887-897. doi:10.1016/j.beth.2012.04.007

Bjaastad, J. F., Haugland, B. S. M., Fjermestad, K. W., Torsheim, T., Havik, O. E., Heiervang, E. R., & Öst, L.-G. (2016). Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT) for Anxiety Disorders in Youth: Psychometric Properties. *Psychological Assessment, 28*(8), 908-916. doi:10.1037/pas0000230

Breinholst, S., Esbjørn, B. H., Reinholdt-Dunne, M. L., & Stallard, P. (2012). CBT for the treatment of child anxiety disorders: A review of why parental involvement has not enhanced outcomes. *Journal of Anxiety Disorders, 26*(3), 416-424. doi:10.1016/j.janxdis.2011.12.014

Cassano, M., Perry-Parrish, C., & Zeman, J. (2007). Influence of Gender on Parental Socialization of Children's Sadness Regulation. *Social Development, 16*(2), 210-231. doi:10.1111/j.1467-9507.2007.00381.x

Cassiello-Robbins, C., & Barlow, D. H. (2016). Anger: The Unrecognized Emotion in Emotional Disorders. *Clinical Psychology: Science and Practice, 23*(1), 66-85. doi:10.1111/cpsp.12139

Chavira, D. A., Stein, M. B., Bailey, K., & Stein, M. T. (2004). Child anxiety in primary care: Prevalent but untreated. *Depression and Anxiety, 20*(4), 155-164. doi:10.1002/da.20039

Chu, B. C., Crocco, S. T., Esseling, P., Areizaga, M. J., Lindner, A. M., & Skriner, L. C. (2016). Transdiagnostic group behavioral activation and exposure therapy for youth anxiety and depression: Initial randomized controlled trial. *Behaviour Research and Therapy, 76*, 65-75. doi:10.1016/j.brat.2015.11.005

Comer, J. S., Gallo, K. P., Korathu-Larson, P., Pincus, D. B., & Brown, T. A. (2012). SPECIFYING CHILD ANXIETY DISORDERS NOT OTHERWISE SPECIFIED IN THE DSM-IV. *Depression and Anxiety, 29*(12), 1004-1013. doi:10.1002/da.21981

Compas, B. E., Jaser, S. S., Bettis, A. H., Watson, K. H., Gruhn, M. A., Dunbar, J. P., . . . Thigpen, J. C. (2017). Coping, Emotion Regulation, and Psychopathology in Childhood and Adolescence: A Meta-Analysis and Narrative Review. *Psychological Bulletin*. doi:10.1037/bul0000110

Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Arch Gen Psychiatry, 60*(8), 837-844. doi:10.1001/archpsyc.60.8.837

Côté, S., Ahun, M., Herba, C., Brendgen, M., Geoffroy, M.-C., Orri, M., . . . Tremblay, R. (2018). Why Is Maternal Depression Related to Adolescent Internalizing Problems? A 15-Year Population-Based Study. *Journal of the American Academy of Child and Adolescent Psychiatry, 57*(12), 916. doi:10.1016/j.jaac.2018.04.024

Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of anxiety and depression in children and adolescents: 20 years after. *Psychol Bull, 140*(3), 816-845. doi:10.1037/a0034733

Dadds, M. R., Collins, D. A. J., Doyle, F. L., Tully, L. A., Hawes, D. J., Lenroot, R. K., . . . Elam, K. (2018). A benchmarking study of father involvement in Australian child mental health services. *PLoS ONE, 13*(8). doi:10.1371/journal.pone.0203113

De France, K., Lennarz, H., Kindt, K., & Hollenstein, T. (2019). Emotion regulation during adolescence: Antecedent or outcome of depressive symptomology? *International Journal of Behavioral Development, 43*(2), 107-117. doi:10.1177/0165025418806584

De Los Reyes, A., & Kazdin, A. E. (2005). Informant Discrepancies in the Assessment of Childhood Psychopathology: A Critical Review, Theoretical Framework, and Recommendations for Further Study. *Psychological Bulletin, 131*(4), 483-509. doi:10.1037/0033-2909.131.4.483

Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behavioral Science, 19*(1), 1-15. doi:10.1002/bs.3830190102

Dozois, D. J. A., Seeds, P. M., & Collins, K. A. (2009). Transdiagnostic approaches to the prevention of depression and anxiety. *Journal of Cognitive Psychotherapy, 23*(1), 44-59. doi:10.1891/0889-8391.23.1.44

Duhig, A. M., Renk, K., Epstein, M. K., & Phares, V. (2000). Interparental Agreement on Internalizing, Externalizing, and Total Behavior Problems: A Meta-analysis. *Clinical Psychology: Science and Practice, 7*(4), 435-453. doi:10.1093/clipsy.7.4.435

Ehrenreich-May, J., & Bilek, E. L. (2012). The Development of a Transdiagnostic, Cognitive Behavioral Group Intervention for Childhood Anxiety Disorders and Co-Occurring Depression Symptoms. *Cognitive and Behavioral Practice, 19*(1), 41-55. doi:10.1016/j.cbpra.2011.02.003

Ehrenreich-May, J., & Chu, B. C. (2014). Overview of Transdiagnostic Mechanism and Treatments for Youth Psychopathology. In J. Ehrenreich-May & B. C. Chu (Eds.), *Transdiagnostic Treatment for Children and Adolescents, principles and practice* (pp. 3 - 14). New York: Guilford Press.

Ehrenreich-May, J., Rosenfield, D., Queen, A. H., Kennedy, S. M., Remmes, C. S., & Barlow, D. H. (2017). An initial waitlist-controlled trial of the unified protocol for the treatment of emotional disorders in adolescents. *Journal of Anxiety Disorders, 46*, 46-55. doi:10.1016/j.janxdis.2016.10.006

Esbjorn, B. H., Bender, P. K., Reinholdt-Dunne, M. L., Munck, L. A., & Ollendick, T. H. (2012). The development of anxiety disorders: considering the contributions of attachment and emotion regulation. *Clin Child Fam Psychol Rev, 15*(2), 129-143. doi:10.1007/s10567-011-0105-4

Essau, C. A., Sasagawa, S., Jones, G., Fernandes, B., & Ollendick, T. H. (2019). Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic program for emotional problems in children in a regular school setting. *Journal of Affective Disorders, 253*, 357-365. doi:10.1016/j.jad.2019.04.036

Fagerland, M. V., Eide, G. E., & Laake, P. (2012). Linear Regression. In M. B. Veierød, S. Lydersen, & P. Laake (Eds.), *Medical statistics : in clinical and epidemiological research* (pp. 127 - 165). Oslo: Gyldendal akademisk.

Fauskanger Bjaastad, J., Henningsen Wergeland, G. J., Mowatt Haugland, B. S., Gjestad, R., Havik, O. E., Heiervang, E. R., & Öst, L. G. (2018). Do clinical experience, formal cognitive behavioural therapy training, adherence, and competence predict outcome in cognitive behavioural therapy for anxiety disorders in youth? *Clinical Psychology & Psychotherapy, 25*(6), 865-877. doi:10.1002/cpp.2321

Fedewa, A. L., Ahn, S., Reese, R. J., Suarez, M. M., Macquoid, A., Davis, M. C., & Prout, H. T. (2016). Does psychotherapy work with school-aged youth? A meta-analytic examination of moderator variables that influence therapeutic outcomes. *Journal of School Psychology, 56*, 59-87. doi:10.1016/j.jsp.2016.03.001

Fernandez-Martinez, I., Espada, J. P., Morales, A., Orgilés, M., Fernández-Martínez, I., & Espada, J. P. (2019). Spanish version of Super Skills for Life : short- and long-term impact of a transdiagnostic prevention protocol targeting childhood anxiety and depression. *Anxiety, Stress & Coping, 32*(6), 694-710. doi:10.1080/10615806.2019.1645836

Finlon, K. J., Izard, C. E., Seidenfeld, A., Johnson, S. R., Cavadel, E. W., Ewing, E. S. K., & Morgan, J. K. (2015). Emotion-based preventive intervention: Effectively promoting emotion knowledge

and adaptive behavior among at-risk preschoolers. *Development and Psychopathology, 27*(4), 1353-1365. doi:10.1017/S0954579414001461

Fisak, B. J., Richard, D., & Mann, A. (2011). The Prevention of Child and Adolescent Anxiety: A Meta-analytic Review. *Prevention Science, 12*(3), 255-268. doi:10.1007/s11121-011-0210-0

Fussner, L. M., Luebbe, A. M., Mancini, K. J., & Becker, S. P. (2018). Emotion Dysregulation Mediates the Longitudinal Relation between Peer Rejection and Depression: Differential Effects of Gender and Grade. *International Journal of Behavioral Development, 42*(2), 155-166. doi:10.1177/0165025416669062

Garber, J., Brunwasser, S. M., Zerr, A. A., Schwartz, K. T. G., Sova, K., & Weersing, V. R. (2016). Treatment and Prevention of Depression and Anxiety in Youth: Test of Cross-Over Effects. *Depression and Anxiety, 33*(10), 939-959. doi:10.1002/da.22519

Garber, J., & Rao, U. (2014). Depression in Children and Adolescents. In M. L. a. K. D. Rudolph (Ed.), *Handbook of Developmental Psychopathology* (3rd ed., pp. 489-520). Boston, MA: Springer US : Imprint: Springer.

Garber, J., Weersing, V., Hollon, S., Porta, G., Clarke, G., Dickerson, J., . . . Brent, D. (2018). Prevention of Depression in At-Risk Adolescents: Moderators of Long-term Response. *Prevention Science, 19*(Supplement 1), 6-15. doi:10.1007/s11121-015-0626-z

García-Escalera, J., Chorot, P., Sandín, B., Ehrenreich-May, J., Prieto, A., & Valiente, R. (2019). An Open Trial Applying the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders in Adolescents (UP-A) Adapted as a School-Based Prevention Program. *Journal of Research and Practice in Children's Services, 48*(1), 29-53. doi:10.1007/s10566-018-9471-0

Gearing, R. E., Schwalbe, C. S. J., Lee, R., & Hoagwood, K. E. (2013). THE EFFECTIVENESS OF BOOSTER SESSIONS IN CBT TREATMENT FOR CHILD AND ADOLESCENT MOOD AND ANXIETY DISORDERS. *Depression and Anxiety, 30*(9), 800-808. doi:10.1002/da.22118

Gonçalves, S. F., Chaplin, T. M., Turpyn, C. C., Niehaus, C. E., Curby, T. W., Sinha, R., & Ansell, E. B. (2019). Difficulties in Emotion Regulation Predict Depressive Symptom Trajectory from Early

to Middle Adolescence. *Child Psychiatry & Human Development, 50*(4), 618-630. doi:10.1007/s10578-019-00867-8

Gonzalez-Tejera, G., Canino, G., Ramirez, R., Chavez, L., Shrout, P., Bird, H., . . . Bauermeister, J. (2005). Examining Minor and Major Depression in Adolescents. *Journal of Child Psychology and Psychiatry, 46*(8), 888-899. doi:10.1111/j.1469-7610.2005.00370.x

Grabell, A. S., Olson, S. L., Miller, A. L., Kessler, D. A., Felt, B., Kaciroti, N., . . . Tardif, T. (2015). The impact of culture on physiological processes of emotion regulation: a comparison of US and Chinese preschoolers. *Developmental Science, 18*(3), 420-435. doi:10.1111/desc.12227

Grist, R., Croker, A., Denne, M., & Stallard, P. (2018). Technology Delivered Interventions for Depression and Anxiety in Children and Adolescents: A Systematic Review and Meta-analysis. *Clinical Child and Family Psychology Review*, 1-25. doi:10.1007/s10567-018-0271-8

Gross, J. J. (1998). The Emerging Field of Emotion Regulation: An Integrative Review. *Review of General Psychology, 2*(3), 271-299. doi:10.1037/1089-2680.2.3.271

Gross, J. J. (2013). Emotion Regulation: Conceptual and Empirical Foundations. In J. J. Gross (Ed.), *Handbook of Emotion Regulation, Second Edition* (2 ed.). New York: The Guilford Press.

Gross, J. J., & Thompson, R., A. (2007). Emotion Regulation: Conseptual Foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (1 ed., pp. 3-20). New York: Guilford Press.

Hankin, B. L., Young, J. F., Abela, J. R. Z., Smolen, A., Jenness, J. L., Gulley, L. D., . . . Goodman, S. H. (2015). Depression From Childhood Into Late Adolescence: Influence of Gender, Development, Genetic Susceptibility, and Peer Stress. *Journal of Abnormal Psychology, 124*(4), 803-816. doi:10.1037/abn0000089

Harvey, A. G. (2014). Overview of Transdiagnostic Mechanisms and Treatmetns. In J. Ehrenreich-May & B. C. Chu (Eds.), *Transdiagnostic treatments for children and adolescents : principles and practice*. New York: Guilford Press.

Helseforsikringsloven. (2009). Lov om medisinsk og helsefaglig forskning. Retrieved from https://lovdata.no/dokument/NL/lov/2008-06-20-44?q=helseforskningsloven.

Hopkins, J., Lavigne, J., Gouze, K., LeBailly, S., & Bryant, F. (2013). Multi-domain Models of Risk Factors for Depression and Anxiety Symptoms in Preschoolers: Evidence for Common and Specific Factors. *An official publication of the International Society for Research in Child and Adolescent Psychopathology, 41*(5), 705-722. doi:10.1007/s10802-013-9723-2

Hourigan, S. E., Goodman, K. L., & Southam-Gerow, M. A. (2011). Discrepancies in Parents' and Children's Reports of Child Emotion Regulation. *Journal of Experimental Child Psychology, 110*(2), 198-212. doi:10.1016/j.jecp.2011.03.002

Huberty, T. J. (2012). *Anxiety and Depression in Children and Adolescents : Assessment, Intervention, and Prevention*: Springer New York : Imprint: Springer.

Izard, C. E., Fine, S., Mostow, A., Trentacosta, C., & Campbell, J. A. N. (2002). Emotion processes in normal and abnormal development and preventive intervention. *Develop. Psychopathol., 14*(4), 761-787. doi:10.1017/S0954579402004066

Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J.-P., Krauthamer-Ewing, E. S., & Finlon, K. J. (2008). Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Dev Psychopathol, 20*(1), 369-397. doi:10.1017/S0954579408000175

Johnson, C., Burke, C., Brinkman, S., & Wade, T. (2016). Effectiveness of a school-based mindfulness program for transdiagnostic prevention in young adolescents. *Behaviour Research and Therapy, 81*, 1-11. doi:10.1016/j.brat.2016.03.002

Johnstone, K., Kemps, E., & Chen, J. W. (2018). A Meta-Analysis of Universal School-Based Prevention Programs for Anxiety and Depression in Children. *Clin. Child Fam. Psychol. Rev., 21*(4), 466-481. doi:10.1007/s10567-018-0266-5

Keenan, K., Hipwell, A., Feng, X., Babinski, D., Hinze, A., Rischall, M., & Henneberger, A. (2008). Subthreshold Symptoms of Depression in Preadolescent Girls Are Stable and Predictive of Depressive Disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(12), 1433-1442. doi:10.1097/CHI.0b013e3181886eab

Kendall, P. C., & Hedtke, K. A. (2006a). *Cognitive-behavioral therapy for anxious children: Therapist manual* (3rd ed.). Ardmore: PA: Workbook Publishing.

Kendall, P. C., & Hedtke, K. A. (2006b). *Cognitive-behavioral therapy for anxious children: Therapist manual.* (3rd ed.). Ardmore: PA: Workbook Publishing.

Kendall, P. C., Rodriguez, K. A. O., Villabø, M. A., Martinsen, K. D., Stark, K. D., & Banneyer, K. (2014). Cognitive-behavioral therapy with children and adolescents. In J. Ehrenreich-May & B. C. Chu (Eds.), *Transdiagnostic Treatments for Children and Adolescents, principles and practice* (pp. 161-447). New York: Guilford Press, cop. 2014.

Kendall, P. C., Stark, K. D., Martinsen, K. D., O'Neil, K. A., & Arora, P. (2013). *"Coping Kids" managing anxiety and depression; groupleaders manual.* Ardmore PA: Workbook Publishing.

Kennedy, S. M., Bilek, E. L., & Ehrenreich-May, J. (2018). A Randomized Controlled Pilot Trial of the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders in Children. *Behavior modification*, 145445517753940. doi:10.1177/0145445517753940

Kennedy, S. M., Tonarely, N. A., Sherman, J. A., & Ehrenreich-May, J. (2018). Predictors of treatment outcome for the unified protocol for transdiagnostic treatment of emotional disorders in children (UP-C). *Journal of Anxiety Disorders, 57*, 66-75. doi:10.1016/j.janxdis.2018.05.004

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. J. A. o. g. p. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry, 62*(6), 593-602. doi:10.1001/archpsyc.62.6.593

Kim-Spoon, J., Cicchetti, D., & Rogosch, F. A. (2013). A Longitudinal Study of Emotion Regulation, Emotion Lability-Negativity, and Internalizing Symptomatology in Maltreated and Nonmaltreated Children. *Child Development, 84*(2), 512-527. doi:10.1111/j.1467-8624.2012.01857.x

Kirsch, V., Keller, F., Tutus, D., & Goldbeck, L. (2018). Treatment expectancy, working alliance, and outcome of Trauma-Focused Cognitive Behavioral Therapy with children and adolescents. *Child and Adolescent Psychiatry and Mental Health, 12*(16). doi:10.1186/s13034-018-0223-6

Kodal, A., Fjermestad, K., Bjelland, I., Gjestad, R., Öst, L.-G., Bjaastad, J. F., . . . Wergeland, G. J. (2018). Long-term effectiveness of cognitive behavioral therapy for youth with anxiety disorders. *Journal of Anxiety Disorders, 53*, 58-67. doi:10.1016/j.janxdis.2017.11.003

Kovacs, M., Joormann, J., & Gotlib, I., H. (2008). Emotion (Dys)regulation and Links to Depressive Disorders. *Child Development Perspectives, 2*(3), 149-155. doi:10.1111/j.1750-8606.2008.00057.x

Kovacs, M., & Lopez-Duran, N., L. . (2012). Contextual Emotion Regulation Therapy: A Developmentally-Based Intervention for Pediatric Depression. *Child and Adolescent Psychiatric Clinics of North America, 21*(2), 327-343. doi:10.1016/j.chc.2012.01.002.

