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Providing an indicated preventive intervention for children with symptoms of anxiety and depression: A study of effectiveness, implementation factors, and program fidelity

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A dissertation for the degree of Philosophiae Doctor – 2019



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Faculty of Health Sciences

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Abstract

Anxiety and depression are among the most prevalent difficulties experienced by children and adolescents, and if they are left untreated, the consequences could be detrimental. Preventive efforts to reduce these issues have been shown to be effective; however, implementing psychosocial interventions with good results in real-life settings is a challenging and complex procedure.

The main goals of this thesis were to 1) investigate the effectiveness of the EMOTION: “*Coping Kids*” *Managing Anxiety and Depression* program and 2) examine the factors closely related to the implementation and treatment fidelity of this new transdiagnostic intervention. This national multi-site randomized controlled trial (RCT) included 36 schools from three regions in Norway, where professionals employed in different municipal services (e.g., school mental health services) delivered the group-based EMOTION intervention to children with elevated symptoms of anxiety and depression.

The first study examined the effectiveness of EMOTION, delivered to $n = 266$ children, compared to a control condition ($n = 443$). The results indicated that EMOTION reduced symptoms of self-reported anxiety and depression compared with those reported in the control group. Parent reports showed a significant decrease in depression in the EMOTION group but did not indicate a significant reduction in anxiety symptoms. The results of the evaluation of EMOTION in real-life settings provide evidence of the intervention’s effectiveness in reducing symptoms of anxiety and depression in school-aged children.

The second study used a mixed methods design to investigate facilitators of and barriers to the implementation of the EMOTION program. Healthcare and childcare professionals from different municipal services trained in the intervention completed one survey prior to conducting the new groups ($N = 63$) and a separate survey after completion of the groups ($N = 66$). Additionally, $n = 12$ group leaders were interviewed to further elaborate their experience of implementing the intervention in the organization they were affiliated with. The results indicated that group leaders showed positive attitudes towards the program and felt the need for such an intervention. Issues related to time constraints, lack of support from leaders, and limited participation from the schools were potential barriers to implementation.

The third study investigated the factor structure of the 11-item Competence and Adherence Scale for Cognitive Behavioural Therapy (CAS-CBT; Bjaastad et al., 2016), which was used

to measure adherence and competence during the delivery of manual-based interventions. In this study, six raters assessed a total of 239 individual videos (sessions), evaluating the group leaders' adherence and competence during completion of the EMOTION program. We were not able to replicate the original two-factor structure reported by Bjaastad and colleagues (2016) using a confirmatory factor analysis (CFA) with our data. The model fit was inadequate, particularly when items assessing the main goals of the session were included. Further investigations, including modifications and removal of the main goal items, yielded an alternative factor structure with acceptable model fit.

In conclusion, although the EMOTION program seems to have promising results regarding symptom reduction for anxiousness and sadness, focusing on key implementation factors is important for the continued use of the program. For instance, group leaders' positive attitudes towards EMOTION are insufficient to implement the intervention; organizational factors associated with resources (e.g., time) and support from organizational leaders warrant some attention. If the services want to continue using the school setting for delivering EMOTION interventions, schools should be included more extensively in the planning and execution of the program. Additionally, there should be an increased emphasis on developing valid measurements for use in implementation research, including evaluations assessing adherence and competence regarding quality of delivery.

Abbreviations

APA: American Psychological Association

CAS-CBT: Competence and Adherence Scale for Cognitive Behavioral Therapy

CBT: Cognitive Behavioral Therapy

CC: Control condition

EBP: Evidence-Based Practice

IG: Intervention group

MASC: Multidimensional Anxiety Scale for Children

MFQ-S: Mood and Feelings Questionnaire – short version

ORC: Organizational Readiness for Change

RCT: Randomized Controlled Trial

ROLE: Readiness for Learning and Evaluation

TAU: Treatment as Usual

TIM: Tidlig Intervensjon – Mestrende barn [Early Intervention – Coping Kids]