Kovacs, M., Obrosky, S., & George, C. (2016). The course of major depressive disorder from childhood to young adulthood: Recovery and recurrence in a longitudinal observational study. *Journal of Affective Disorders, 203*, 374-381. doi:10.1016/j.jad.2016.05.042

Kovacs, M., & Yaroslavsky, I. (2014). Practitioner Review: Dysphoria and its regulation in child and adolescent depression. *Journal of Child Psychology and Psychiatry, 55*(7), 741-757. doi:10.1111/jcpp.12172

Kraemer, H. C., Yesavage, J. A., Taylor, J. L., & Kupfer, D. (2000). How can we learn about developmental processes from cross-sectional studies, or can we? *Am J Psychiatry, 157*(2), 163-171. doi:10.1176/appi.ajp.157.2.163

La Greca, A. M., Ehrenreich-May, J., Mufson, L., & Chan, S. (2016). Preventing Adolescent Social Anxiety and Depression and Reducing Peer Victimization: Intervention Development and Open Trial. *Child & Youth Care Forum, 45*(6), 905-926. doi:10.1007/s10566-016-9363-0

Larsson, B., Ingul, J., Jozefiak, T., Leikanger, E., & Sund, A. M. (2016). Prevalence, stability, 1-year incidence and predictors of depressive symptoms among Norwegian adolescents in the

general population as measured by the Short Mood and Feelings Questionnaire. *Nordic Journal of Psychiatry, 70*(4), 290-296. doi:10.3109/08039488.2015.1109137

Lavigne, J. V., Hopkins, J., Gouze, K. R., & Bryant, F. B. (2015). Bidirectional Influences of Anxiety and Depression in Young Children. *Journal of Abnormal Child Psychology, 43*(1), 163-176. doi:10.1007/s10802-014-9884-7

Lee, Y., Barendregt, J., Stockings, E. A., Ferrari, A., Whiteford, H., Patton, G., & Mihalopoulos, C. (2017). The population cost-effectiveness of delivering universal and indicated school-based interventions to prevent the onset of major depression among youth in Australia. *Epidemiology and Psychiatric Sciences, 26*(5), 545-564. doi:10.1017/S2045796016000469

Leikanger, E., Ingul, J. M., & Larsson, B. (2012). Sex and age-related anxiety in a community sample of Norwegian adolescents.(Report)(Clinical report). *Scandinavian Journal of Psychology, 53*(2), 150. doi:10.1111/j.1467-9450.2011.00915.x

Lewis, K. J. S., Mars, B., Lewis, G., Rice, F., Sellers, R., Thapar, A. K., . . . Thapar, A. (2012). Do parents know best? Parent-reported vs. child-reported depression symptoms as predictors of future child mood disorder in a high-risk sample. *Journal of Affective Disorders, 141*(2-3), 233-236. doi:10.1016/j.jad.2012.03.008

Linden, A. (2013). Assessing regression to the mean effects in health care initiatives. *BMC Medical Research Methodology, 13*(1), 119. doi:10.1186/1471-2288-13-119

Loevaas, M. E. S., Sund, A. M., Lydersen, S., Neumer, S. P., Martinsen, K. D., Holen, S., . . . Reinfjell, T. (2019). Does the Transdiagnostic EMOTION Intervention Improve Emotion Regulation Skills in Children? *Journal of Child and Family Studies*, 805-813. doi:10.1007/s10826-018-01324-1

Lu, W. (2017). Child and Adolescent Mental Disorders and Health Care Disparities: Results from the National Survey of Children's Health, 2011-2012. *J. Health Care Poor Underserved, 28*(3), 988-1011. doi:10.1353/hpu.2017.0092

Machin, D., & Fayers, P. M. (2010). *Randomized clinical trials : design, practice and reporting*. Chichester, West Sussex: John Wiley & Sons.

Majdandzic, M., Möller, E., de Vente, W., Bögels, S., & van Den Boom, D. (2014). Fathers' Challenging Parenting Behavior Prevents Social Anxiety Development in Their 4-Year-Old Children: A Longitudinal Observational Study. *Journal of Abnormal Child Psychology, 42*(2), 301-310. doi:10.1007/s10802-013-9774-4

March, J. S., Parker, J. D. A., Sullivan, K., Stallings, P., & Conners, C. K. (1997). The Multidimensional Anxiety Scale for Children (MASC): Factor Structure, Reliability, and Validity. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(4), 554-565. doi:10.1097/00004583-199704000-00019

Martinsen, K. D. (2018). *Prevention of anxiety and depression in school children : the development and testing of the new transdiagnostic EMOTION intervention.* (Doctoral disertation), University of Oslo, Faculty of Social Sciences, Department of Psychology, Oslo. Retrieved from https://www.duo.uio.no/handle/10852/61185 (no. 687)

Martinsen, K. D., Holen, S., Neumer, S.-P., Waaktaar, T., Rasmussen, L. M. P., Kendall, P. C., & Patras, J. (2017). The Factor Structure of MASC Youth Report in Norwegian School Children. *Journal of Child and Family Studies*, 1-9. doi:10.1007/s10826-017-0705-9

Martinsen, K. D., Kendall, P. C., Stark, K., & Neumer, S.-P. (2016). Prevention of Anxiety and Depression in Children: Acceptability and Feasibility of the Transdiagnostic EMOTION Program. *Cognitive and Behavioral Practice, 23*(1), 1-13. doi:10.1016/j.cbpra.2014.06.005

Martinsen, K. D., Kendall, P. C., Stark, K., Rodriguez, K. A. O., & Arora, P. (2017). *Mestrende barn : gruppeledermanual barn* (2. utg. ed.). Oslo: Gyldendal akademisk.

Martinsen, K. D., Kendall, P. C., Stark, K. D., Rodriguez, K. A. O. N., & Arora, P. (2014). *Mestrende barn, gruppeldermanual barn*. Oslo, Norway: Gyldendal Akademisk.

Martinsen, K. D., Rasmussen, L. M. P., Wentzel-Larsen, T., Holen, S., Sund, A. M., Løvaas, M. E. S., . . . Neumer, S.-P. (2018). Prevention of anxiety and depression in school children: Effectiveness of the transdiagnostic EMOTION program. *Journal of Consulting and Clinical Psychology*. doi:10.1037/ccp0000360

Martinsen, K. D., Stark, K., Rodriguez, K. A. O. N., Kendall, P. C., & Arora, P. (2014). *Mestrende Barn, gruppeledermanual foreldre*. Oslo: Gyldendal Akademisk.

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy, 49*(9), 544-554. doi:10.1016/j.brat.2011.06.003

McLellan, L. F., & Hudson, J. L. (2017). Generalised Anxiety Disorder. In S. Goldstein & M. DeVries (Eds.), *Handbook of DSM-5 Disorders in Children and Adolescents* (pp. 193-212). Cham: Springer International Publishing.

McRae, K., & Shiota, M. (2017). Biological and Pyhsiological Aspects of Emotional Regulation. In C. A. Essau, S. Leblanc, & T. H. Ollendick (Eds.), *Emotion Regulation and Psychopathology in Children and Adolescents* (1 ed., pp. 43 - 59). United Kingdom: Oxford University Press.

Mendelson, T., & Eaton, W. (2018). Recent advances in the prevention of mental disorders. *The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services, 53*(4), 325-339. doi:10.1007/s00127-018-1501-6

Mihalopoulos, C., Vos, T., Pirkis, J., & Carter, R. (2011). The Economic Analysis of Prevention in Mental Health Programs. *Annu. Rev. Clin. Psychol., 7*(1), 169-201. doi:10.1146/annurev-clinpsy-032210-104601

Molina, P., Sala, M. N., Zappulla, C., Bonfigliuoli, C., Cavioni, V., Zanetti, M. A., . . . Cicchetti, D. (2014). The Emotion Regulation Checklist – Italian translation. Validation of parent and teacher versions. *European Journal of Developmental Psychology, 11*(5), 624-634. doi:10.1080/17405629.2014.898581

Muris, P. (2007). *Normal and abnormal fear and anxiety in children and adolescents*. Retrieved from https://www.sciencedirect.com/book/9780080450735/normal-and-abnormal-fear-and-anxiety-in-children doi:10.1016/B978-0-08-045073-5.X5000-X

Mychailyszyn, M. P., Brodman, D. M., Read, K. L., & Kendall, P. C. (2012). Cognitive-Behavioral School-Based Interventions for Anxious and Depressed Youth: A Meta-Analysis of Outcomes.

Clinical Psychology, Science and Practice, 19(2), 129-153. doi:10.1111/j.1468-2850.2012.01279.x

Mychailyszyn, M. P., Mendez, J. L., & Kendall, P. C. (2010). School Functioning in Youth with and without Anxiety Disorders: Comparisons by Diagnosis and Comorbidity. *School Psychology Review, 39*(1), 106-121.

Myles-Pallister, J., D., Ehassan, S., Rooney, R. M., & Kane, R. T. (2014). The Efficacy of the Enhanced Aussie Optimism Positive Thinking Skills Program in Improving Social and Emotional Learning in Middle Childhood. *Frontiers in Psychology, 5*. doi:10.3389/fpsyg.2014.00909

Möller, E. L., Nikolić, M., Majdandžić, M., & Bögels, S. M. (2016). Associations between maternal and paternal parenting behaviors, anxiety and its precursors in early childhood: A meta-analysis. *Clinical Psychology Review, 45*, 17-33. doi:10.1016/j.cpr.2016.03.002

Neumer, S.-P., Costache, A., & Hagen, R. (2017). Effectiveness of indicated interventions for the prevention of anxiety and depression in children: a systematic review. *Effekten av indikerte tiltak for forebygging av angst og depresjon hos barn og unge en systematisk litteraturgjennomgang, 54*(11).

Noordhof, A., Oldehinkel, A. J., Verhulst, F. C., & Ormel, J. (2008). Optimal use of multi-informant data on co-occurrence of internalizing and externalizing problems: the TRAILS study. *International Journal of Methods in Psychiatric Research, 17*(3), 174-183. doi:10.1002/mpr.258

Ohannessian, C., Milan, S., & Vannucci, A. (2017). Gender Differences in Anxiety Trajectories from Middle to Late Adolescence. *Journal of Youth and Adolescence, 46*(4), 826-839. doi:10.1007/s10964-016-0619-7

Pagliaccio, D., Luby, J. L., Bogdan, R., Agrawal, A., Gaffrey, M. S., Belden, A. C., . . . Goodman, S. H. (2015). Amygdala Functional Connectivity, HPA Axis Genetic Variation, and Life Stress in Children and Relations to Anxiety and Emotion Regulation. *Journal of Abnormal Psychology, 124*(4), 817-833. doi:10.1037/abn0000094

Paternoster, R., Brame, R., Mazerolle, P., & Piquero, A. (1998). USING THE CORRECT STATISTICAL TEST FOR THE EQUALITY OF REGRESSION COEFFICIENTS. *Criminology, 36*(4), 859-866. doi:10.1111/j.1745-9125.1998.tb01268.x

Patras, J., Martinsen, K. D., Holen, S., Sund, A. M., Adolfsen, F., Rasmussen, L. P., & Neumer, S. P. (2016). Study protocol of an RCT of EMOTION: An indicated intervention for children with symptoms of anxiety and depression. *BMC Psychol, 4*(1), 48. doi:10.1186/s40359-016-0155-y

Peris, T. S., Caporino, N. E., O'rourke, S., Kendall, P. C., Walkup, J. T., Albano, A. M., . . . Compton, S. N. (2017). Therapist-Reported Features of Exposure Tasks That Predict Differential Treatment Outcomes for Youth With Anxiety. *Journal of the American Academy of Child & Adolescent Psychiatry, 56*(12), 1043-1052. doi:10.1016/j.jaac.2017.10.001

Podsakoff, P. M., Mackenzie, S. B., Lee, J.-Y., Podsakoff, N. P., & Zedeck, S. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology, 88*(5), 879-903. doi:10.1037/0021-9010.88.5.879

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, 56*(3), 345-365. doi:10.1111/jcpp.12381

Powell, A. K., Ocean, S. E., & Stanick, C. F. (2017). Depressive Disorders. In S. Goldstein & M. DeVries (Eds.), *Handbook of DSM-5 Disorders in Children and Adolescents*. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-57196-6_7 doi:10.1007/978-3-319-57196-6_7

Queen, A. H., & Ehrenreich-May, J. (2014). Anxiety-Disordered Adolescents With and Without a Comorbid Depressive Disorder:Variations in Clinical Presentation and Emotion Regulation. *22*(3), 160-170. doi:10.1177/1063426613478175

Rasing, S. P. A., Creemers, D., H. M. , Janssens, J., M. A. M. , & Scholte, R., H. J (2017). Depression and Anxiety Prevention Based on Cognitive Behavioral Therapy for At-Risk Adolescents: A Meta-Analytic Review. *Frontiers in Psychology, 8*. doi:10.3389/fpsyg.2017.01066

Rasmussen, L.-M. p. (2019). *Providing an indicated preventive intervention for children with symptoms of anxiety and depression: A study of effectiveness, implementation factors, and program fidelity.* (A dissertation for the degree of Philosophiae Doctor), UIT – The arctic university of Norway, Tromsø. Retrieved from https://munin.uit.no/handle/10037/16299

Rasmussen, L.-M. P., Patras, J., Neumer, S.-P., Adolfsen, F., Martinsen, K. D., Holen, S., . . . Martinussen, M. (2019). Facilitators and Barriers to the Implementation of EMOTION: An Indicated Intervention for Young Schoolchildren. *Scandinavian Journal of Educational Research*, 1-16. doi:10.1080/00313831.2019.1596976

Rith-Najarian, L. R., Mesri, B., Park, A. L., Sun, M., Chavira, D. A., & Chorpita, B. F. (2019). Durability of Cognitive Behavioral Therapy Effects for Youth and Adolescents With Anxiety, Depression, or Traumatic Stress:A Meta-Analysis on Long-Term Follow-Ups. *Behavior Therapy, 50*(1), 225-240. doi:10.1016/j.beth.2018.05.006

Rothenberg, W. A., Di Giunta, L., Lansford, J. E., Lunetti, C., Fiasconaro, I., Basili, E., . . . Cirimele, F. (2019). Daily Associations between Emotions and Aggressive and Depressive Symptoms in Adolescence: The Mediating and Moderating Role of Emotion Dysregulation. *Journal of Youth and Adolescence*. doi:10.1007/s10964-019-01071-6

Sabatier, C., Restrepo Cervantes, D., Moreno Torres, M., Hoyos De Los Rios, O., & Palacio Sañudo, J. (2017). Emotion Regulation in Children and Adolescents: concepts, processes and influences. *Psicología desde el Caribe, 34*(1), 75 - 90. doi:10.14482/psdc.33.2.7290

Sameroff, A. (2009). The Transactional Model. In A. Sameroff (Ed.), *The transactional model of development: How children and contexts shape each other* (pp. 3 - 21). Washington, DC: American Psychological Association.

Schleider, J., & Weisz, J. (2018). A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial. *Journal of Child Psychology and Psychiatry, 59*(2), 160. doi:10.1111/jcpp.12811

Schneider, R. L., Arch, J. J., Landy, L. N., & Hankin, B. L. (2016). The Longitudinal Effect of Emotion Regulation Strategies on Anxiety Levels in Children and Adolescents. *Journal of Clinical Child & Adolescent Psychology*, 1-14. doi:10.1080/15374416.2016.1157757

Schofield, T. J., Parke, R. D., Coltrane, S., & Weaver, J. M. (2016). Optimal Assessment of Parenting, or How I Learned to Stop Worrying and Love Reporter Disagreement. *Journal of Family Psychology*. doi:10.1037/fam0000206

Schäfer, J., Naumann, E., Holmes, E., Tuschen-Caffier, B., & Samson, A. (2017). Emotion Regulation Strategies in Depressive and Anxiety Symptoms in Youth: A Meta-Analytic Review. *A Multidisciplinary Research Publication, 46*(2), 261-276. doi:10.1007/s10964-016-0585-0

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: the development and validation of a new criterion Q-sort scale. *Dev Psychol, 33*(6), 906-916. doi:10.1037/0012-1649.33.6.906

Silk, J. S., Price, R. B., Rosen, D., Ryan, N. D., Forbes, E. E., Siegle, G. J., . . . Ladouceur, C. D. (2019). A Longitudinal Follow-up Study Examining Adolescent Depressive Symptoms as a Function of Prior Anxiety Treatment. *Journal of the American Academy of Child and Adolescent Psychiatry, 58*(3), 359. doi:10.1016/j.jaac.2018.10.012

Snyder, J., Bullard, L., Wagener, A., Leong, P. K., Snyder, J., & Jenkins, M. (2009). Childhood Anxiety and Depressive Symptoms: Trajectories, Relationship, and Association with Subsequent Depression. *Journal of Clinical Child and Adolescent Psychology, 38*(6), 837-849. doi:10.1080/15374410903258959

Stark, K., D., Simpson, J., Schoebelen, S., Hargrave, J., Molnar, J., & Glen, R. (2007). *Treating depressed youth; Therapist manual for ACTION.* Ardmore: PA: Workbook Publishing. .

Statistics of Norway, S. (2016). Inntekts og formuesstatistikk for husholdninger, 2015. Retrieved from https://www.ssb.no/inntekt-og-forbruk/statistikker/ifhus/aar

Statistics of Norway, S. (2017). Befolkningens utdanningsnivå. Tabell 1, utdanningsnivå for menn og kvinner 16 år og over. Aldersgrupper. Antall og prosent. . Retrieved from https://www.ssb.no/utdanning/statistikker/utniv/aar

Statistics of Norway, S. (2018). Woman and men in Norway 2018. Retrieved from https://www.ssb.no/en/befolkning/artikler-og-publikasjoner/_attachment/347081?_ts=1632b8bcba0

Stein, S., Ngo, Q., Austic, E., Veliz, P., McCabe, S., & Boyd, C. (2018). The Clinical Relevance of Divergence in Adolescent–Parent Reports of Adolescent Depression and Anxiety. *Child and Adolescent Social Work Journal, 35*(6), 611-623. doi:10.1007/s10560-018-0555-3

Stockings, E. A., Degenhardt, L., Dobbins, T., Lee, Y. Y., Erskine, H. E., Whiteford, H. A., & Patton, G. (2016). Preventing depression and anxiety in young people: a review of the joint efficacy of universal, selective and indicated prevention. *Psychological medicine, 46*(1), 11. doi:10.1017/S0033291715001725

Stone, L. B., Mennies, R. J., Waller, J. M., Ladouceur, C. D., Forbes, E. E., Ryan, N. D., . . . Silk, J. S. (2018). Help me Feel Better! Ecological Momentary Assessment of Anxious Youths' Emotion Regulation with Parents and Peers. *Journal of Abnormal Child Psychology, 47*(2). doi:10.1007/s10802-018-0454-2

Strand, B. H., Dalgard, O. S., Tambs, K., & Rognerud, M. (2003). Measuring the mental health status of the Norwegian population: a comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). *Nord J Psychiatry, 57*(2), 113-118. doi:10.1080/08039480310000932

Sun, M., Rith-Najarian, L. R., Williamson, T. J., & Chorpita, B. F. (2019). Treatment Features Associated with Youth Cognitive Behavioral Therapy Follow-Up Effects for Internalizing Disorders: A Meta-Analysis. *Journal of Clinical Child & Adolescent Psychology, 48*(1), 269-S283. doi:10.1080/15374416.2018.1443459

Sund, A. M., Larsson, B., & Wichstrom, L. (2001). Depressive symptoms among young Norwegian adolescents as measured by The Mood and Feelings Questionnaire (MFQ). *European Child & Adolescent Psychiatry, 10*(4), 222-229. doi:10.1007/s007870170011

Sund, A. M., Larsson, B., & Wichstrom, L. (2003). Psychosocial correlates of depressive symptoms among 12-14-year-old Norwegian adolescents. *Journal of Child Psychology and Psychiatry, 44*(4), 588-597. doi:Doi 10.1111/1469-7610.00147

Sund, A. M., Larsson, B., & Wichstrøm, L. (2011). Prevalence and characteristics of depressive disorders in early adolescents in central Norway. *Child and Adolescent Psychiatry and Mental Health, 5*(28), 28-28. doi:10.1186/1753-2000-5-28

Suveg, C., Sood, E., Comer, J. S., & Kendall, P. C. (2009). Changes in Emotion Regulation Following Cognitive-Behavioral Therapy for Anxious Youth. *Journal of Clinical Child & Adolescent Psychology, 38*(3), 390-401. doi:10.1080/15374410902851721

Swan, A. J., & Kendall, P. C. (2016). Fear and Missing Out: Youth Anxiety and Functional Outcomes. *Clinical Psychology, Science and Practice, 23*, 417-435. doi:10.1111/cpsp.12169

Tahmouresi, N., Bender, C., Schmitz, J., Baleshzar, A., & Tuschen-Caffier, B. (2014). Similarities and Differences in Emotion Regulation and Psychopathology in Iranian and German School-children: A Cross-cultural Study. *International Journal of Preventive Medicine, 5*(1), 52-60.

The World Medical Association, I. (2019, 09.07.2018). WMA DECLARATION OF HELSINKI - ETHICALPRINCIPLES FOR MEDICAL RESEARCH INVOLVING HUMAN SUBJECTS. Retrieved from https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/

Thompson, R., A., & Goodman, M. (2010). Development of Emotion Regulation. In A. M. Kring & D. M. Sloan (Eds.), *Emotion regulation and psychopathology : a transdiagnostic approach to etiology and treatment*. New York: Guilford Press.

Thor Ólason, D., Blöndahl Sighvatsson, M., & Smári, J. (2004). Psychometric properties of the Multidimensional Anxiety Scale for Children (MASC) among Icelandic schoolchildren. *Scandinavian Journal of Psychology, 45*(5), 429-436. doi:10.1111/j.1467-9450.2004.00424.x

Thoresen, M. (2012). Longitudinal analysis. In M. B. Veierød, S. Lydersen, & P. Laake (Eds.), *Medical statistics : in clinical and epidemiological research* (pp. 259 - 286). Oslo: Gyldendal akademisk.

Van Lissa, C. J., Keizer, R., Van Lier, P. A. C., Meeus, W. H. J., Branje, S., & Dubow, E. F. (2019). The Role of Fathers' Versus Mothers' Parenting in Emotion-Regulation Development From Mid–Late Adolescence: Disentangling Between-Family Differences From Within-Family Effects. *Dev Psychol, 55*(2), 377-389. doi:10.1037/dev0000612

Vasey, M. W., Bosmans, G., & Ollendick, T. H. (2014). The developmental psychopathology of anxiety. In M. L. a. K. D. Rudolph (Ed.), *Handbook of Developmental Psychopathology* (3rd ed., pp. 543-560). Boston, MA: Springer US.

Villabo, M., Gere, M., Torgersen, S., March, J. S., & Kendall, P. C. (2012). Diagnostic Efficiency of the Child and Parent Versions of the Multidimensional Anxiety Scale for Children. *Journal of Clinical Child and Adolescent Psychology, 41*(1), 75. doi:10.1080/15374416.2012.632350

Wadsworth, M. E., & Achenbach, T. M. (2005). Explaining the Link Between Low Socioeconomic Status and Psychopathology: Testing Two Mechanisms of the Social Causation Hypothesis. *Journal of Consulting and Clinical Psychology, 79*(6), 1146-1153. doi:10.1037/0022-006X.73.6.1146

Weisz, J. R., Kuppens, S., Ng, M. Y., Eckshtain, D., Ugueto, A. M., Vaughn-Coaxum, R., . . . Kazak, A. E. (2017). What Five Decades of Research Tells Us About the Effects of Youth Psychological Therapy: A Multilevel Meta-Analysis and Implications for Science and Practice. *American Psychologist, 72*(2), 79-117. doi:10.1037/a0040360

Werner-Seidler, A., Perry, Y., Calear, A. L., Newby, J. M., & Christensen, H. (2017). School-based depression and anxiety prevention programs for young people: A systematic review and

meta-analysis. *Clinical Psychology Review, 51*, 30-47. doi:https://doi.org/10.1016/j.cpr.2016.10.005

Werner, K., & Gross, J. J. (2010). Emotion Regulation and Psychopathology: A Conseptual Framework. In A. M. Kring & D. M. Sloan (Eds.), *Emotion regulation and psychopathology : a transdiagnostic approach to etiology and treatment*. New York: Guilford Press.

Yap, M. B. H., Morgan, A. J., Cairns, K., Jorm, A. F., Hetrick, S. E., & Merry, S. (2016). Parents in prevention: A meta-analysis of randomized controlled trials of parenting interventions to prevent internalizing problems in children from birth to age 18. *Clinical Psychology Review, 50*, 138-158. doi:10.1016/j.cpr.2016.10.003

Zagoloff, A., & Bernstein, G. A. (2017). Separation Anxiety and Panic Disorders in Children. In S. Goldstein & M. DeVries (Eds.), *Handbook of DSM-5 Disorders in Children and Adolescents*. Retrieved from https://link.springer.com/chapter/10.1007%2F978-3-319-57196-6_8 doi:10.1007/978-3-319-57196-6_8

Vil du delta i TIM?

Informasjon og invitasjon til et forskningsprosjekt

Skolen dere tilhører vil delta i et forskningsprosjekt som heter Tidlig intervensjon – Mestrende barn (TIM). Vi skal undersøke om barn som er forsiktige eller gruer seg og barn som lett blir lei seg får det bedre ved å være med på et mestringskurs.

Vi tror barn kan ha nytte av kurset Mestrende barn, men fordi vi ikke kan vite dette sikkert ønsker vi å gjennomføre et forskningsprosjekt. Vi vil trekke lodd mellom skolene som vil delta; halvparten av skolene (tiltaksskoler) får mestringskurset Mestrende barn, mens den andre halvparten (kontrollskoler) får egen opplæring for lærere og helsesøster.

Hva er kurset Mestrende barn?

Kurset er for barn som kanskje oftere enn andre barn er redde for ting eller lei seg. Det kan for eksempel være slike ting som å være redd for å holde en presentasjon i klassen, eller for å overnatte hos andre. Andre barn bekymrer seg for ting som har blitt sagt eller for ting som skal skje. De som blir med på kurset vil lære forskjellige måter som de kan hjelpe seg selv på når de møter vanskelige situasjoner.

I mestringskurset møtes barna i små grupper to ganger i uken i ti uker. Hver gruppetime vil være på ca. en time. Skolen din vil bestemme om kurset skal holdes i skoletiden eller rett etter skoletiden (SFO-tid).

Hvem kan bli med på forskningsprosjektet?

Barn som har lyst til å delta må først få tillatelse fra foreldrene. Foreldrene får et eget brev, der de kan skrive under på om de godtar at du deltar. Deretter vil du bli bedt om å fylle ut et spørreskjema på pc på skolen. Noen spørsmål handler om forskjellige ting en kan være redd for og reaksjoner en kan ha, mens andre spørsmål handler om ting man kan tenke. Hvis du trenger hjelp til å fylle ut skjemaet på pc vil du få det.

Barn som er mer redde eller lei seg enn det som er vanlig vil bli invitert til å være med i prosjektet. Det er først etter dette at du og foreldrene dine får vite om du blir med i prosjektet, enten i en egen mestringsgruppe, eller gjennom vanlig kontakt med lærere og helsesøstre.

Hvis du får tilbud om å delta vil vi be foreldrene dine om å svare på spørsmål om deg, og vi vil også be læreren din svare på noen spørsmål om hvordan du har det i klassen. Etter at mestringsgruppene er ferdig (10 uker), vil du bli bedt om å fylle ut spørreskjema på pc igjen og så igjen etter 12 måneder.

Hvis du ønsker å være med

Selv om foreldrene dine eller andre voksne har sagt at du bør være med i forskningsprosjektet, kan du selv velge å ikke være med.

Hvis du har spørsmål om undersøkelsen, kan du gå inn på nettsiden www.ntnu.no/rkbu/mestrendebarn, eller snakke med kontaktpersonen for forskningsprosjektet på din skole.

Tusen takk for hjelpen!

Vennlig hilsen forskerne:

Simon-Peter Neumer, Kicki Martinsen, Solveig Holen, Anne Mari Sund og Joshua Patras

Tidlig intervensjon - Mestrende barn (TIM)

Invitasjon og informasjon til foresatte

Har ditt barn problemer med engstelighet eller tristhet? Kanskje litt mer enn andre barn på samme alder?

Skolen deres har sagt ja til å delta i forskningsstudien TIM. Studien skal undersøke om barn som er mer engstelige eller triste enn andre har nytte av å delta i tiltaket Mestrende barn. Formålet med Mestrende barn er å lære barna mestringsferdigheter slik at de kan takle stress og bekymringer bedre. Hvis studien viser positive resultater vil tiltaket Mestrende barn tas i bruk på flere skoler.

Denne forespørselen går til foresatte til alle elever på 4. – 6. trinn på skoler som har sagt seg villige til å være med på forskningsprosjektet.

En randomisert kontrollert studie

Vi vil undersøke om tiltaket Mestrende barn virker som forventet. Vi inviterer dere derfor til å delta i en randomisert kontrollert studie, som betyr at vi sammenlikner hvordan det går med barn som får dette tiltaket, med hvordan det går med de som får vanlig oppfølging av lærer og helsesøster. Vi vil derfor trekke lodd mellom skolene som har sagt seg villige til å delta; halvparten av skolene blir tiltaksskoler og får tiltaket mens den andre halvparten blir kontrollskoler.

Hva skjer på tiltakskolene?

Barn møtes i mindre grupper med to gruppeledere to ganger i uken i ti uker, enten i skoletid eller rett etter skoletid. I gruppene utvikler barna ferdigheter som skal gjøre det lettere å takle vanskelige situasjoner som å møte det de frykter, i forhold til venner, å løse problemer og å utvikle et bedre selvbilde. Også foresatte til barn som deltar i grupper vil få tilbud om opplæring syv kvelder. På noen av disse kveldene deltar også barna.

Hva skjer på kontrollskolene?

Lærere og skolehelsesøster vil få tilbud om et halvdags seminar. Slik vil de voksne i skolen lettere kunne møte triste og engstelige barn på en god måte.

Hva skal vi spørre om og hvem skal vi spørre?

Vi vil spørre barnet om hvordan han eller hun føler seg, om det er engstelig eller trist, om selvfølelse og livskvalitet. All kartlegging vil skje elektronisk. Spørreundersøkelsen vil foregå i flere trinn. Barn som skårer vesentlig høyere enn gjennomsnittet vil bli invitert til å være med i studien.

Etter loddtrekning mellom skolene vil så foresatte og barn få en endelig beskjed om barnet blir med i studien, enten i en mestringsgruppe, eller gjennom vanlig kontakt med helsesøster og lærer. De foresatte og lærer vil bedt om å svare på noen spørsmål. Spørsmålene vil bli gjentatt etter avslutning av gruppene og ett år senere.

Du finner mer informasjon om studien i det fullstendige informasjonsskrivet på de neste sidene!

Om TIM-studien:

Tidlig intervensjon – Mestrende barn er et landsomfattende samarbeidsprosjekt mellom RBUP Øst og Sør, RKBU Midt-Norge og RKBU Nord.

Prosjektet er støttet av Norges forskningsråd.

Mer informasjon om studien:

www.ntnu.no/rkbu/mestrendebarn

Regionsenter for barn og unges psykiske helse
Helseregion ØST og SØR

UNIVERSITETET I TROMSØ

NTNU
Regionalt kunnskapssenter for barn og unge
– Psykisk helse og barnevern

Tidlig intervensjon – Mestrende barn (TIM)

Informasjon og invitasjon til foresatte

Mestrende barn er et nytt skoletiltak for barn som er noe mer engstelig og lettere blir lei seg enn sine jevnaldrende. Dette er et lavterskeltilbud rettet mot barn i risiko for å utvikle angst og/eller depresjon. En pilotstudie indikerer at elever og foresatte er fornøyde med tiltaket, men det er enda ikke gjennomført en effektevaluering. Vi inviterer dere derfor til å delta i en forskningsstudie.

Randomisert kontrollert studie

TIM-studien er en randomisert kontrollert studie. Det betyr at vi sammenlikner hvordan det går med barn som får dette tiltaket, med hvordan det går med de som får vanlig oppfølging av lærer og helsesøster. Vi vil derfor trekke lodd mellom skolene som har sagt seg villige til å delta; halvparten av skolene blir tiltaksskoler og får tiltaket mens den andre halvparten (kontrollskoler) får tilbud om opplæring til lærere og helsesøster.

Kontrollskoler

I kontrollskolene vil lærere og skolehelsesøster få tilbud om et halvdags seminar. Målsettingen med seminaret er at voksne som møter barna i skolen lettere skal kunne identifisere internaliserende problemer og få informasjon om hvordan de kan møte triste og engstelige barn på en god måte.

Tiltaksskoler

Gjennom tiltaket Mestrende barn arbeider barn i mindre grupper med å utvikle ferdigheter som skal gjøre det lettere å takle vanskelige situasjoner. Eksempler kan være i forhold til venner, å møte det de frykter, å løse problemer og å utvikle et bedre selvbilde. Tilbudet vil i hovedsak være rettet mot barna, men også foresatte til barn som deltar i mestringsgrupper vil få tilbud om opplæring for å kunne støtte barna enda bedre. Gruppeleder vil bli informert om barnet er mer engstelig og/eller trist enn andre.

I mestringsgruppene møtes barna to ganger i uken i ti uker. Hver gruppetime vil vare i ca. en time og både jenter og gutter fra ulike klassetrinn kan delta i samme gruppe. Skolen kan selv avgjøre om gruppemøtene gjennomføres rett etter skoletid (i SFO tid) eller om de gjennomføres i skoletiden. Hvis de gjennomføres i skoletiden vil skolen legge gruppemøtene på ulike tidspunkt for å sikre at barnet ikke mister for mye tid i ett enkelt fag og slik at barnet kan følge vanlige skoleoppgaver. Det vil tas video-opptak av utvalgte timer (20 %) for å sikre kvaliteten på gjennomføringen av kurset.

Foreldregruppene vil møtes 7 ganger om kvelden i løpet av disse 10 ukene. I det første møtet vil hvert barn få satt et individuelt mål for kurset og dette gjøres med barn og foresatte sammen. I 3 av de resterende 6 foreldremøtene vil barnet delta for at barn og foresatte sammen kan øve på de strategiene barnet har lært og slik at de foresatte i enda større grad kan støtte barnets utvikling i kurset.

Kartlegging

All kartlegging vil skje elektronisk, og dere vil få tilsendt en mail med direkte link til spørreskjemaet. Hvis dere ønsker å fylle ut papirskjema i stedet for et spørreskjema på nett, vil dette være mulig.
I spørreskjemaene benytter vi anerkjente skalaer som har vært brukt i liknende undersøkelser tidligere.

Spørreundersøkelsen vil foregå i flere steg. Først kan barn som ønsker å delta, og der foresatte har gitt skriftlig samtykke, fylle ut et elektronisk spørreskjema på skolen. En ressursperson vil være tilstede for å hjelpe barnet ved behov. Barnets spørreskjema er tilpasset alderstrinnet og tar omtrent 30 minutter å fylle ut. Det handler om hvordan barnet føler seg, om det er engstelig eller trist, om selvfølelse og livskvalitet.

Hvis kartleggingen viser at barnet har alvorlige symptomer eller akutt hjelpebehov, vil den lokale prosjektansvarlige kontakte foresatte og/eller helsesøster for å avklare videre oppfølging. En slik oppfølging vil ikke hindre barnet fra å delta i studien.

De innkomne svarene på barnas spørreskjema om engstelighet og tristhet blir skåret, og de barna som skårer vesentlig høyere enn gjennomsnittet vil bli invitert til å være med i studien. Dette fordi vi tror at disse barna kan ha mest nytte av tilbudet. Det er først etter denne skåringen at foresatte og barn får en endelig bekreftelse på om barnet blir med i studien, enten i en mestringsgruppe, eller gjennom vanlig kontakt med helsesøster og lærer.

Etter at barna som skal være med i studien er identifisert, vil foresatte og lærere bes om å svare på hvert sitt spørreskjema. Spørreskjema til de foresatte inneholder spørsmål om barnets humør og atferd, livshendelser i foregående år, livskvalitet, selvfølelse, samt noen spørsmål om foresattes egne tanker og følelser. Barnets lærer vil svare på et kort skjema som handler om barnets atferd og faglige fungering. Begge foresatte er invitert til å delta i undersøkelsen.

Når intervensjonen er over, etter ca.10 uker, vil vi stille de samme spørsmålene en gang til for å kunne analysere om tiltaket har vært virksomt. Den samme undersøkelsen vil gjennomføres etter 12 måneder for å se om mulige effekter av intervensjonen er stabil. Også barn og foresatte på kontrollskolene deltar i denne kartleggingen.

Rettigheter

Deltakelse i undersøkelsen er frivillig. Selv om du samtykker i å delta, kan du når som helst trekke samtykket tilbake.

Personvern, taushetsplikt og anonymitet

Alle opplysninger som er samlet inn i forbindelse med prosjektet vil behandles konfidensielt. En kodeliste med navn og ID-nummer vil oppbevares atskilt fra innsamlede opplysninger og på en slik måte at bare personer med spesiell tillatelse har tilgang.

Resultater fra undersøkelsen vil bli analysert og presentert på gruppenivå. Verken du eller barnet vil kunne gjenkjennes. Undersøkelsen er godkjent av Regional komité for medisinsk forskningsetikk, Øst-Norge.

Oppbevaring av innsamlet informasjon

Vi ønsker å oppbevare opplysningene fra undersøkelsen fram til desember 2022. Etter dette vil listen med navn og nummer slettes. Tilsvarende vil kobling mellom navn og nummer slettes hvis samtykke trekkes tilbake.

Hvis du ønsker at ditt barn skal være med i studien

Vi ønsker at dere snakker med barna om denne studien og diskuterer hva det vil innebære å delta. Vi ber deretter om at du fyller ut slippen på neste side, og returnerer den med barnet til skolen. Positivt samtykke innebærer at foresatte, barnet selv og lærer kan fylle ut spørreskjema.

Tusen takk for hjelpen!

Med vennlig hilsen

Simon-Peter Neumer
Nasjonal prosjektleder, RBUP Øst og Sør

For samtykkeerklæring, se neste side →

Hvis du har spørsmål om undersøkelsen, kan du kontakte lokal eller nasjonal prosjektleder.

Nasjonal prosjektleder er Simon-Peter Neumer; simon-peter.neumer@r-bup.no, tlf: 958 20 508.

Lokale prosjektledere:

RBUP Øst og Sør:	Solveig Holen; solveig.holen@r-bup.no, tlf: 930 17 776
	Kristin Martinsen; kristin.martinsen@r-bup.no, tlf: 995 86 031
RKBU Midt-Norge:	Anne Mari Sund; anne.m.sund@ntnu.no, tlf: 926 07 464
RKBU Nord:	Joshua Patras; joshua.patras@uit.no, tlf: 474 55 939

Samtykke til deltakelse i TIM-studien

Jeg har mottatt informasjon om TIM-studien, og

samtykker ☐

samtykker ikke ☐

til at mitt barn deltar i studien.

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Barnets navn Skole og Basisgruppe/klasse

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Underskrift av foresatte I Dato

Dersom du/dere samtykker i at barnet skal delta i undersøkelsen, vennligst fyll ut e-post og telefon/mobilnummer til minst en foresatt:

Tel./mobilnr.(foresatte I) ______________________

E-post (foresatte I)

|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|

Tel./mobilnr.(foresatte II) ______________________

E-post (foresatte II)

|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|

Table B1. Results from mixed model analyses with ERC L/N and ERC ER as dependent variables. Child and school as random effect. Intervention, time (after versus before intervention), interaction between intervention and time, child age and child gender as covariates.

Time	Measurement	Intervention group		Control group		Difference (interaction between group and time)	
		N	Mean (SE)	N	Mean (SE)	Estimate (95% CI)	*P* value
Baseline	ERC L/N	265	.79 (.03)	292	.74 (.02)		
	ERC ER	265	2.30 (.03)	292	2.41 (.02)		
Post intervention	ERC L/N	192	.70 (.03)	225	.70 (.03)	.06 (.00 to .11)	.039
	ERC ER	192	2.39 (.03)	225	2.39 (.03)	.11 (.05 to .17)	< .001

*p= <0.05. **p= <0.01. ***p= <0.001.

Note: ERC L/N = Liability/negativity, higher score indicates greater dysregulation. ERC ER = Emotion regulation, lower score indicates greater dysregulation.

Appendix B

Table B2. Results from mixed model analyses with MASC child and parent version, and SMFQ child and parent version as dependent variables. Child and school as random effects, and time as a categorical fixed-effects variable using three time-points (pre, post, and 12 months after intervention), interaction between intervention and time, child age and gender as covariates.