List of articles

- 1) Martinsen, K. D., **Rasmussen, L-M. P.**, Wentzel-Larsen, T., Holen, S., Sund, A. M., Loevaas, M. E., Patras, J., Kendall, P., Waaktaar, T., & Neumer, S.-P. (2018). Prevention of anxiety and depression in school-aged children: Effectiveness of the transdiagnostic EMOTION program. *Journal of Consulting and Clinical Psychology*, 87. doi:10.1037/ccp0000360
- 2) **Rasmussen, L-M. P.**, Patras, J., Neumer, S-P., Adolfsen, F., Martinsen, K. D., Holen, S., Sund, A. M., & Martinussen, M. (2019). Facilitators and barriers to the implementation of EMOTION: An indicated intervention for young schoolchildren. *Scandinavian Journal of Educational Research*, doi: 10.1080/00313831.2019.1596976.
- 3) **Rasmussen, L-M. P.**, Patras, J., Handegård, B. H., Neumer, S-P., Martinsen, K. D., Adolfsen, F., Sund, A. M., & Martinussen, M. (*In review*). A validation of the adapted version of the Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT).

Introduction

Using a mixed- and multi-method design, this thesis investigates the effectiveness of the indicated preventive intervention EMOTION: “*Coping Kids*” *Managing Anxiety and Depression* (Martinsen, Stark, Rodriguez, & Kendall, 2014) and factors related to the implementation and fidelity of the program. EMOTION is a transdiagnostic group-based intervention for children aged 8 – 12 years with symptoms of anxiety and/or depression and is implemented in primary health care services. Employees from different municipal and mental health services conducted the interventions, but the schools were used as the delivery context. Hence, this thesis provides information and new knowledge regarding the effectiveness, implementation, and fidelity of the program, which is being introduced as a new intervention within this complex service setting.

Anxiety and depression in children and adolescents

Anxious and sad feelings are normal for everyone, including children. It is common, and natural, for children to experience anxiety related to their development (e.g., anxiety when separated from a parent, fear of strangers, or fear of the dark). When symptoms persist and become age inappropriate, however, the child might be at risk of developing a clinical anxiety disorder (Muris, Merckelbach, Mayer, & Prins, 2000). In general, anxious symptoms often include excessive fear, worry, perfectionistic behavior, and/or obsessiveness (Ludwig, Lyon, & Ryan, 2015). Typically, these symptoms are displayed through avoidance of age-appropriate activities, e.g., sleepovers, socializing with peers, and many complaints of somatic pain, such as stomach aches or headaches (Ludwig et al., 2015). As with anxiety, symptoms of sadness related to specific incidents, such as the loss of close friends or family members, chronic disease, bullying, or other worrying occurrences, are normal and expected. When such symptoms persist and are present for a period of time, the child is at risk of developing depression (American Psychiatric Association, 2013). Depressive children often experience loneliness, hopelessness, low self-esteem and a general feeling of fatigue (American Psychiatric Association, 2013), and symptoms of depression seem to predict later onset of a depressive disorder (Ialongo, Edelsohn, & Kellam, 2001; Keenan et al., 2008).

In fact, studies show that anxiety and depression are among the most prominent disorders in children and adolescents (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). According to Polanczyk and colleagues (2015), the worldwide pooled prevalence among youths (6-18 years) was 6.5% for anxiety and 2.6% for depression. Research also indicates that 2-17% have an anxiety disorder during childhood,

while 1-13% fulfil the criteria for clinical depression during childhood and adolescence (Angold, Erkanli, Silberg, Eaves, & Costello, 2002; Costello et al., 2003). In Norway, according to a report published by the Norwegian Institute of Public Health (NIPH), as many as one out of five children will experience an anxiety disorder at some point during youth and adolescence (Mykletun, Knudsen, & Mathiesen, 2009). Furthermore, a large epidemiological study showed that 3% of children 8-10 years old fulfilled the criteria for an anxiety disorder (Heiervang et al., 2007). The same study by Heiervang and colleagues (2007) also demonstrated that approximately 1% of children in the same age group had a depressive disorder.