Time	Measurement	Intervention group		Control group		Difference (interaction between group and time)		
		N	Mean (*SE*)	*N*	Mean (*SE*)	Estimate (95% CI)		*p*-value
						Baseline to 12 months follow-up	Post-intervention to 12 months follow-up	
Baseline	MASC-C	358	63.91 (1.02)	437	61.98 (.99)			
	MASC-P	268	45.34 (1.14)	300	40.74 (1.08)			
	SMFQ-C	358	10.35 (.39)	437	9.43 (.37)			
	SMFQ-P	267	6.67 (.32)	298	4.70 (.30)			
Post intervention	MASC-C	266	51.15 (1.07)	428	56.39 (.96)		2.62 (-.14 to 5.38)	.063
	MASC-P	194	43.27 (1.21)	230	39.08 (1.15)		-2.08 (.33 to -4.49)	.090
	SMFQ-C	265	7.80 (.40)	428	7.64 (.37)		0.07 (-.85 to .99)	.888
	SMFQ-P	193	5.04 (.34)	227	4.38 (.33)		-0.23 (-1.00 to .54)	.556
12 months follow-up	MASC-C	269	49.13 (1.07)	406	51.75 (.98)	4.56 (1.83 to 7.29)		.001***

	MASC-P	193	41.34 (1.22)	239	39.23 (1.15)	2.50 (.25 to 4.73)	.029*
	SMFQ-C	269	6.69 (.40)	406	6.46 (.37)	0.69 (-.22 to 1.59)	.138
	SMFQ_P	188	4.41 (.35)	235	3.98 (.33)	1.55 (.83 to 2.26)	<.001***

*p= <0.05. **p= <0.01. ***p= <0.001.

Note: MASC-C = The Multidimensional Anxiety Scale for Children – child report. MASC-P = The Multidimensional Anxiety Scale for Children – parent report. SMFQ-C = The Mood and Feelings Questionnaire – short form, child report. SMFQ-P = The Mood and Feelings Questionnaire – short form, parent report.

Appendix B

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RESEARCH ARTICLE Open Access

Emotion regulation and its relation to symptoms of anxiety and depression in children aged 8–12 years: does parental gender play a differentiating role?

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Abstract

Background: Symptoms of anxiety and depression are prevalent and highly comorbid in children, contributing to considerable impairment even at a subclinical level. Difficulties with emotion regulation are potentially related to both anxious and depressive symptoms. Research looking at maternal contributions to children's mental health dominates the literature but ignores the potentially important contributions of fathers.

Method: The present study is part of the Coping Kids study in Norway, a randomized controlled study of a new indicated preventive intervention for children, EMOTION. EMOTION aims to reduce levels of anxious and depressive symptoms in children aged 8–12 years. Using cross sectional data and multiple regression analyses, we investigated the relations between anxious and depressive symptoms and emotion regulation in $n = 602$ children. Symptoms were reported by the child, mothers and fathers. Emotion regulation was reported by mothers and fathers.

Results: Symptoms of anxiety, as reported by parents, were associated with poorer emotion regulation. This association was also demonstrated for depressive symptoms as reported by both parents and children. When analyzing same gender reports, parental gender did not differentiate the relationship between anxiety symptoms and emotion regulation. For depressive symptoms, we did find a differentiating effect of parental gender, as the association with dysregulation of emotion was stronger in paternal reports, and the association with adaptive emotion regulation was stronger in maternal reports. When using reports from the opposite parent, the emotion regulation difficulties were still associated with depressive and anxiety symptoms, however exhibiting somewhat different emotional regulation profiles.

Conclusion: Problems with emotion regulation probably coexists with elevated levels of internalizing symptoms in children. In future research, both caregivers should be included.

Trial registration: The regional ethics committee (REC) of Norway approved the study. Registration number: 2013/1909; Project title: Coping Kids: a randomized controlled study of a new indicated preventive intervention for children with symptoms of anxiety and depression. ClinicalTrials.gov; Protocol ID 228846/H10.

Keywords: Emotion regulation, Anxiety, Depression, Children

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Background

Emotion regulation, anxiety and depression

The regulation of emotions is important in children's adaptive development, playing a role in, for example, executive cognitive functions and social competence [1, 2], as well as in the development of psychopathology [3]. Anxiety and depressive disorders in children are global health concerns, with an estimated three-month prevalence of 2.2% for depression and 2.4% for anxiety [4]. Comorbidity rates between anxiety and depression are as high as 30% [4, 5]. In addition, symptoms of anxiety and depression that do not meet diagnostic criteria contribute to considerable impairment [5, 6], and subclinical symptoms might develop into disorders [7, 8]. Preventive interventions for anxiety and depression are important in reducing the development of disorders later in life, and emotion regulation is one potentially relevant factor to consider [3].

Emotion regulation is defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goal" [9]. The success of emotion regulation depends on the adaptation of responses to situational demands [10], and while this ability develops throughout life, children have acquired their primary regulation strategies by approximately the age of seven [11]. The strategies used to regulate emotions are diverse and include, for example, help seeking, avoidance, attentional redirection, suppression, and problem solving. Development of these strategies is complex and interacts with genetics, biology, cognition, temperament, social environment, and learning [11].

Theoretically, children who repeatedly fail to regulate their emotions in accordance with the context are at greater risk of developing internalizing symptoms. Barlow and colleges [12] introduced a triple vulnerability model for internalizing symptoms, consisting of biological and psychological vulnerabilities combined with negative early learning situations. When children perceive a situation as uncontrollable and/or a strong unwanted feeling occurs, this leads the individual to initiate emotion regulation efforts. If emotion regulation is ineffective, this leads to an increase in the unwanted feelings, which may again lead the individual into a negative cycle with increasing psychological distress and poor attempts at emotion regulation. Over time, this might develop into an anxiety or depressive disorder [12]. Others have developed similar theories for specific disorders such as depression [13] and anxiety [14], where repeatedly failing to downregulate unwanted feelings leads to an increased risk of disorders.

In support of these theories, one longitudinal study found that poor emotion regulation skills predicted internalizing symptoms in children [15]. This result is in line with a cross-section study by Zeman and colleges [16] indicating associations between internalizing symptoms and poor emotion regulation. Additionally, children diagnosed with an anxiety disorder reported more dysregulation of affect compared to a control group of non-anxious children [17]. The use of less effective emotion regulation strategies has also been associated with depression for both children and adolescents [18, 19]. Longitudinal findings indicate that difficulties with emotion regulation in pre-adolescence could also be a risk-factor for both depression and anxiety [20, 21].

Depressive symptoms are mainly linked to dysregulation of dysphoria and sadness [13] and anxious symptoms to dysregulation of fear [14]. Symptoms are fluctuating phenomena, with varying prevalence among individuals [4]. In contrast, emotion regulation is a more stable trait [3, 11] that includes the regulation of all possible emotions using a broad range of regulative strategies [11]. Theoretically, internalizing symptoms and emotion regulation are related but distinct phenomena.

The association between youth psychopathology symptoms and emotion regulation was confirmed in a recent meta-analytic study [3]. However, a large portion of the studies included in the review used an American sample and focused on adolescents. Culture potentially influences the association between internalizing symptoms and emotion regulation [22]. Replication in other cultures is therefore important to broaden our understanding of how internalizing symptoms and emotion regulation are associated.

Parental differences

Informant difference between child and parent is common, and in studies on anxious and depressive symptoms moderate discrepancies are typically reported [23]. Parental reports of children's internalizing symptoms are considered valid [24]. Informant differences have traditionally been viewed as measurement error, but resent research have pointed to this instead being a reflection of different perspectives and relationships, and providing clinically meaningful information [25].

Studies of how parents report children's symptoms have mainly found small differences, with mothers generally reporting more problems than fathers [26, 27]. Mothers rate their children higher on social-emotional competence and dysregulation problems than do fathers [27]. Parental agreement is higher for externalizing than for internalizing difficulties, and parental agreement has been found to be moderated by children's age, gender and socioeconomic status [26]. Consequently, one would expect parents' reports of their children's emotion regulation capacities to differ. Multiple informants are generally viewed as a strength in research [26], but including both parents as informants may be costly and time-consuming. Is it necessary to include both parents in research regarding emotion regulation? In order to

answer this question, we must compare maternal and paternal reports of child emotion regulation.

Parents are actively involved in the external regulation of the child's emotions as well as in the process of teaching the child internal regulation [11]. As a result, one could expect children's expressed emotion regulation to differ between situations with different caregivers. In addition, mothers and fathers might make divergent interpretations of a child's behavior in terms of emotion regulation. Differences between parental reports of children's symptoms may therefore reflect actual differences in the relation between children and parents [25], and in this context, may reflect actual differences in the child's emotion regulation ability in relation to the different caregivers. A better understanding of informant differences might therefore contribute to a better understanding of the child's emotion regulation capacities. Research focusing only on mothers ignores the potential differentiating paternal role. This uncertainty underlines the importance of including both caregivers in research.

Control variables

There seems to be an association between experiencing stressors and poor emotion regulation, contributing to the increased risk of internalizing symptoms [28, 29]. Similarly, parental mental health problems are risk factors for childhood psychopathology, and parental mental health influences children's development of emotion regulation [30]. Sociodemographic factors (SES), such as parental education and the family economy, also influence children's mental health [31] and possibly the association between internalizing symptoms and emotion regulation [32]. Based on this, it is important to control for the influence of sociodemographic factors, parental mental health and experienced stress to understand the relationship between symptoms of anxiety and depression and emotion regulation.

In addition, we controlled for the child's age and gender, both of which are important demographic factors in the development of anxiety and depression [4, 29]. Emotional regulation continues to develop in middle childhood, and there may be differences related to age [11]. There are also potential gender differences in emotion regulation [17].

This article examines the associations between anxious and depressive symptoms and difficulties in emotion regulation in Norwegian school children aged 8–12 years. Both mothers and fathers reported on their child's emotion regulation capacities, and we further investigated whether parental gender has a differentiating role. To our knowledge, these questions have not previously been investigated in a Norwegian child population with emotional problems, and very few relevant studies have been conducted worldwide.

We hypothesize that symptoms of anxiety and depression as reported by the child, mother and father will be negatively associated with emotion regulation skills as reported by mothers and fathers when controlling for the child's age and gender, family economy, parental education, parental mental health, and chronic and acute stressors. We further examined whether the association between internalizing symptoms and emotion regulation differed depending on the informant being mother or father.

Method

Procedure

The present study uses baseline data from the Coping Kids study in Norwegian schools. Coping Kids is a national cluster randomized controlled study of an indicated group-based cognitive behavioral therapy (CBT) intervention, EMOTION, for children between the ages of 8 and 12 with elevated anxiety and depressive symptoms. Participants came from three sites across Norway, including both urban and rural areas. Schools volunteered to participate in the project, and children in grades 3, 4, 5 and 6 (corresponding to age range of 8–12 years) received written invitations to participate in the screening. Taking part in the screening required written informed consent from a parent and expressed interest from the child. Children answered questionnaires electronically at school, and parents did so at home via e-mailed links. Data used in the present study are cross-sectional baseline data, collected between autumn 2014 and spring 2016; new children entered the study every semester. For a complete description of the study and protocol, see Patras and colleague [33].

Participants

A total of 1686 children were screened for symptoms of anxiety and depression, and 873 children were invited to participate in an intervention study based on scoring one SD or above a population mean on measures of symptoms of anxiety and/or depression. Seven children were excluded due to exclusion criteria (mental retardation, autism, or severe behavioral disturbance), and 71 were randomly excluded due to lack of resources (lack of group leaders). Parents of the included children ($n = 795$) were invited to participate in the study, and the parental response was 78.5%. For the present study, inclusion required the availability of parental data; 624 children had at least one parent participate in the study. A total of 850 parents ($n = 299$ fathers, and $n = 550$ mothers) were included in the present study, of these, 226 children had both parents participate in the study.

There were no significant differences between children with and without parental response regarding age or symptom levels of anxiety and depression. Sociodemographic variables, stress experienced by the child, and parental mental health were only reported by parents.

Therefore, no comparisons between children with and without parental data were computable for these variables.

Sociodemographics

In our sample, 94.7% of the children, 88.9% of the mothers, and 88.8% of the fathers reported Norway as place of birth. The mean age of the children was 10.1 ($SD = 0.90$) years. Girls represented 58.1% of the sample, and this gender difference was significant ($t = 80.15$, $p < 0.001$). As symptoms of depression, and potentially of anxiety, are more prevalent in girls in the current age group [4, 29], this gender difference is considered representative for this population.

Parents rated the economic situation of the family on a five-point scale ranging from one *(less than 350.000 NOK)* to five (*over 1 million NOK*). A total of 81.2% rated their family income above 500.000 NOK, which is equivalent to the median income in Norway [34].

Parents rated their education levels individually from one *(= ten years of primary school*) to five (= *four years or more of college/university*). A total of 30.2% of fathers and 60.4% of mothers reported four or more years of college/university, compared to 32.2% for the general population in Norway (35.6% of females and 28.7% of males) [35].

Measures

Mood and feeling questionnaire – Short form (SMFQ)

The 13-item SMFQ child and parental versions were used to screen depressive symptoms experienced over the previous 2 weeks [36]. Higher scores indicate higher levels of depressive symptoms. In the present sample, Cronbach's alpha was good for both parental reports (mothers $\alpha = 0.88$, and fathers $\alpha = 0.88$) and child self-reports ($\alpha = 0.81$). Norwegian norms for the SMFQ are available [37].

Multidimensional anxiety scale for children (MASC)

The 39-item MASC child and parental version was used to screen anxious symptoms experienced over the previous 2 weeks [38]. Higher scores indicate higher levels of anxiety symptoms. In the present sample, Cronbach's alpha was excellent for both parental reports (mothers $\alpha = 0.90$, and fathers $\alpha = 0.90$) and good for child self-reports ($\alpha = 0.85$). The MASC is validated in Norway [39] as well as internationally [38].

Emotion regulation checklist (ERC)

The 24-item ERC [40] is a questionnaire assessing children's emotion regulation as reported by parents, validated by Shields and Cicchetti [40]. The questionnaire was previously validated in European samples [41] in addition to the original American validation, but the ERC has not been validated in a Norwegian sample. The ERC consists of two subscales, the Emotion Regulation subscale (ER) and the Lability/Negativity subscale (L/N). The ER subscale measures appropriate emotional expression, empathy and emotional self-awareness; high scores reflect good emotion regulation. The L/N subscale measures inflexibility, lability and dysregulation. Higher scores reflect dysregulation. The mean item score was calculated individually for each subscale. In the present sample, Cronbach's alphas were acceptable-to-good for maternal (ERC ER $\alpha = 0.72$, ERC L/N $\alpha = 0.81$) and paternal (ERC ER $\alpha = 0.79$, ERC L/N $\alpha = 0.80$) reports.

The Hopkin's symptom checklist (HSCL-10)

The HSCL-10 is a 10-item self-report questionnaire measuring adult symptoms of anxiety and depression within the previous week. Higher scores indicate higher levels of symptoms. The HSCL-10 is a short version of the HSCL [42]. The HSCL-10 has been validated with a Norwegian sample [43]. Cronbach's alphas in our sample were good for both mothers' ($\alpha = 0.87$) and fathers' ($\alpha = 0.85$) reports.

Early adolescence stress questionnaire (EASQ)

The EASQ was originally based on several questionnaires regarding youth stressors, with additional items adjusted to children and adolescents in Norway. In the present study, the EASQ was reported by parents. The questionnaire contains 22 items describing stressors over the previous 12 months, covering areas regarding family, self, friends and school. Both acute negative life events and chronic stress are included [44]. The EASQ measures the cumulative load of unrelated stressors that the child have experienced, therefore reliability scores are uninformative. Example questions are "Has your child switched schools?" and "Has someone close to the child died?". All answers are given as Yes or No, and all items contribute to the sum score.

Statistics

Analyses were performed using IBM SPSS 23. We used paired t-tests to compare scores of symptoms and emotion regulation between respondents. Bivariate correlations between relevant variables were also tested.

Hierarchical multiple regressions were preformed to determine whether emotion regulation adds to the explained variance of the control variables on children's symptom levels of anxiety or depression. All assumptions of linear regression were met, and levels of multicollinearity and homoscedasticity were acceptable. Step one in the hierarchical regression included all control variables, and step two also included the emotion regulation variables. The dependent variables were children's symptom of anxiety and depression, as reported by children themselves, mothers and fathers. Paternal scores on the control variables of paternal education level, paternal mental health and the child's experience of stressful life

events were used in the regressions with paternal scores of children's emotion regulation. In the regressions with maternal reports of emotion regulation scores, we used maternal reports of the same control variables. In addition, we conducted similar hierarchical regression analyses using reports from the opposite parent (e.g. measuring whether maternal report of emotion regulation would predict paternal report of childhood anxiety/depression or vice versa).

Of the 624 children with parents participating in the study, 22 ERC reports were missing, and therefore 602 cases were analyzed. Due to aspects of computerized data collection, no participants had any single items missing. In the regression analyses, missing values were excluded list-wise, resulting in the exclusion of four maternal and three paternal responses.

To compare the relationship between symptoms and emotional regulation for maternal and paternal results, we used the Paternoster test [45]. The Paternoster test is used to test if an empirical relationship estimated in two independent samples are similar, by comparing the unstandardized regressions coefficients from the two independent regressions.

Results

Descriptive data are presented in Table 1. Compared to fathers, mothers scored their children higher on the ERC ER ($r = 0.40$, $CI = [-1.25, -0.32]$, $p < 0.001$). For the ERC L/N, there were no significant differences between parental scores.

The correlation between the symptoms score and emotion regulation ranged between 0.68 ($p < 0.001$) for depression and ERC L/N reported by fathers and 0.00 ($p > 0.05$) for child-reported anxiety scores and maternal scores on the ERC ER (Table 2).

Regression analyses

Anxiety symptoms

When the child's self-report on MASC (anxiety) was the dependent variable, none of the ERC (emotion regulation) subscales contributed to the model; this was true for both maternal and paternal reports.

When the maternal report on MASC was the dependent variable, both ERC subscales contributed significantly to the model (L/N: $\beta = 0.24$, $p < 0.001$, ER: $\beta = -0.16$, $p < 0.001$), $\Delta R^2 = 10.2\%$ (Table 3). When the paternal report on MASC was the dependent variable, both ERC subscales contributed significantly to the model (L/N: $\beta = 0.30$, $p < 0.001$, ER: $\beta = -0.13$, $p < 0.05$), $\Delta R^2 = 12.5\%$ (Table 3). The Paternoster test was used to compare the unstandardized regression coefficients (b_1) between regressions containing parental reports on MASC and ERC; there was no difference (L/N: $Z = 0.6$, $p < 0.05$, ER $Z = 0.4$, $p < 0.05$).

In addition, we tested whether paternal report of emotion regulation would predict maternal report of childhood anxiety or vice versa. Paternal report of children's emotional regulation predicted maternal report of MASC only for the L/N subscale of ERC (L/N: $\beta = 0.17$, $p < 0.05$), $\Delta R^2 = 5.60\%$, while maternal report of children's emotional regulation predicted paternal report of MASC only for the ER subscale of ERC (ER: $\beta = -0.20$, $p < 0.01$), $\Delta R^2 = 7.20\%$.

Depressive symptoms

When the child's self-report on SMFQ (depression) was the dependent variable and maternal reports were used as the

Table 1 Descriptive statistics split by respondents

	Child $n = 602$ (1)	Mother $n = 537$ (2)	Father $n = 289$ (3)	Groups (t-test)
	M (SD)	M (SD)	M (SD)	
Child age	10.07 (0.90)			
Child gender	Girls 58.10%			Girls>Boys***
MASC (0–117)	63.43 (13.78)	43.39 (15.37)	41.36 (14.67)	1 > 2,3***
SMFQ (0–26)	9.92 (4.91)	5.64 (4.86)	5.08 (4.58)	1 > 2,3***, 2 > 3**
ERC L/N (0–45)		11.26 (5.96)	11.37 (5.82)	n.s.
ERC ER (0–24)		18.99 (3.30)	18.33 (3.26)	2 > 3**
HSCL (0–30)		4.07 (4.36)	3.23 (3.71)	
EASQ (0–44)		1.60 (1.62)	1.43 (1.44)	
Economy (5 point scale. 1 = 350,000 NOK, 5 = over 1 million NOK)		3.71 (1.19)	3.71 (1.19)	
Education (5 point scale, 1 = ten years of primary school, 5 = four years or more on college/university)		3.93 (0.98)	3.81 (1.07)	

All scores are sum-scores. Economy is measured per family. ERC L/N high score indicates poor regulation skills. ERC ER high score indicates good regulation skills
MASC Multidimensional Anxiety Scale for Children, *SMFQ* Mood and Feeling Questionnaire – short form, *ERC* Emotion regulation checklist, *HSCL* The Hopkin's symptom check list, *EASQ* Early Adolescence Stress Questionnaire
*$p = < 0.05$. **$p = < 0.01$. ***$p = < 0.001$

Table 2 Correlation matrix

	MASC-C	MFQ-C	MASC-M	MFQ-M	ERC LN-M	ERC ER-M	MASC-F	MFQ-F	ERC L/N-F	ERC ER-F
MASC-C	1									
MFQ-C	0.32***	1								
MASC-M	0.24***	0.14***	1							
MFQ-M	0.10*	0.29***	0.56***	1						
ERC L/N-M	0.04	0.18***	0.42***	0.59***	1					
ERC ER-M	−0.00	− 0.13**	0.37***	− 0.53***	− 0.53***	1				
MASC-F	0.23***	0.06	0.56***	0.39***	0.27***	− 0.28***	1			
MFQ-F	0.10	0.34***	0.35***	0.61***	0.45***	−0.41***	0.53***	1		
ERC L/N-F	0.11	0.24***	0.32***	0.51***	0.57***	−0.38***	0.45***	0.68***	1	
ERC ER-F	−0.10	−0.21***	− 0.28***	−0.34***	− 0.34***	−0.40***	− 0.34***	−0.41***	− 0.51***	1

Children $n = 602$, Mother $n = 537$, Father $n = 289$
MASC Multidimensional Anxiety Scale for Children, *SMFQ* Mood and Feeling Questionnaire – short form, *ERC* Emotion regulation checklist. *C* Reported by child, *M* Reported by mother, *F* Reported by father
*$p = < 0.05$. **$p = < 0.01$. ***$p = < 0.001$

independent variables, ERC L/N contributed significantly to the model ($\beta = 0.12$, $p < 0.05$), $\Delta R^2 = 1.8\%$ (Table 4). When the child's report on SMFQ was the dependent variable and paternal reports were used on the independent variables, ERC did not contribute to the model.

When the maternal report on SMFQ was the dependent variable, both ERC subscales contributed significantly to the model (L/N: $\beta = 0.34$, $p < 0.001$, ER: $\beta = -0.25$, $p < 0.001$), $\Delta R^2 = 21.6\%$ (Table 5). When the paternal report of SMFQ was the dependent variable, only

Table 3 Hierarchical multiple regression analysis, Anxiety (MASC)

Variables	Fathers' reports on child anxiety symptoms as dependent, fathers' reports on control and independent variables ($n = 285$)					Mothers' reports on child anxiety symptoms as dependent, mothers' reports on control and independent variables ($n = 534$)				
	β (CI)	t	$Part^2$	Total R^2	ΔR^2	β (CI)	t	$Part^2$	Total R^2	ΔR^2
Step 1				18.10%	**19.80%**				16.20%	**17.10%**
Age (child)	0.10 (−0.09, 3.55)	1.87				0.12 (0.73, 3.41)	3.04**			
Gender (child)	0.11 (0.16, 6.58)	2.07*				0.04 (− 1.34, 3.55)	0.89			
Economy (family)	−0.11 (− 3.01, − 0.10)	− 1.84				−0.09 (− 2.30, − 0.10)	− 2.14*			
Parental Education	0.00 (− 1.48, 1.60)	0.08				−0.00 (−1.34, 1.30)	− 0.03			
Stress (EASQ)	0.01 (−1.09, 1.28)	0.15				0.14 (0.54, 2.16)	3.29***			
Parental psychiatric health (HSCL)	0.40 (1.12, 2.03)	6.84***				0.30 (0.76, 1.34)	7.08***			
Step 2				30.40%	**12.50%**				26.20%	**10.20%**
Age (child)	0.09 (− 0.09, 3.26)	1.86				0.12 (0.71, 3.23)	3.07*			
Gender (child)	0.15 (1.40, 7.34)	2.90**				0.07 (−0.23, 4.39)	1.77			
Economy (family)	−0.12 (−3.08, − 0.21)	−2.25*				− 0.09 (−2.15, 0.09)	−2.14*			
Parental Education	0.04 (−0.91, 1.95)	0.72				0.03 (−0.74, 1.76)	0.80			
Stress (EASQ)	−0.05 (−1.57, 0.65)	− 0.82				0.07 (− 0.15, 1.40)	1.58			
Parental psychiatric health (HSCL)	0.26 (0.59, 1.48)	4.59***				0.19 (0.37, 0.94)	4.50***			
ERC Liability/Negativity (L/N)	0.30 (0.46, 1.08)	4.85***	5.76%			0.24 (0.39, 0.86)	5.26***	3.84%		
ERC Emotion regulation (ER)	−0.13 (−1.19, − 0.05)	−2.13*	1.10%			− 0.16 (−1.18, − 0.34)	−3.57***	1.77%		

All scores are sum-scores. ERC L/N high scores indicate poor regulation skills. ERC ER high scores indicate good regulation skills
SMFQ Mood and Feeling Questionnaire – short form, *ERC* Emotion regulation checklist, *HSCL* The Hopkin's symptom check list, *EASQ* Early Adolescence Stress Questionnaire
*$p = < 0.05$. **$p = < 0.01$. ***$p = < 0.001$

Table 4 Hierarchical multiple regression analysis, Depression (SMFQ)

Children's self-reports on child depression symptoms as dependent, mothers' reports on control and independent variables ($n = 534$)					
Variables	β (CI)	t	Part^2	Total R^2	ΔR^2
Step 1				4.50%	**5.60%**
Age (child)	0.12 (0.20, 1.10)	2.84**			
Gender (child)	0.08 (−0.09, 1.56)	1.76			
Economy (family)	0.05 (−0.16, 0.58)	1.14			
Maternal Education	−0.04 (− 0.64, 0.26)	−0.84			
Stress (EASQ)	0.16 (0.20, 0.75)	3.43***			
Maternal psychiatric health (HSCL)	0.06 (−0.03, 0.16)	1.34			
Step 2				6.00%	**1.80%**
Age (child)	0.12 (0.20, 1.09)	2.82**			
Gender (child)	0.09 (0.03, 1.68)	2.03*			
Economy (family)	0.06 (−0.14, 0.59)	1.20			
Maternal Education	−0.02 (− 0.56, 0.33)	−0.51			
Stress (EASQ)	0.13 (0.10, 0.65)	2.67**			
Maternal psychiatric health (HSCL)	0.01 (−0.09, 0.12)	0.31			
ERC Liability/Negativity (L/N)	0.12 (0.01, 0.18)	2.28*	0.92%		
ERC Emotion regulation (ER)	−0.05 (−0.22, 0.08)	−0.97	0.18%		

All scores are sum-score. ERC L/N high scores indicate poor regulation skills. ERC ER high scores indicate good regulation skills
SMFQ Mood and Feeling Questionnaire – short form, *ERC* Emotion regulation checklist, *HSCL* The Hopkin's symptom check list, *EASQ* Early Adolescence Stress Questionnaire
*$p = < 0.05$. **$p = < 0.01$. ***$p = < 0.001$

the L/N subscale of ERC contributed significantly to the model (L/N: $\beta = 0.53$, $p < 0.001$), $\Delta R^2 = 28.0\%$ (Table 5). The Paternoster test was used to compare the unstandardized regression coefficients (b_1) between regressions containing parental reports on SMFQ and ERC. The ERC L/N paternal reports were higher than the maternal reports ($Z = 2.8$, $p < 0.01$). The ERC ER was only a predictor of children's levels of depressive symptoms in maternal reports, and the Paternoster test was not calculated.

In addition, we tested whether paternal report of emotion regulation would predict maternal report of childhood depression or vice versa. Paternal report of children's emotional regulation predicted maternal report of SMFQ only for the L/N subscale of ERC (L/N: $\beta = 0.38$, $p < 0.001$), $\Delta R^2 = 14\%$, while maternal report of children's emotional regulation predicted paternal report of SMFQ for both the L/N and ER subscales (L/N: $\beta = 0.26$, $p < 0.001$, ER: $\beta = -0.23$, $p < 0.01$), $\Delta R^2 = 21.9\%$.

Discussion

The present study investigated emotion regulation in relation to anxious and depressive symptoms in children aged 8–12 years.

When parental reports of symptoms were used, the results supported our first hypothesis. We found a negative association between children's symptoms of anxiety and depression and emotion regulation. These results were retained even after controlling for known risk factors such as parental mental health, SES, stress the preceding year, and the child's age and gender. The results are in line with the work by Kovacs and Yaroslavsky [46], who found deficits in emotion regulation to be evident in children at risk for depression, and with Schneider and colleges [21] who found negative emotion regulation skills to be a risk factor for anxiety symptoms.

Our findings indicated that a lack of positive strategies to regulate emotions, as well as the presence of negative emotion regulation strategies, were associated with anxious and depressive symptoms. Such regulation strategies should therefore be explored in longitudinal studies as potential targets for intervention. Our results show the same tendency as the findings from the longitudinal study of Kim-Spoon and colleges [15], who found low positive emotion regulation and high dysregulation to be independent predictors of internalizing symptoms in children. By separating the measurement of anxiety and depression, the present study further elaborated these findings. The results from the present study are also supported by theories that underlying deficits in emotion regulation are a risk factor for depression and anxiety [12–14].

Our study is based on cross-sectional data, and therefore we cannot state the direction of the relationships [47]. Symptoms of anxiety and depression might weaken the child's emotion regulation capacities, leading to repeated failure to downregulate negative feelings and upregulate

Table 5 Hierarchical multiple regression analysis, Depression (SMFQ)

Variables	Fathers' reports on child depression symptoms as dependent, fathers' reports on control and independent variables ($n = 285$)					Mothers' reports on child depression symptoms as dependent, mothers' reports on control and independent variables ($n = 534$)				
	β (CI)	t	$Part^2$	Total R^2	ΔR^2	β (CI)	t	$Part^2$	Total R^2	ΔR^2
Step 1				23.40%	**25.00%**				27.70%	**28.50%**
Age (child)	0.06 (−0.22, 0.88)	1.18				0.07 (−0.03, 0.76)	1.83			
Gender (child)	0.02 (−0.78, 1.16)	0.38				−0.06 (−1.34, 0.09)	−1.71			
Economy (family)	0.04 (−0.28, − 0.66)	0.80				−0.02 (− 0.40, 0.25)	−0.46			
Parental Education	0.07 (−0.77, 0.16)	−1.28				0.04 (−0.19, 0.59)	1.00			
Stress (EASQ)	0.20 (0.29, 1.00)	3.55***				0.30 (0.67, 1.14)	7.51***			
Parental psychiatric health (HSCL)	0.38 (0.34, 0.61)	6.81***				0.35 (0.31, 0.48)	9.01***			
Step 2				51.60%	**28.00%**				49.40%	**21.60%**
Age (child)	0.05 (−0.17, 0.70)	1.19				0.06 (−0.02, 0.64)	1.88			
Gender (child)	0.07 (−0.13, 1.42)	1.64				−0.02 (− 0.77, 0.44)	−0.53			
Economy (family)	0.02 (−0.29, 0.46)	0.46				−0.01 (− 0.31, 0.23)	−0.29			
Parental Education	−0.01 (− 0.42, 0.32)	−0.27				0.09 (0.11, 0.76)	2.62**			
Stress (EASQ)	0.12 (0.08, 0.66)	2.54*				0.19 (0.37, 0.78)	5.55***			
Parental psychiatric health (HSCL)	0.19 (0.12, 0.35)	4.01***				0.19 (0.14, 0.29)	5.53***			
ERC Liability/Negativity (L/N)	0.53 (0.34, 0.50)	10.20***	17.72%			0.34 (0.22, 0.34)	8.92***	7.56%		
ERC Emotion regulation (ER)	−0.08 (−0.27, 0.03)	−1.64	0.46%			−0.25 (− 0.48, − 0.26)	−6.68***	4.24%		

All scores are sum-score. ERC L/N high scores indicate poor regulation skills. ERC ER high scores indicate good regulation skills
SMFQ Mood and Feeling Questionnaire – short form, *ERC* Emotion regulation checklist, *HSCL* The Hopkin's symptom check list, *EASQ* Early Adolescence Stress Questionnaire
*$p = < 0.05$. **$p = < 0.01$. ***$p = < 0.001$

positive feelings, thus weakening the child's belief in their capability to influence their own feelings. Worsening of internalizing symptoms might also increase the intensity of emotions and thereby the child's difficulties in regulating them [48]. There is not necessarily a contradiction between deficits in emotion regulation being a potential risk factor for the disorder and increased difficulties with emotion regulation over the course of the disorder. Transactional relationships between several factors working together in developing and maintaining disorders are a widely accepted theory within the field of child psychopathology [49].

Inclusion in the present study was based on elevated symptoms of anxiety and/or depression; thus, this was not a sample of clinically depressed or anxious children. The relationship between symptoms and poor emotion regulation in this sample supports the notion that deficits in emotion regulation are detectable in children with subclinical internalizing symptoms. Therefore, emotion regulation is a potentially important target in prevention and identification of children at risk.

However, based on the child's report, our first hypothesis was only confirmed regarding depressive symptoms and maternal reports of emotion regulation. One possible interpretation of this could be that the association between internalizing symptoms and emotion regulation is not that strong, and other factors should be emphasized in transdiagnostic research and interventions. Still, studies have repeatedly found only medium agreement between children's self-reports and caregivers' reports, with no clear answer regarding whose reports are most accurate [50]. Both child and parental reporters provide clinically meaningful information, enlightening a phenomenon from different angles [25]. Caution must be taken, as the results did not show an association between emotion regulation and symptom scores from all the informants.

Our results only partially supported our second hypothesis: No difference was found between parental reports regarding the association of anxiety symptoms and emotion regulation in children. This might indicate that there is no difference between parental reports regarding this association. Another potential explanation is that our sample size of fathers was too small to detect differences.

The results show parental differences for the association between children's emotion regulation and depressive symptoms. Children might display different emotion regulation behaviors to their parents, reflecting differences in parent-child relationships [25]. Parents might also have dissimilar interpretations and weightings of their children's behavior [27]. Alternatively, mothers may more accurately see and report the positive emotion regulation

behaviors of their children. Compared to fathers, mothers reported higher levels of the ER subscale of ERC, which captures positive emotion regulation behaviors in children. Still another possibility is that mothers idealize more and that paternal reports are more accurate.

In the additional analyses using opposite parental reporters of emotion regulation and of depressive and anxiety symptoms, the levels of symptoms were negatively associated with emotion regulation, though with a slightly altered regulation profile compared using same reporters. Paternal report of anxiety symptoms in children, was associated with maternal report of ER, while maternal report of anxiety in children was associated with paternal report of LN, both results confirm the findings from the main analyses. As for depression, maternal report of depressive symptoms was associated with paternal LN, and paternal reports with both the ERC scales as reported by the mother, also a similar pattern as in the main analyses.

These findings may indicate that fathers more accurately see and report the dysregulation (LN) of emotion regulation behaviors of their depressed and anxious children as reported by mothers. While mothers see and report lack of positive emotion regulation behaviors of their anxious children as reported by fathers. Mothers also see and report both lack of positive emotion regulation and dysregulation of their depressed children, independent of whether depressive symptoms is reported by mother or father. All over, the additional analyses with opposite reporters thus strengthen the results in the present study, especially regarding ERC and depressive symptoms.

The difference in association between emotion regulation and depression implies that both parents contribute important information in understanding their children's difficulties. Combining maternal and paternal reports therefore holds the potential to broaden our understanding of the association between depressive symptoms and emotion regulation.

One explanation of differences in parental evaluations of their children's mental status has been proposed to be linked to the parents' own state of mind [51]. In the present study, however, we have controlled for parental psychological problems. The results might therefore give a correct picture of how parents differ in their conceptions of their children's ability to regulate emotions in relation to depressive symptoms, in contrast to how parents differ with respect to anxiety symptoms.

Importantly, research including both paternal and maternal data often finds parental differences [25, 27]. Regardless of the explanation, it seems that in both research and clinical work with children at risk for internalizing problems, both caregivers should be included if possible [52]. Informant differences are interesting beyond the simple question of whether there are differences in reported symptoms: they are also interesting in understanding relationships between symptoms and constructs of emotion regulation.

Strengths and limitations

This study used a large national sample of Norwegian children reporting elevated anxious and/or depressive symptoms. Few exclusion criteria ensured a diverse sample. Including fathers in the parental sample addresses an important gap in the research literature [25]. However as children in our study were recruited on the basis of their self-reported elevated anxious and/or depressive symptoms, further research will be required to test whether these findings generalize to the general population. Furthermore, the sample is skewed toward well educated parents, especially for mothers, indicating that our sample are skewed towards higher SES. As low SES are associated with increased risk for psychopathology symptoms in children [31], the skewness in our sample possibly reduce generalization of our results further.

The study should be repeated with emotion regulation measurements from both parent and child, as discrepancies between child and maternal reports of emotion regulation have been found [53]. Not having multiple informants allows the possibility that shared method variance could affect our results [54]. The relationship between emotion regulation and anxious symptoms was not statistical significant when children self-reported on anxious symptoms. As a result we cannot rule out that the association found for parental reports of anxious symptoms and emotion regulation was inflated by shared method variance. However, the relationship between emotion regulation and depressive symptoms was evident using only parental report for both measurements, and when children's self-report on depressive symptoms was used as dependent variable. Although the effect diminished when different reporters were used, this may indicate that the relationship are not merely a result of measurement bias. However, whether parent or child reports are most accurate has not yet been clearly answered, and different informants might report on different aspects of the same construct [26]. Notably, Compas and colleges [3] compared studies using single and multiple informants on emotion regulation and found no moderator effect of the informant for the association between emotion regulation and internalizing symptoms.

This study was cross sectional. To establish emotion regulation as a possible risk factor for anxiety and depression, longitudinal data are necessary [47].

Conclusion

Deficits in emotion regulation probably coexist with elevated symptoms of anxiety and/or depression in Norwegian children aged 8 to 12 years. Further, parental gender

probably plays a differentiating role in the association between symptoms of depression and emotion regulation. This highlights the importance of including both parents in research and clinical work with children, as exclusion of one caregiver might bias our understanding of the child.

Abbreviation

CBT: Cognitive behavioral therapy; EASQ: Early Adolescence Stress Questionnaire; ER: Emotion regulation, L/N lability/negativity; ERC: Emotional regulation scale; HSCL-10: Hopkins Symptom Checklist; IBM SPSS: International business machines statistical package for social sciences; MASC: Multidimensional Anxiety Scale for Children; NOK: Norwegian kroner; SD: Standard deviation; SES: Socioeconomic Status; SMFQ: Mood and feeling questionnaire – short version

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Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to privacy policy but are available from the corresponding author on reasonable request.