Research also shows that many children experience anxious and depressive symptoms but are still below the threshold for a clinical disorder. Balázs and colleagues (2013) indicate that up to 32% of children have anxious symptoms, and 29% of adolescents show subthreshold depression. Having subthreshold symptoms or non-identified problems can have a large impact on children's everyday life (e.g., more reluctant to participate in activities, sleepovers). Several studies have shown that subthreshold anxiety and depressive symptoms predict later onset of a clinical disorder (Polanczyk et al., 2015). The number of children and adolescents with internalizing difficulties along with how these problems occur could be explained by different potential risk factors.

Longitudinal studies generally support the etiological model, which emphasizes child, parent/family and environmental factors as predictors of anxiety and depression (Kroes et al., 2002; Shaw, Keenan, Vondra, Delliquardi, & Giovannelli, 1997; Spence, Najman, Bor, O'Callaghan, & Williams, 2002). Research indicates that the child's temperament is a predictor of later psychopathology. For example, having a biological predisposition (e.g., having a sensitivity towards anxiety or showing behavioral inhibition) has been shown to be an important risk factor in the development of later anxiety (Allan et al., 2015; Milrod et al., 2014). Likewise, gender is considered a predictor of depression, with girls reporting more symptoms over time than boys (Garber, Keiley, & Martin, 2002). Furthermore, both parental/familial (e.g., psychopathology, family environment, parenting behaviors) and environmental factors (e.g., poverty, traumatic experiences) have been shown to affect children's mental health (Stark, Humphrey, Crook, & Lewis, 1990; Tiet et al., 2001; Wood, McLeod, Sigman, Hwang, & Chu, 2003). For instance, certain parenting styles, such as being overprotecting or modelling anxious behavior, have previously been linked to child anxiety (Wood et al., 2003). Several studies have also shown that parental depression increases the

risk of the child developing a depressive disorder (Beardslee, Gladstone, Wright, & Cooper, 2003; Beardslee, Versage, & Gladstone, 1998; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997).

The consequences of leaving these disorders untreated may lead to lifelong issues such as social withdrawal, school dropout, drug abuse, and, in the worst-case scenario, suicide (Birmaher et al., 1996; Costello et al., 2003; Kendall, Safford, Flannery-Schroeder, & Webb, 2004; Woodward & Fergusson, 2001). Children and adolescents with internalizing issues, however, often fail to receive sufficient help from local mental health and municipal services due to the quiet nature of their suffering (Chavira, Stein, Bailey, & Stein, 2004; Heiervang et al., 2007). Hence, anxiety and depression may have a large impact on children's daily life and everyday functioning, and the potential impairments indicate a need for interventions that can alter a negative trajectory.

As anxiety and depression share many common factors (i.e., overlapping symptoms, underdeveloped emotion regulation, lack of coping skills), these disorders often co-occur, or one of the disorders may be an antecedent for the other (Avenevoli, Knight, Kessler, & Merikangas, 2008; Chavira et al., 2004). Compared to having just one of the disorders, having both anxiety and depression also decreases the chance of improvement (Birmaher et al., 1996). Hence, targeting both problems simultaneously using one protocol (i.e., a transdiagnostic approach) may promote the overall effectiveness of a treatment, with the added benefit of reducing the need for training in different interventions. Identifying the children with internalizing problems at an early stage to avoid later development of a clinical disorder is therefore of utmost importance (Kovacs & Lopez-Duran, 2010; Luby, 2010)

Prevention of anxiety and depression

Prevention and early intervention have the potential to reduce risk factors and strengthen protective factors, thereby decreasing the likelihood of developing a mental disorder and psychopathology (Mifsud & Rapee, 2005; National Research Council Institute of Medicine, 2009; Webster-Stratton, Reid, & Hammond, 2004). There are different approaches to prevention depending on the risk status of the individual (Mrazek & Haggerty, 1994). Universal prevention targets the whole population, with the idea of providing some benefit to all. Selective prevention targets at-risk populations with increased probability of developing a disorder (e.g., children from low socio-economic backgrounds or from disadvantaged neighbourhoods). Indicated prevention targets individuals identified as having a known

vulnerability or symptoms of a disorder and aims to intervene before treatment for a disorder is required.