Authors' contributions

MESL reviewed the literature, drafted and revised the manuscript, performed and interpreted statistical analyses. AMS and TR was involved in drafting and revising the manuscript, and interpreting statistical analyses. OH contributed to performing and interpreting the statistical analyses, in addition to being involved in revising the manuscript. JP, KM, SPN, and SH made substantial contributions in revising the manuscript critically. AMS, SPN, KM, SH and JP contributed to the study design and data collection. All authors read and approved the final manuscript.

Ethics approval and consent to participate

The Regional Committee for medical and health research ethics of Norway (REC), south east, approved the study. Registration number: 2013/1909; Project title: Coping Kids: a randomized controlled study of a new indicated preventive intervention for children with symptoms of anxiety and depression. Parents or legal guardian of the children participating in our study provided written informed consent on the children's behalf, before entering the study.

Consent for publication

Not applicable.

Competing interests

KM receives royalties from sales of the EMOTION intervention in Norway. The remaining seven authors declare that they have no competing interest with publishing this article.

Publisher's Note

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References

1. Blair C, Diamond A. Biological processes in prevention and intervention: the promotion of self-regulation as a means of preventing school failure. Dev Psychopathol. 2008;20:899–911.
2. Monopoli WJ, Kingston S. The relationships among language ability, emotion regulation and social competence in second-grade students. Int J Behav Dev. 2012;36:398–405.
3. Compas BE, Jaser SS, Bettis AH, Watson KH, Gruhn MA, Dunbar JP, Williams E, Thigpen JC. Coping, emotion regulation, and psychopathology in childhood and adolescence: a meta-analysis and narrative review. Psychol Bull. 2017;143:939–91.
4. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. Arch Gen Psychiatry. 2003;60:837–44.
5. Gonzalez-Tejera G, Canino G, Ramirez R, Chavez L, Shrout P, Bird H, Bravo M, Martinez-Taboas A, Ribera J, Bauermeister J. Examining minor and major depression in adolescents. J Child Psychol Psychiatry. 2005;46:888–99.
6. Comer JS, Gallo KP, Korathu-Larson P, Pincus DB, Brown TA. Specifying child anxiety disorders not otherwise specified in the DSM-iv. Depress Anxiety. 2012;29:1004–13.
7. Mian ND, Wainwright L, Briggs-Gowan MJ, Carter AS. An ecological risk model for early childhood anxiety: the importance of early child symptoms and temperament. J Abnorm Child Psychol. 2011;39:501–12.
8. Keenan K, Hipwell A, Feng X, Babinski D, Hinze A, Rischall M, Henneberger A. Subthreshold symptoms of depression in preadolescent girls are stable and predictive of depressive disorders. J Am Acad Child Adolesc Psychiatry. 2008;47:1433–42.
9. Thompson RA. Emotion regulation: a theme in search of definition. Monogr Soc Res Child Dev. 1994;59:25–52.
10. Cole PM, Martin SE, Dennis TA. Emotion regulation as a scientific construct: methodological challenges and directions for child development research. Child Dev. 2004;75:317–33.
11. Thompson RA, Goodman M. Development of emotion regulation. In: Kring AM, Sloan DM, editors. Emotion regulation and psychopathology : a transdiagnostic approach to etiology and treatment. New York: Guilford Press; 2010.
12. Barlow DH, Allen LB, Choate ML. Toward a unified treatment for emotional disorders. Behav Ther. 2004;35:205–30.
13. Kovacs M, Lopez-Duran NL. Contextual Emotion Regulation Therapy: A Developmentally-Based Intervention for Pediatric Depression. Child Adolesc Psychiatr Clin N Am. 2012;21:327–43.
14. Weems C. Developmental trajectories of childhood anxiety: identifying continuity and change in anxious emotion☆. Dev Rev. 2008;28:488–502.
15. Kim-Spoon J, Cicchetti D, Rogosch FA. A longitudinal study of emotion regulation, emotion lability-negativity, and internalizing symptomatology in maltreated and nonmaltreated children. Child Dev. 2013;84:512–27.
16. Zeman J, Shipman K, Suveg C. Anger and sadness regulation: predictions to internalizing and externalizing symptoms in children. J Clin Child Adolesc Psychol. 2002;31:393–8.
17. Suveg C, Zeman J. Emotion regulation in children with anxiety disorders. J Clin Child Adolesc Psychol. 2004;33:750–9.
18. Goodwin RD. Association between coping with anger and feelings of depression among youths. Am J Public Health. 2006;96:664–9.
19. Siener S, Kerns K. Emotion regulation and depressive symptoms in preadolescence. Child Psychiatry Hum Dev. 2012;43:414–30.
20. Feng X, Keenan K, Hipwell AE, Henneberger AK, Rischall MS, Butch J, Coyne C, Boeldt D, Hinze AK, Babinski DE. Longitudinal associations between emotion regulation and depression in preadolescent girls: moderation by the caregiving environment. Dev Psychol. 2009;45:798–808.
21. Schneider RL, Arch JJ, Landy LN, Hankin BL. The longitudinal effect of emotion regulation strategies on anxiety levels in children and adolescents. J Clin Child Adolesc Psychol. 2016;00:1–14.
22. Tahmouresi N, Bender C, Schmitz J, Baleshzar A, Tuschen-Caffier B. Similarities and differences in emotion regulation and psychopathology in

Iranian and German school-children: A cross-cultural study. Int J Prev Med. 2014;5:52–60.
23. Milan S, Wortel S, Ramirez J, Oshin L. Depressive symptoms in mothers and daughters: attachment style moderates reporter agreement. J Abnorm Child Psychol. 2017;45:171–82.
24. Thapar A, McGuffin P. Validity of the shortened mood and feelings questionnaire in a community sample of children and adolescents: a preliminary research note. Psychiatry Res. 1998;81:259–68.
25. Schofield TJ, Parke RD, Coltrane S, Weaver JM: Optimal Assessment of Parenting, or How I Learned to Stop Worrying and Love Reporter Disagreement. J Fam Psychol 2016;30:614–24.
26. Duhig AM, Renk K, Epstein MK, Phares V. Interparental agreement on internalizing, externalizing, and Total behavior problems: a meta-analysis. Clin Psychol Sci Pract. 2000;7:435–53.
27. Alakortes J, Fyrstén J, Carter AS, Moilanen IK, Ebeling HE. Finnish mothers' and fathers' reports of their boys and girls by using the brief infant-toddler social and emotional assessment (BITSEA). Infant behav Dev. 2015;39:136.
28. Pagliaccio D, Luby JL, Bogdan R, Agrawal A, Gaffrey MS, Belden AC, Botteron KN, Harms MP, Barch DM, Goodman S, et al. Amygdala functional connectivity, HPA Axis genetic variation, and life stress in children and relations to anxiety and emotion regulation. J Abnorm Psychol. 2015;124:817–33.
29. Hankin BL, Young JF, Abela JRZ, Smolen A, Jenness JL, Gulley LD, Technow JR, Gottlieb AB, Cohen JR, Oppenheimer CW, et al. Depression from childhood into late adolescence: influence of gender, development, genetic susceptibility, and peer stress. J Abnorm Psychol. 2015;124:803–16.
30. Blandon AY, Calkins SD, Keane SP, O'Brien M. Individual differences in trajectories of emotion regulation processes: the effects of maternal depressive symptomatology and children's physiological regulation. Dev Psychol. 2008;44:1110–23.
31. Wadsworth ME, Achenbach TM. Explaining the link between low socioeconomic status and psychopathology: testing two mechanisms of the social causation hypothesis. J Consult Clin Psychol. 2005;79:1146–53.
32. Troy AS, Ford BQ, McRae K, Zarolia P, Mauss IB. Change the things you can: emotion regulation is more beneficial for people from lower than from higher socioeconomic status. Emotion. 2016;
33. Patras J, Martinsen KD, Holen S, Sund AM, Adolfsen F, Rasmussen LP, Neumer SP. Study protocol of an RCT of EMOTION: an indicated intervention for children with symptoms of anxiety and depression. BMC Psychol. 2016;4:48.
34. Inntekts og formuesstatistikk for husholdninger, 2015 [https://www.ssb.no/inntekt-og-forbruk/statistikker/ifhus].
35. Nøkkeltall for utdanning [https://www.ssb.no/utniv].
36. Angold A, Costello EJ, Messer SC, Pickles A. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. Int J Methods Psychiatr Res. 1995;5:237–49.
37. Larsson B, Ingul J, Jozefiak T, Leikanger E, Sund AM. Prevalence, stability, 1-year incidence and predictors of depressive symptoms among Norwegian adolescents in the general population as measured by the short mood and feelings questionnaire. Nord J Psychiatry. 2016;70:290–6.
38. March JS, Parker JDA, Sullivan K, Stallings P, Conners CK. The multidimensional anxiety scale for children (MASC): factor structure, reliability, and validity. J Am Acad Child Adolesc Psychiatry. 1997;36:554–65.
39. Martinsen K, Holen S, Neumer S-P, Waaktaar T, Rasmussen LMP, Kendall PC, Patras J. The factor structure of MASC youth report in Norwegian school children. J Child Fam Stud. 2017:1–9.
40. Shields A, Cicchetti D. Emotion regulation among school-age children: the development and validation of a new criterion Q-sort scale. Dev Psychol. 1997;33:906–16.
41. Molina P, Sala MN, Zappulla C, Bonfigliuoli C, Cavioni V, Zanetti MA, Baiocco R, Laghi F, Pallini S, De Stasio S, et al. The Emotion Regulation Checklist – Italian translation. Validation of parent and teacher versions. Eur J Dev Psychol. 2014;11:624–34.
42. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L. The Hopkins symptom checklist (HSCL): a self-report symptom inventory. Behav Sci. 1974;19:1–15.
43. Strand BH, Dalgard OS, Tambs K, Rognerud M. Measuring the mental health status of the Norwegian population: a comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). Nord J Psychiatry. 2003;57:113–8.
44. Sund AM, Larsson B, Wichstrom L. Psychosocial correlates of depressive symptoms among 12-14-year-old Norwegian adolescents. J Child Psychol Psychiatry. 2003;44:588–97.
45. Paternoster R, Brame R, Mazerolle P, Piquero A. Using the correct statistical test for the equality of regression coefficients. Criminology. 1998;36:859–66.
46. Kovacs M, Yaroslavsky I. Practitioner review: dysphoria and its regulation in child and adolescent depression. J Child Psychol Psychiatry. 2014;55:741–57.
47. Kraemer HC, Yesavage JA, Taylor JL, Kupfer D. How can we learn about developmental processes from cross-sectional studies, or can we? Am J Psychiatry. 2000;157:163–71.
48. Carthy T, Horesh N, Apter A, Gross J. Patterns of emotional reactivity and regulation in children with anxiety disorders. J Psychopathol Behav Assess. 2010;32:23–36.
49. Sameroff A. The transactional model of development: how children and contexts shape each other. Washington, DC: American Psychological Association; 2009.
50. De Los RA, Kazdin AE. Informant discrepancies in the assessment of childhood psychopathology: a critical review, theoretical framework, and recommendations for further study. Psychol Bull. 2005;131:483–509.
51. Fjermestad KW, Nilsen W, Johannessen TD, Karevold EB. Mothers' and Fathers' Internalizing Symptoms Influence Parental Ratings of Adolescent Anxiety Symptoms. J Fam Psychol. 2017;31:939–44.
52. Clark DA, Listro CJ, Lo SL, Durbin CE, Donnellan MB, Neppl TK. Measurement invariance and child temperament: an evaluation of sex and informant differences on the child behavior questionnaire. Psychol Assess. 2016;28:1646–62.
53. Hourigan SE, Goodman KL, Southam-Gerow MA. Discrepancies in Parents' and Children's reports of child emotion regulation. J Exp Child Psychol. 2011;110:198–212.
54. Podsakoff PM, Mackenzie SB, Lee J-Y, Podsakoff NP, Zedeck S. Common method biases in behavioral research: a critical review of the literature and recommended remedies. J Appl Psychol. 2003;88:879–903.

Paper 2

Does the Transdiagnostic EMOTION Intervention Improve Emotion Regulation Skills in Children?

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A 12-month follow-up of a transdiagnostic indicated prevention of internalizing symptoms in school-aged children: The results from the EMOTION study.

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Short title: Results from EMOTION study 12-month follow-up.

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Abstract

Background: Anxious and depressive symptoms in youth are highly prevalent, are often comorbid and have a high rate of relapse. Preventive interventions are promising, but follow-up results are lacking. The transdiagnostic EMOTION program is an indicated preventive CBT intervention targeting children aged 8 – 12 years. **Methods:** The present study investigates the 12 months follow-up effects of the EMOTION intervention in a cluster RCT with 795 children that included both child self-reports and parental reports. **Results:** Mixed model analyses showed a larger decrease of symptoms in the intervention group than in the control group for child self-reported anxious symptoms (difference 4.56, CI 1.83 to 7.29, p = .001) and in parental reports for both anxious (difference 2.50, CI .26 to 4.74, p = .029) and depressive (difference 1.55, CI .83 to 2.26, p = <.001) symptoms in children. No statistically significant difference was found for child self-reported depressive symptoms (difference .69, CI -.22 to 1.60, p = .139). **Conclusion:** The transdiagnostic EMOTION program has shown potential for long-term reduction of symptoms for both anxiety and depression in school-aged children. However, the effect on depressive symptoms should be considered preliminary and further investigated, as only parental reports showed effect. **Trial registration:** The regional ethics committee (REC) of Norway approved the study. Registration number: 2013/1909; Project title: Coping Kids: a randomized controlled study of a new indicated preventive intervention for children with symptoms of anxiety and depression. ClinicalTrials.gov; Protocol ID 228846/H10.

Keywords: Anxiety, Depression, Follow-up, Transdiagnostic prevention, Child.

Background

Anxious and depressive disorders (i.e., internalizing disorders) are common and often comorbid in youth (1). Research indicate that comorbid anxious and depressive symptoms are associated with an increased risk of developing anxiety and depressive disorders in the future (2), and relapse rates for these disorders are high (3, 4). Internalizing disorders in youth are often associated with functional impairments in important life areas, such as academic achievement and social functioning, and even subclinical symptoms have been found to influence adaptive development negatively (5-7). Internalizing disorders tend to be stable in children over time (1, 2). Hence, it is necessary to identify interventions that can interrupt this process, with the aim of reducing or minimizing possible negative consequences associated with these disorders. Successful prevention has the potential to reduce the severity and persistence of symptoms for those affected and to decrease the incidence of new diagnosable cases (3).

The majority of prevention research targeting children with internalizing symptoms focus on programs based on cognitive behavioral therapy (CBT) that are delivered in a school setting (3, 8). A recent review (3) reported positive results after indicated interventions, that is, interventions aimed at youth with elevated symptoms. These interventions were successful at reducing symptoms of both anxiety and depression in youth; however, follow-up periods of up to 12 months revealed limited long-term effects. The authors identified important areas for improvement, especially the need for follow-up studies (3). Similarly, Werner-Seidler et al (4) reviewed studies of both anxiety and depression and found small positive effects for school-

based prevention programs for youth both at postintervention and at follow-up. Indicated programs were found to be more effective for depression than universal programs. No difference between the indicated and universal programs was detected for anxiety. The same was true for follow-up effects, however the small number of follow-up studies measuring anxiety symptoms reduces the reliability of the results reported in this review (4). In another meta-analysis of anxiety prevention programs (9), the results indicated small effect sizes post intervention and at six months follow-up; at the 12-month follow-up, however, the effect had diminished. Conflicting results were recently published by Rasing et al (10), who found no postintervention effect for indicated CBT-based anxiety prevention programs delivered in groups. They did find a significant decrease in anxious symptoms at six months postintervention. This effect diminished after 12 months, however, similar to the results reported by Fisak and colleagues (9).

Several studies focusing on depression have found positive short- and long-term effects for indicated prevention programs (3, 11); however, the effects seem to diminish over time. Similarly, in a recent meta-analytic review with at-risk adolescents, no effects were found for depression at follow-up after 6 and 12 months (10). The effect of preventive interventions targeting both anxious and depressive symptoms was not moderated by the participants' age or gender (4, 9, 12). In summary, the effects of indicated preventions are generally promising, although heterogeneity is high. Follow-up results are scarce, especially regarding prevention of anxiety, indicating that more studies are needed.

Transdiagnostic interventions have the advantage of targeting both anxious and depressive symptoms concurrently, thus reaching a broader population and simplifying implementation for professionals as only one program has to be learned and implemented (13, 14). Transdiagnostic approaches are developed based on the common comorbidity of these

disorders and the similarities between the disorders in terms of etiology, risk factors, and treatment strategies (13, 15). Crossover effects from prevention programs that focus exclusively on either anxiety or depression further support the idea of targeting both symptom categories with the same intervention (16). There are few studies of such interventions for youth, but the results to date are generally promising (17-20). In addition, there are studies that focus on the prevention of both anxiety and depression without using the term "transdiagnostic"; one example is the Aussie Optimism; Positive Thinking Skills Program for the prevention of depression and anxiety in school-aged children. This program reported positive short-term results for depression, but not anxiety, when implemented in schools with youth defined as high risk. No effects were identified at a 30-month follow-up (21, 22). The comparable program FRIENDS for Life is also aimed at preventing anxiety and depression and has shown positive effects after six and 12 months for both anxiety and depressive symptoms when used as an indicated program (23). Although evidence so far is scarce, the results indicate the potential for positive long-term effects after implementing a transdiagnostic preventive intervention.

The present study examined the long-term effect of the newly developed transdiagnostic indicated prevention program EMOTION *"Coping Kids" Managing Anxiety and Depression* (24, 25) in Norwegian school children aged 8 to 13 years with high self-reported levels of anxious and/or depressive symptoms. EMOTION is a CBT-based program aiming to reduce anxious and depressive symptoms in school-aged children. The postintervention effects of the EMOTION program have shown positive results for child self-reports of anxious and depressive symptoms as well as parent-reported depressive symptoms in children. Parental reports of child anxiety symptoms, however, did not show any significant difference between the groups from pre- to postintervention (26).

Based on the positive postintervention results of EMOTION (26), we hypothesized that the intervention group would decrease significantly more than the control groups in child self-reported anxious and depressive symptoms at the 12-month follow-up compared to baseline. In addition, we hypothesized that parental reports of their child's depressive symptoms would reflect a decrease in symptoms and possibly also a decrease in parent-reported anxious symptoms. We further investigated whether the differences between the groups continued to increase from postintervention to the 12-month follow-up for both child and parental reported symptoms.

Method

Procedure

The data in the present study are part of the Coping Kids evaluation in Norway, a cluster randomized controlled study (RCT) of a new, indicated preventive intervention for children, the EMOTION program (24, 25). The data sample was collected from 36 schools, covering both rural and urban areas in Norway. Prior to randomization the schools were matched on geographic location, size and demographic factors. Schools were then randomized into 18 intervention schools and 18 control schools. The data were collected between fall 2014 and spring 2017, with enrollment of new children occurring every semester. For each child, data were collected at three waves: before the intervention, immediately after the intervention was completed (approximately 10 weeks) and at follow-up one year after the intervention was completed (see figure 1, Consort Statement). All data were collected electronically.

An invitation to participate in screening was handed out to all children between the ages of 8 to 13 years (corresponding to grades 3, 4, 5 and 6) at the participating schools. Participation in screening required expressed interest from the child and a signed consent

form from the caregivers. The children answered the questionnaires digitally at the schools, and teachers were available to answer questions. Children who scored above a predetermined cut-off (MASC-C >= 61 points for girls and >= 54 points for boys (27). SMFQ-C >= 7 points regardless of gender (28) on either anxious or depressive symptoms were invited to participate in the study. The parents of the included children were invited to participate, and link to questionnaires were sent to consenting parents by email.

Two group leaders from primary or secondary health services delivered the EMOTION program to groups of three to seven children two times a week for 10 weeks. In addition, parenting groups were held seven times over the 10-week period, with children participating in four of the meetings. The group leaders underwent a three-day training seminar that covered basic CBT and the EMOTION manual. A trained CBT therapist provided 10 hours of supervision to the group leaders over the study period.

To ensure fidelity to the program 17% of the sessions were videotaped and rated (from 0 = None to 6 = Thorough) using the Competence and Adherence for Cognitive Behavioral Therapy (CAS-CBT) (29) and fidelity were supported (M = 3.55, SD = 1.24) (30). Group leaders recorded attendance for intervention groups, reporting 89.8 % attendance in child session and 80% attendance in parental session (30).

Both the control and intervention schools were given a half-day seminar focusing on increasing knowledge about internalizing symptoms in children and how schools can support these children. For a complete description of the study protocol, see Patras et al (31).

Participants

A total of 1686 children participated in screening for anxious and depressive symptoms. Based on screening results, 873 children were invited to participate. Seven children were excluded due to exclusion criteria (e.g., mental retardation, autism, or being

potentially unable to benefit from a group intervention), and 71 were excluded due to lack of resources (group leaders). Finally, 795 children were included in the study, and of these, 635 children (79.9 %) had a parent participating in at least one of the measurement points (83.4 % of the parents were mothers).

An income equal to or above the median income in Norway (32) was reported by 82.4 % of the sample. Education at the college or university level was reported by 67.0 % of parents. By comparison, a corresponding education level are reported by 32.9 % of the general Norwegian population (33). In our sample, 71.3 % of the children lived with both their parents. Norway was reported as the place of birth for 95.3 % of the children, for 88.8 % of the mothers and for 89.2 % of the fathers.

The Intervention

The indicated EMOTION intervention is CBT based, and it focuses on teaching children adaptive symptom management skills. In the first half of the intervention, the emphasis is on psychoeducation and learning new coping skills. The second half is reserved for practicing the skills and learning to approach avoided situations through behavioral experiments (25). Examples of strategies that target depressive symptoms include using coping strategies to improve mood, emotion regulation and behavioral activation, while strategies that targeted anxious symptoms include building a fear hierarchy and undergoing graded exposure. The parallel parent groups covered subjects that corresponded to those of the child groups, with the intention of increasing parental support for children and providing a general focus on positive parent strategies (34). A pilot study reported positive results for the feasibility of the EMOTION intervention (35).

Measures

The Multidimensional Anxiety Scale for Children (MASC) (36) child and parent versions were used to assess anxious symptoms. The MASC includes 39 items that cover anxious symptoms over the past two weeks. Cronbach's alphas were acceptable for both the child (α = .84 at pre, .91 at post, and .91 at follow-up) and parent (α = .72 at pre, .81 at post, and .92 at follow-up) versions in the present sample.

The Mood and Feelings Questionnaire – short form (SMFQ) (37) child and parent versions were used to assess depressive symptoms. The SMFQ includes 13 items that cover depressive symptoms over the past two weeks. In addition, we added one question about suicidal ideation from the MFQ long version (38). Cronbach's alphas were acceptable for both the child (α = .81 at pre, .87 at post, and .88 at follow-up) and parent (α = .88 at pre, .87 at post, and .92 at follow-up) versions in the present sample.

Statistics

The data were analyzed using linear mixed models (LMM), with the MASC and SMFQ symptom measures for child and parent reports as dependent variables. In all mixed models, child was included as a random effect and time as a categorical fixed-effects variable using the three timepoints (pre, post, and 12 months after intervention), the interaction between intervention and time, child age and gender as covariates. Intention to treat analyses (ITT) was used (39).

LMM has the advantage of being unbiased under the missing at random assumption, while a complete case analysis would have been unbiased only under the stricter missing completely at random assumption. The LMM included data from all participants who had data from at least one timepoint in the analysis. All mixed models were repeated with the child nested within school and school as a second random effect. The results were essentially the same (see Appendix B2 in the present thesis for results).

Schools were the unit of randomization, and due to feasibility considerations, randomization was only performed in the first wave of data collection; hence, each school was kept as either an intervention or a control school throughout the data collection period. We compared the intervention and control groups at baseline in terms of the child and parent versions of the MASC and SMFQ, child age, child gender and sociodemographic factors (t-test for scale variables and Pearson's chi-squared test for dichotomous variables). Completers (those who had data for at least one follow-up point) and dropouts were compared using Student's *t*-test. No statistically significant differences were found between completers and dropouts (see table 2, page 42 in the present thesis for attrition analyses).
P-values < .05 were considered statistically significant, and 95 % confidence intervals (CIs) are reported where relevant. The statistical analyses were performed using SPSS 24.

Results

The baseline characteristics of the intervention and control groups are presented in Table 1. There were no statistically significant intergroup differences regarding child or parent gender, parental education or income. A significant age difference was found at baseline: the children in the intervention group were older than those in the control group ($M_{\text{intervention}}$ = 10.20 [SD .95] versus M_{control} = 10.01 [SD .86], p = .015). However, this small age difference was not considered clinically meaningful. The intervention group scored higher for both anxious and depressive symptoms compared to the control group at baseline across all respondents (see Table 1).

Table 2 displays the results of the mixed model analyses. Comparing the baseline results to those at the 12-month follow-up, for child self-reported anxious symptoms, the intervention group changed more than the control group: difference 4.56, CI 1.83 to 7.29, p = .001. For child self-reported depressive symptoms, there was no statistically significant

difference in symptom change between the intervention and control group: difference .69, CI -.22 to 1.60, $p = .139$.

For parent reported child anxious symptom, the intervention group had changed more than the control group at 12 months after the intervention: difference 2.50, CI .26 to 4.74, $p = .029$. For parent reported child depressive symptom, the intervention group changed more than the control group at 12 months after the intervention: difference 1.55, CI .83 to 2.26, $p = <.001$. There were no statistically significant differences between the intervention and control groups regarding the change over time from postintervention to the 12-month follow-up. This was true across all reporters, see Table 2.

Figure 2 to 5 displays the development of the intervention and control groups over time, split by symptoms and reporter.

Discussion

The results of the present study indicate that the follow-up effects of the EMOTION transdiagnostic preventive intervention program are promising.

For both child and parent reports of the children's anxious symptoms, the symptom reduction in the intervention group was greater than in the control group one year after the intervention, indicating a small but significant effect of the EMOTION program. The effect of the EMOTION intervention persisted from baseline to the 12-month follow-up but did not continue to increase between the postintervention assessment and the 12-month follow-up.

The results of the children's reports are consistent with the previously published postintervention effects of EMOTION (26), suggesting that the intervention is effective for child self-reported anxious symptoms from both a short- and a long-term perspective. The postintervention results of EMOTION indicated that there was no reduction in the children's

anxious symptoms as assessed by the parents (26). This suggests a delayed effect of the EMOTION intervention on anxiety symptoms as reported by parents. The positive findings regarding follow-up reductions in anxiety symptoms across informants strengthen the results and indicates that the EMOTION intervention creates lasting improvements in children's strategies for managing anxiety. The small effect of the EMOTION program are in line with those of similar prevention programs, such as the FRIENDS for Life program (23) and a review focusing exclusively on school-based prevention programs for anxiety and depression (4). However, the results of this study contradict reviews that report no effects for anxiety prevention at a 12-month follow-up (3, 9). Recent reviews have especially called for more studies evaluating the follow-up effects of anxiety prevention, as the existing results are uncertain, primarily due to the small number of published studies (3, 4). Our results elaborate on these previous findings and indicate that the EMOTION program is effective for preventing anxiety 12 months after the intervention. Furthermore, treatment interventions targeting children with diagnosed anxiety disorders show promising long-term results (40, 41). The extent of the EMOTION intervention resembles treatment interventions, and it is possible that this sort of extensiveness is necessary for the successful prevention of anxiety symptoms.

For depressive symptoms, the parents reported a greater reduction in child symptoms in the intervention group compared to the control group at the 12-month follow-up, indicating a small but significant effect of the EMOTION program. The child reports did not support these findings, however, as no effects were found on depressive symptoms as assessed by the children. This finding is only partly in line with the pre- to postintervention results for the EMOTION program (26), where both child self-report and parental report of child symptoms showed an effect on depressive symptoms. The parent-reported results correspond with those

of previous studies showing a small effect for depression in both the short- and long-term (3, 23). Dissimilar results from different informants are common (42), and variations in effect across informants are also found in similar trials. For example, Kösters and colleges (23) found positive effects using children's self-reports on both anxiety and depression 12 months after the intervention, but teachers' reports showed no effects, and peer reports indicated an increase in symptoms among those following the intervention. In support of the clinical importance of parent reported reduction in child depressive symptoms, others have found parental reports to be the best predictor of mood disorders in a group of children under the age of twelve (43).

The uncertain results regarding depression in the present study suggest that there is room for improvement in the EMOTION intervention. Research has suggested that effective regulation of dysphoric mood is important for recovery from juvenile depression (44). However, the EMOTION intervention has been found to be effective for improving children's general emotion regulation capacity (45), indicating other important factors relevant to the long-term prevention of depression should be improved. For example, improving group leader's ability to set goals relevant for depressed children appears to be an area of improvement. Further improvement could possibly be to include booster sessions in the intervention (10). The results regarding booster sessions are mixed, however (46, 47). Booster sessions are characterized by considerable heterogeneity (e.g., in terms of the number of sessions and the content of sessions), which may contribute to the mixed findings.

The EMOTION intervention provides seven parent sessions, four of which include the children and three to which only the parents are invited. The parents in our sample were taught both how to recognize their child's symptoms and how to support their child in

implementing the skills and strategies acquired in the EMOTION program. A substantial amount of evidence supports the importance of parent-related factors, such as parental mental health and parenting practices, to children's risk of internalizing symptoms (48). Nevertheless, it is still equivocal whether parental involvement in interventions increases effectiveness (48, 49). Possibly involving parents enhances the effectiveness of interventions for younger children (48, 49), and a recent meta-analysis found that parental involvement in CBT treatment targeting anxiety was associated with increased effects both postintervention and at follow-up (46). The parental participation in the EMOTION intervention might have contributed to the finding that the parents in the intervention group reported greater symptom reduction than parents in the control group.

Results from the present study indicate that it is possible to prevent both anxious and depressive symptoms in one transdiagnostic intervention with lasting effects. Further, when conducting research on prevention interventions even a small effect is considered beneficial at a population level, as it may reduce the onset of disorders (4, 50). This is in line with the results from Kösters and colleges (23) and elaborates the findings of Martinsen and colleagues (26). Transdiagnostic programs have the advantages of targeting a larger group of children, simplifying implementation, and potentially reducing costs (13, 14, 48). In the present sample, variation among schools was insignificant, which we expect is a result of the Norwegian school system, where the great majority of children go to public schools (51) and where economic inequality, both within and among schools, is relatively low. To improve the impact of preventive interventions for children, studies focusing on moderators and mediators of effects are needed to identify essential components of the EMOTION intervention and similar interventions. Furthermore, the use of new technology (e.g., Virtual Reality and web-based sessions) could be investigated to make the intervention more feasible within municipal

service settings, to investigate the importance of the intensity of the intervention and potentially strengthen the effects.

Strengths and Limitations

The present study had a large sample and high response rate at follow-up. The study was performed in naturalistic settings and had few exclusion criteria. At baseline, there were statistically significant differences between the intervention and control groups on both anxiety and depression measures across all respondents. Therefore, we used a mixed model for our analyses to adjust for these differences. In addition, the mixed model has the advantage of including data from all participants who had data on at least two time-points in the analysis, thereby minimizing the amount of missing data in the analysis (52).

The sample seems to be skewed toward parents with more education and average or above-average income levels. Although socioeconomic differences in Norway are relatively low, we cannot rule out the possibility that our sample is only representative of those children in higher socioeconomic classes. Low socioeconomic status is associated with an increased risk of psychopathology in children (53). To ensure generalization to this high-risk group, future research should strive to include these families. To evaluate a true long-term prevention effect, it will be necessary to have a longer follow-up period than 12 months (41).

Conclusion

The transdiagnostic EMOTION program has shown potential for long-term reduction of symptoms for both anxiety and depression in school-aged children. However, the effect on depressive symptoms should be considered preliminary and further investigated, as only parental reports showed effect. This could have important implications for reducing potential

suffering for children and families and for reducing the possible costs to society for treating disorders later in life.

List of abbreviations: CBT = cognitive behavioral therapy. RCT = Randomized controlled study. MASC-C/P = The Multidimensional Anxiety Scale for Children – child/parent version. SMFQ-C/P = The Mood and Feelings Questionnaire – short form child/parent version. CAS-CBT = Cognitive Behavioral Therapy.

Declarations

Ethical Approval: The study was approved by the regional ethics committee (REC), Region South and East Norway (Registration number: 2013/1909; Project title: Coping Kids**:** a randomized controlled study of a new indicated preventive intervention for children with symptoms of anxiety and depression). Legal guardian of the children participating in our study provided written informed consent on the children's behalf, before entering the study. **Consent for publication:** Not applicable. **Availability of data and material:** The datasets generated and/or analyzed during the current study are not publicly available due to privacy policy but are available from the corresponding author on reasonable request. **Competing interests:** One of the authors, Kristin Martinsen, receives royalties from the sale of EMOTION manuals in Norway. All the other authors declare that they have no competing interests. All authors approved the final manuscript before publication. **Funding:** The project was founded by the Norwegian Research Council, award number 228846/H10. The Norwegian Research Council had no role in designing the study, collecting data, analysis or interpretation of data, or in writing the manuscript. **Authors contributions:** MESL reviewed the literature, drafted and revised the manuscript, performed and interpreted statistical analyses. TR was involved in drafting and revising the manuscript and interpreting statistical

analyses. SL contributed to performing and interpreting the statistical analyses, in addition to being involved in revising the manuscript. AMS, SPN, KM, SH, JP, FA and LMR made substantial contributions in revising the manuscript critically. AMS, SPN, KM, SH, FA and JP contributed to the study design and data collection. All authors read and approved the final manuscript. **Acknowledgements**: We would like to thank all parents and children who participated in the study, school personnel and project coordinators for their invaluable assistance with the data collection.

REFERENCES

1. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. Archives of general psychiatry. 2003;60(8):837-44.

2. Lavigne JV, Hopkins J, Gouze KR, Bryant FB. Bidirectional Influences of Anxiety and Depression in Young Children. Journal of Abnormal Child Psychology. 2015;43(1):163-76.

3. Stockings EA, Degenhardt L, Dobbins T, Lee YY, Erskine HE, Whiteford HA, et al. Preventing depression and anxiety in young people: a review of the joint efficacy of universal, selective and indicated prevention. Psychological medicine. 2016;46(1):11.

4. Werner-Seidler A, Perry Y, Calear AL, Newby JM, Christensen H. School-based depression and anxiety prevention programs for young people: A systematic review and meta-analysis. Clinical Psychology Review. 2017;51:30-47.

5. Gonzalez-Tejera G, Canino G, Ramirez R, Chavez L, Shrout P, Bird H, et al. Examining Minor and Major Depression in Adolescents. Journal of Child Psychology and Psychiatry. 2005;46(8):888-99.

6. Comer JS, Gallo KP, Korathu-Larson P, Pincus DB, Brown TA. SPECIFYING CHILD ANXIETY DISORDERS NOT OTHERWISE SPECIFIED IN THE DSM-IV. Depression and Anxiety. 2012;29(12):1004-13.

7. Swan AJ, Kendall PC. Fear and Missing Out: Youth Anxiety and Functional Outcomes. 2016. p. 417-35.

8. Werner K, Gross J, J. Emotion Regulation and Psychopathology: A Conseptual Framework. In: Kring AM, Sloan DM, editors. Emotion regulation and psychopathology : a transdiagnostic approach to etiology and treatment. New York: Guilford Press; 2010.

9. Fisak BJ, Richard D, Mann A. The Prevention of Child and Adolescent Anxiety: A Meta-analytic Review. Prevention Science. 2011;12(3):255-68.

10. Rasing SPA, Creemers D, H. M. , Janssens J, M. A. M. , Scholte R, H. J Depression and Anxiety Prevention Based on Cognitive Behavioral Therapy for At-Risk Adolescents: A Meta-Analytic Review. Frontiers in Psychology. 2017;8.

11. Duong M, Cruz R, King K, Violette H, McCarty C. Twelve-Month Outcomes of a Randomized Trial of the Positive Thoughts and Action Program for Depression Among Early Adolescents. Prevention Science. 2016;17(3):295-305.

12. Duong M, Kelly B, Haaland W, Matsumiya B, Huey S, McCarty C. Mediators and Moderators of a School-Based Cognitive-Behavioral Depression Prevention Program. Cognitive Therapy and Research. 2016;40(5):705-16.

13. Dozois DJA, Seeds PM, Collins KA. Transdiagnostic approaches to the prevention of depression and anxiety. Journal of Cognitive Psychotherapy. 2009;23(1):44-59.

14. Ehrenreich-May J, Chu BC. Overview of Transdiagnostic Mechanisms and Treatmetns. In: Ehrenreich-May J, Chu BC, editors. Transdiagnostic treatments for children and adolescents : principles and practice. New York: Guilford Press; 2014.

15. Kendall PC, Rodriguez KAO, Villabø MA, Martinsen KD, Stark KD, Banneyer K. Cognitive-behavioral therapy with children and adolescents. In: Ehrenreich-May J, Chu BC, editors. Transdiagnostic Treatments for Children and Adolescents, principles and practice. New York: Guilford Press, cop. 2014; 2014. p. 161-447.

16. Garber J, Brunwasser SM, Zerr AA, Schwartz KTG, Sova K, Weersing VR. Treatment and Prevention of Depression and Anxiety in Youth: Test of Cross‐Over Effects. Depression and Anxiety. 2016;33(10):939-59.

17. Chu BC, Crocco ST, Esseling P, Areizaga MJ, Lindner AM, Skriner LC. Transdiagnostic group behavioral activation and exposure therapy for youth anxiety and depression: Initial randomized controlled trial. Behaviour Research and Therapy. 2016;76:65-75.

18. Essau CA, Sasagawa S, Jones G, Fernandes B, Ollendick TH. Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic program for emotional problems in children in a regular school setting. Journal of Affective Disorders. 2019;253:357-65.

19. La Greca AM, Ehrenreich-May J, Mufson L, Chan S. Preventing Adolescent Social Anxiety and Depression and Reducing Peer Victimization: Intervention Development and Open Trial. Child & Youth Care Forum. 2016;45(6):905-26.

20. García-Escalera J, Chorot P, Sandín B, Ehrenreich-May J, Prieto A, Valiente R. An Open Trial Applying the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders in Adolescents (UP-A) Adapted as a School-Based Prevention Program. Journal of Research and Practice in Children's Services. 2019;48(1):29-53.

21. Rooney R, Morrison D, Hassan S, Kane R, Roberts C, Mancini V. Prevention of internalizing disorders in 9–10 year old children: efficacy of the Aussie Optimism Positive Thinking Skills Program at 30-month follow-up. Frontiers in Psychology. 2013;4(988).

22. Rooney R, Hassan S, Kane R, Roberts C, Nesa M. Reducing depression in 9-10 year old children in low SES schools: A longitudinal universal randomized controlled trial. Behaviour Research and Therapy. 2013;51(12):845-54.

23. Kösters MP, Chinapaw MJ, Zwaanswijk M, Van der Wal MF, Koot HM. Indicated Prevention of Childhood Anxiety and Depression: Results from a Practice-Based Study up to 12 Months After Intervention. American Journal of Public Health. 2015;105(10):2003-13.

24. Kendall PC, Stark KD, Martinsen KD, O'Neil KA, Arora P. "Coping Kids" managing anxiety and depression; groupleaders manual. . Ardmore, : PA: Workbook Publishing. ; 2013.

25. Martinsen KD, Kendall PC, Stark KD, Rodriguez KAON, Arora P. Mestrende barn, gruppeldermanual barn. Oslo, Norway: Gyldendal Akademisk; 2014.

26. Martinsen KD, Rasmussen LMP, Wentzel-Larsen T, Holen S, Sund AM, Løvaas MES, et al. Prevention of anxiety and depression in school children: Effectiveness of the transdiagnostic EMOTION program. Journal of consulting and clinical psychology. 2018.

27. Thor Ólason D, Blöndahl Sighvatsson M, Smári J. Psychometric properties of the Multidimensional Anxiety Scale for Children (MASC) among Icelandic schoolchildren. Scandinavian Journal of Psychology. 2004;45(5):429-36.

28. Angold A, Erkanli A, Silberg J, Eaves L, Costello E. Depression scale scores in 8-17-year-olds: effects of age and gender. J Child Psychol Psychiatry. 2002;43(8):1052-63.

29. Bjaastad JF, Haugland BSM, Fjermestad KW, Torsheim T, Havik OE, Heiervang ER, et al. Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT) for Anxiety Disorders in Youth: Psychometric Properties. Psychological Assessment. 2016;28(8):908-16.

30. Martinsen KD. Prevention of anxiety and depression in school children : the development and testing of the new transdiagnostic EMOTION intervention. Oslo: University of Oslo, Faculty of Social Sciences, Department of Psychology; 2018.

31. Patras J, Martinsen KD, Holen S, Sund AM, Adolfsen F, Rasmussen LP, et al. Study protocol of an RCT of EMOTION: An indicated intervention for children with symptoms of anxiety and depression. BMC Psychol. 2016;4(1):48.

32. Statistics of Norway S. Inntekts- og formuestatistikk for husholdninger https://www.ssb.no/inntekt-og-forbruk/statistikker/ifhus/aar: Statistics of Norway, SSB; 2017 [updated 13.12.17. Available from: https://www.ssb.no/inntekt-og-forbruk/statistikker/ifhus/aar.

33. Statistics of Norway S. Nøkkeltall for utdanning https://www.ssb.no/utdanning/nokkeltall/utdanning2017 [updated 31.01.17. Available from: https://www.ssb.no/utdanning/nokkeltall/utdanning.

34. Martinsen KD, Stark K, Rodriguez KAON, Kendall PC, Arora P. Mestrende Barn, gruppeledermanual foreldre. Oslo: Gyldendal Akademisk; 2014.

35. Martinsen KD, Kendall PC, Stark K, Neumer S-P. Prevention of Anxiety and Depression in Children: Acceptability and Feasibility of the Transdiagnostic EMOTION Program. Cognitive and Behavioral Practice. 2016;23(1):1-13.

36. March JS, Parker JDA, Sullivan K, Stallings P, Conners CK. The Multidimensional Anxiety Scale for Children (MASC): Factor Structure, Reliability, and Validity. Journal of the American Academy of Child & Adolescent Psychiatry. 1997;36(4):554-65.

37. Angold A, Costello E, J. , Messer S, C., Pickles A. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. International Journal of Methods in Psychiatric Research. 1995;5(4):237-49.

38. Angold A, Costello E, Pickles E, Winder F. The development of a questionnaire for use in epidemiological studies of depression in children and adolescents. London: Medical research Council 1987.

39. Yelland LN, Sullivan TR, Voysey M, Lee KJ, Cook JA, Forbes AB. Applying the intention-to-treat principle in practice: Guidance on handling randomisation errors. Clinical Trials. 2015;12(4):418-23.

40. Mychailyszyn MP, Brodman DM, Read KL, Kendall PC. Cognitive‐Behavioral School‐Based Interventions for Anxious and Depressed Youth: A Meta‐Analysis of Outcomes. 2012. p. 129-53.

41. Rith-Najarian LR, Mesri B, Park AL, Sun M, Chavira DA, Chorpita BF. Durability of Cognitive Behavioral Therapy Effects for Youth and Adolescents With Anxiety, Depression, or Traumatic Stress:A Meta-Analysis on Long-Term Follow-Ups. Behavior Therapy. 2019;50(1):225-40.

42. Schofield TJ, Parke RD, Coltrane S, Weaver JM. Optimal Assessment of Parenting, or How I Learned to Stop Worrying and Love Reporter Disagreement. Journal of Family Psychology. 2016.

43. Lewis KJS, Mars B, Lewis G, Rice F, Sellers R, Thapar AK, et al. Do parents know best? Parent-reported vs. child-reported depression symptoms as predictors of future child mood disorder in a high-risk sample. Journal of Affective Disorders. 2012;141(2-3):233-6.

44. Kovacs M, Yaroslavsky I. Practitioner Review: Dysphoria and its regulation in child and adolescent depression. Journal of Child Psychology and Psychiatry. 2014;55(7):741-57.

45. Loevaas MES, Sund AM, Lydersen S, Neumer SP, Martinsen KD, Holen S, et al. Does the Transdiagnostic EMOTION Intervention Improve Emotion Regulation Skills in Children? Journal of Child and Family Studies. 2019:<xocs:firstpage xmlns:xocs=""/>.

46. Sun M, Rith-Najarian LR, Williamson TJ, Chorpita BF. Treatment Features Associated with Youth Cognitive Behavioral Therapy Follow-Up Effects for Internalizing Disorders: A Meta-Analysis. 2019. p. S269-S83.

47. Gearing RE, Schwalbe CSJ, Lee R, Hoagwood KE. THE EFFECTIVENESS OF BOOSTER SESSIONS IN CBT TREATMENT FOR CHILD AND ADOLESCENT MOOD AND ANXIETY DISORDERS. Depression and Anxiety. 2013;30(9):800-8.

48. Yap MBH, Morgan AJ, Cairns K, Jorm AF, Hetrick SE, Merry S. Parents in prevention: A meta-analysis of randomized controlled trials of parenting interventions to prevent internalizing problems in children from birth to age 18. Clinical Psychology Review. 2016;50:138-58.

49. Barmish AJ, Kendall PC. Should Parents Be Co-Clients in Cognitive-Behavioral Therapy for Anxious Youth? Journal of Clinical Child & Adolescent Psychology. 2005;34(3):569-81.

50. Mendelson T, Eaton W. Recent advances in the prevention of mental disorders. The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services. 2018;53(4):325-39.

51. Statistics of Norway S. Elevar i grunnskolen https://www.ssb.no/utdanning/statistikker/utgrs/aar: Statistics of Norway, SSB; 2017 [Available from: https://www.ssb.no/utdanning/statistikker/utgrs/aar.

52. Thoresen M. Longitudinal analysis. In: Veierød MB, Lydersen S, Laake P, editors. Medical statistics : in clinical and epidemiological research. Oslo: Gyldendal akademisk; 2012. p. 259 - 86.

53. Wadsworth ME, Achenbach TM. Explaining the Link Between Low Socioeconomic Status and Psychopathology: Testing Two Mechanisms of the Social Causation Hypothesis. Journal of Consulting and Clinical Psychology. 2005;79(6):1146-53.

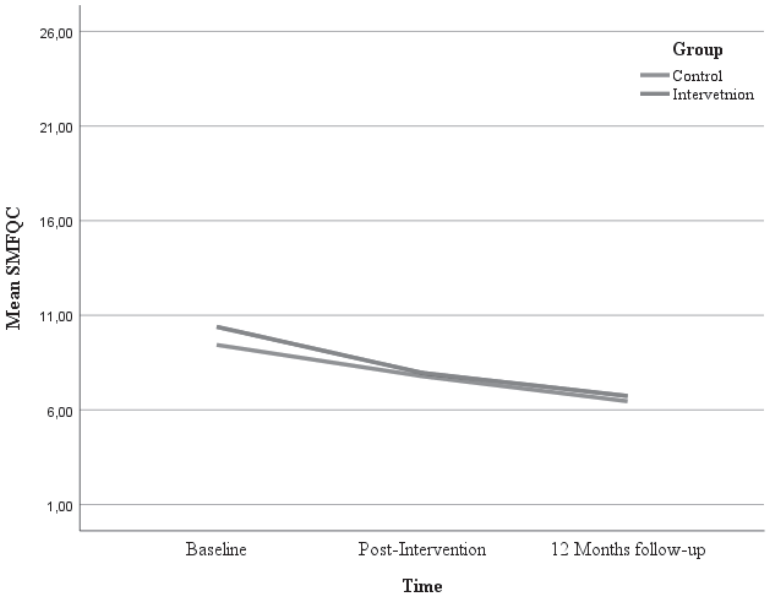
Table 1. Descriptive Statistics at Baseline Split by Group. Mean (*SD*) or *n* (%). (*N* = 795)

	Intervention group (*N* 358)	Control group (*N* 437)	*p*-value
Child age	10.20 (.95)	10.01 (.86)	.015*
Child female	221 (61.7)	240 (54.9)	.053
Parent mother	222 (82.20)	257 (84.50)	.463
Education parent	3.88 (1.02)	3.88 (1.05)	.933
Family income	4.66 (1.23)	4.67 (1.26)	.974
MASC-C	64.70 (13.42)	62.39 (13.58)	.017*
MASC-P	45.90 (15.42)	40.63 (14.68)	<.001***
SMFQ-C	10.32 (5.21)	9.51 (4.58)	.019*
SMFQ-P	6.66 (5.06)	4.63 (4.35)	<.001***

*p= <0.05. **p= <0.01. ***p= <0.001.

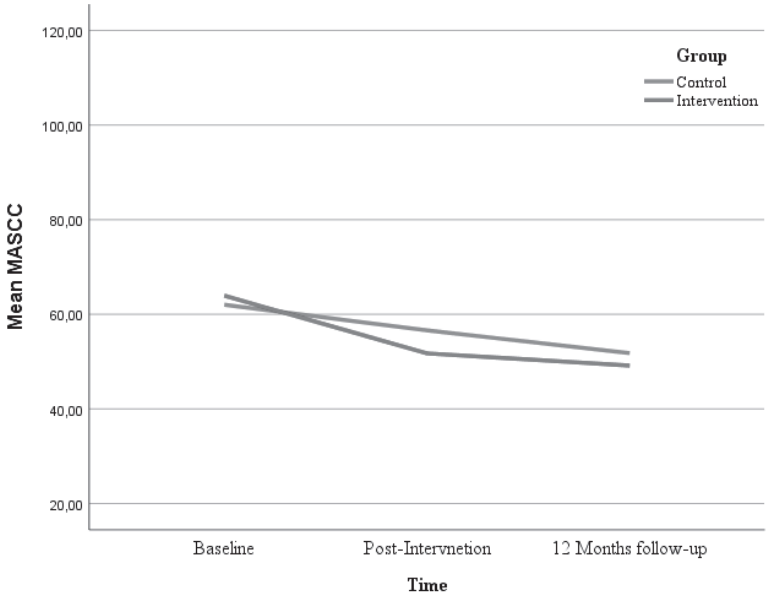
Note: MASC-C = The Multidimensional Anxiety Scale for Children – child report. MASC-P = The Multidimensional Anxiety Scale for Children – parent report. SMFQ-C = The Mood and Feelings Questionnaire – short form, child report. SMFQ-P = The Mood and Feelings Questionnaire – short form, parent report.

Figure 2. Comparison between groups, depressive symptoms, child report



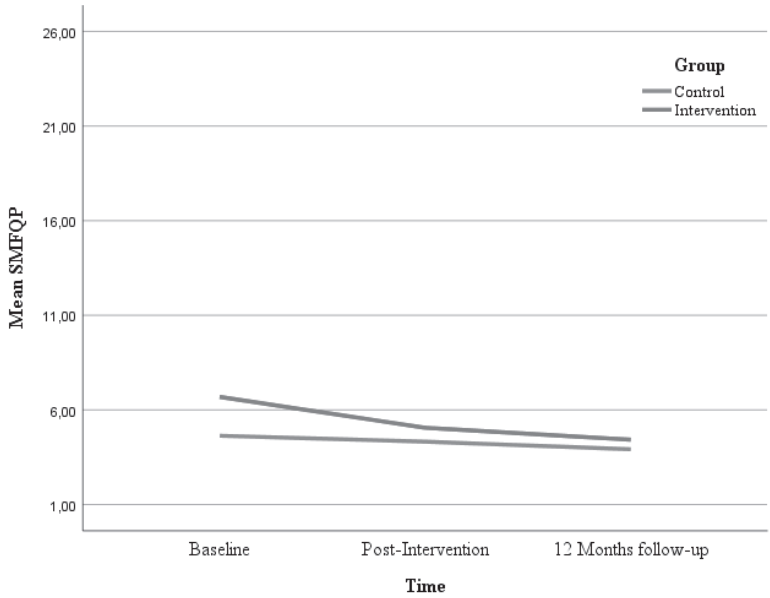
Note: SMFQ-C = Mood and Feelings Questionnaire – short form.

Figure 3. Comparison between groups, anxious symptoms, child report



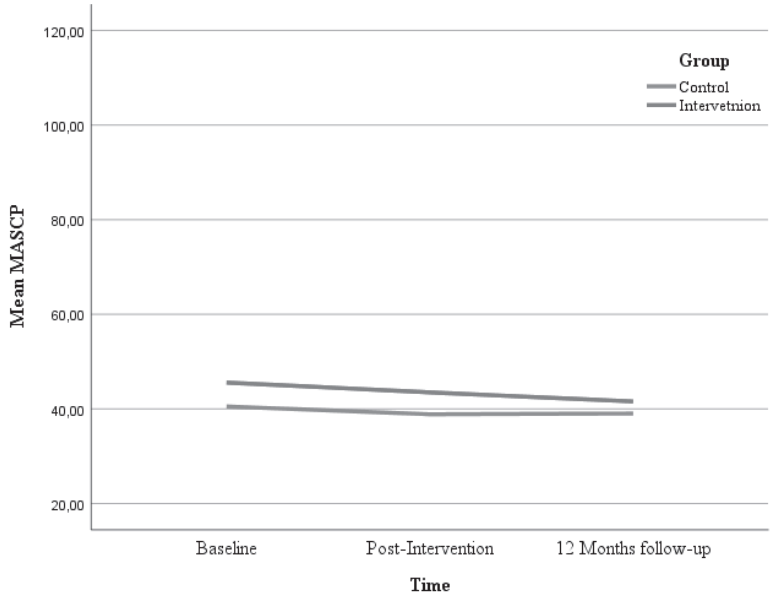
Note: MASC = Multidimensional Anxiety Scale for Children.

Figure 4. Comparison between groups, depressive symptoms, parental report



Note: SMFQ = Mood and Feelings Questionnaire – short form.

Figure 5. Comparison between groups, anxious symptoms, parental report



Note: MASC = Multidimensional Anxiety Scale for Children.

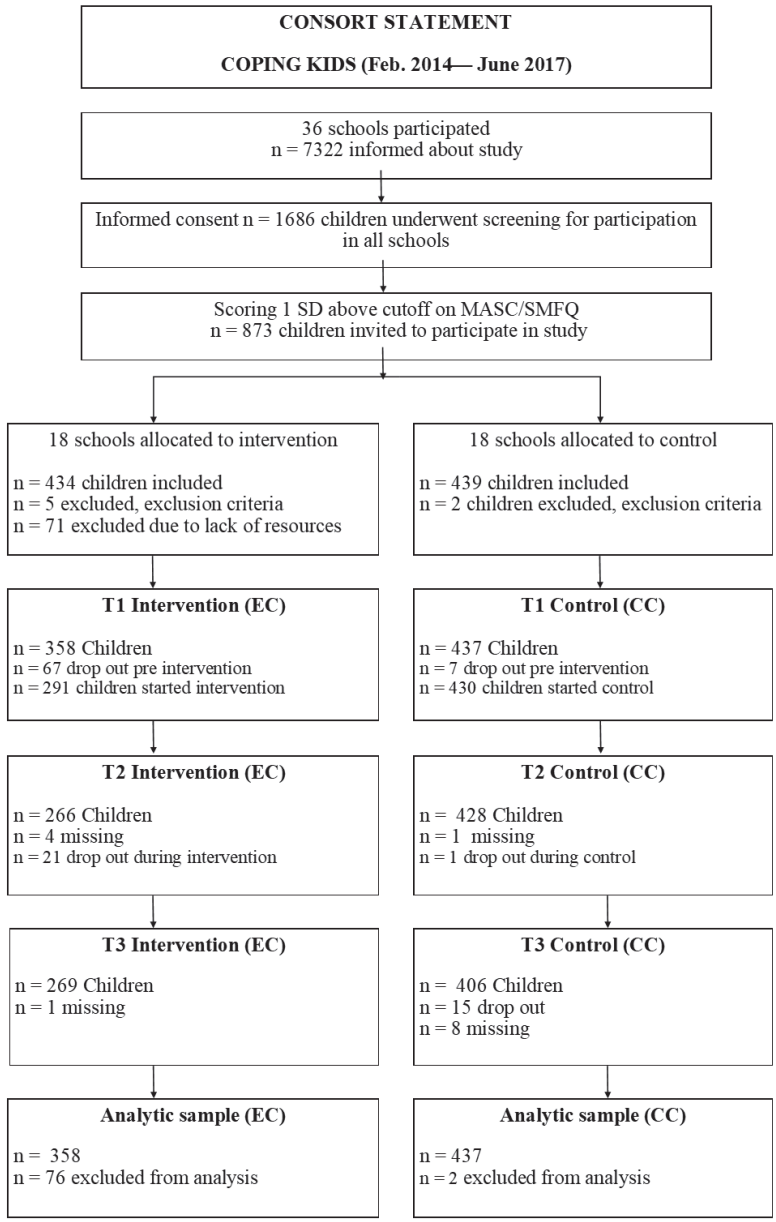


Figure 1. A flowchart of participants through the study.
Note: In the intervention condition; four children were sick at T2, but present at T3.

Table 2. Results from mixed model analyses with MASC child and parent version, and SMFQ child and parent version as dependent variables. Child as random effect, and time as a categorical fixed-effects variable using three time-points (pre, post, and 12 months after intervention), interaction between intervention and time, child age and gender as covariates.

Time	Measurement	Intervention group		Control group		Difference (interaction between group and time)		
		N	Mean (*SE*)	*N*	Mean (*SE*)	Estimate (95% CI)		*p*-value
						Baseline to 12 months follow-up	Post-intervention to 12 months follow-up	
Baseline	MASC-C	358	63.90 (.94)	437	62.99 (.88)			
	MASC-P	268	45.57 (.96)	300	40.52 (.89)			
	SMFQ-C	358	10.41 (.32)	437	9.45 (.30)			
	SMFQ-P	267	6.69 (.28)	298	4.64 (.26)			
Post intervention	MASC-C	266	51.14 (1.00)	428	56.40 (.88)		2.63 (-.14 to 5.39)	.062
	MASC-P	194	43.50 (1.04)	230	38.87 (.98)		-2.08 (-4.49 to 0.34)	.092
	SMFQ-C	265	7.86 (.34)	428	7.65 (.30)		0.07 (-.85 to .99)	.879
	SMFQ-P	193	5.06 (.31)	227	4.32 (.29)		-0.23 (-1.00 to .54)	.564
12 months follow-up	MASC-C	269	49.13 (.99)	406	51.76 (.90)	4.56 (1.83 to 7.29)		.001***

	MASC-P	193	41.57 (1.05)	239	39.03 (.98)	2.50 (.26 to 4.74)	.029*
	SMFQ-C	269	6.75 (.33)	406	6.48 (.30)	0.69 (-.22 to 1.60)	.139
	SMFQ_P	188	4.43 (.31)	235	3.92 (.29)	1.55 (.83 to 2.26)	<.001***

*p= <0.05. **p= <0.01. ***p= <0.001.

Note: MASC-C = The Multidimensional Anxiety Scale for Children – child report. MASC-P = The Multidimensional Anxiety Scale for Children – parent report. SMFQ-C = The Mood and Feelings Questionnaire – short form, child report. SMFQ-P = The Mood and Feelings Questionnaire – short form, parent report.

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