Cognitive behavioral therapy (CBT) is considered one of the most effective treatments for internalizing disorders, given its explicit focus on using cognitive and behavioral processes to influence and potentially alter a negative behavioral pattern (Kendall, 2012; Silverman, Pina, & Viswesvaran, 2008). Extensive research also shows that CBT as a preventive effort shows results with small to large effect sizes on internalizing problems (e.g., Mychailyszyn, Brodman, Read, & Kendall, 2012; Stockings et al., 2016; Werner-Seidler, Perry, Callear, Newby, & Christensen, 2017). There are, however, inconclusive results regarding the effectiveness of universal interventions compared to selective and indicated preventive efforts, where the latter approach seems to yield better results, particularly for depressive children (Callear & Christensen, 2010; Mychailyszyn et al., 2012; Stice, Shaw, Bohon, Marti, & Rohde, 2009; Teubert & Pinquart, 2011). Furthermore, group-based CBT has the advantage of targeting multiple children at the same time, thereby reducing the number of therapists needed and ultimately diminishing the resources required to handle these difficulties (Flannery-Schroeder, Choudhury, & Kendall, 2005; Wergeland et al., 2014).

Access to adequate CBT efforts and an acceptable therapeutic dose is limited, however, often due to lack of available mental health providers and tools to implement treatments effectively (Farmer, Burns, Phillips, Angold, & Costello, 2003; Ginsburg, Becker, Drazdowski, & Tein, 2012; Weist, Rubin, Moore, Adelsheim, & Wrobel, 2007). Therefore, the focus of investigations in this field has turned from effectiveness studies only to include implementation research. By studying the relevant factors when transferring interventions into new contexts, implementation science serves as the link between research and practice (Fixsen, Naoom, Blase, & Wallace, 2007; Proctor et al., 2009a; Tabak, Khoong, Chambers, & Brownson, 2012). Hence, the context of delivery becomes an essential part of the therapeutic offer because interventions need to be implemented in settings where children can be easily reached and the professionals have the knowledge and skills required to conduct the intervention adequately.

Context of delivery

Researchers and therapists recognize the need to identify children who are struggling and reach them where they are. Therefore, preventive interventions for children and adolescents are becoming an important part of children's primary mental health and school mental health

services (Greenberg, Domitrovich, & Bumbarger, 2001; Skogen, Smith, Aarø, Siqveland, & Øverland, 2018; Weisz, Sandler, Durlak, & Anton, 2005). In Norway, the municipalities manage the first-line mental health services for children and adolescents, which are governed and financed by political mandates, rules and regulations (Stamsø, 2017). Because these first-line services (e.g., school mental health) serve as a link between prevention and treatment, the introduction of preventive efforts in this context has increased during the last decade. It is, however, important to find suitable arenas for conducting interventions to make them available to children.

Schools have been considered an ideal location to deliver and implement preventive interventions because children spend a lot of time there, and children's access to the intervention is therefore easier (Ginsburg, Becker, Newman, & Nichols, 2008; Lee & Gortmaker, 2017). Children with internalizing problems may be easier to identify in school settings, as emotional issues are often displayed within these settings (e.g., speaking or reading aloud in the classroom, socializing with other students) and are therefore more easily recognized by teachers and service providers. Furthermore, these children are less likely to seek help and are generally not inclined to receive mental health services (Chavira et al., 2004; Heiervang et al., 2007), which makes it even more important to identify them at an early stage. Previous studies have also demonstrated that preventive CBT interventions delivered in school settings show positive results (Mychailyszyn et al., 2012; Werner-Seidler et al., 2017).

Conducting interventions in the context of schools also introduces some challenges, and researchers acknowledge that various factors can affect implementation quality (Domitrovich et al., 2008; Payne & Eckert, 2010). For example, Domitrovich and colleagues (2008) proposed a multi-level framework in which the individual level (e.g., attitudes, characteristics), school level (e.g., school culture and climate, resources) and macro-level (e.g., policies and financing) are all important for successful implementation within a school setting. Furthermore, many interventions require collaboration between mental health providers working in municipal services and schools, which increases the complexity of delivering interventions. In general, there is a large gap between existing effective school-based health interventions and the programs, policies, and services offered to children (Lee & Gortmaker, 2017). Therefore, preventive efforts require extensive focus on adequate effectiveness evaluations and implementation to manage the complexities related to real-life settings such as schools.

Effectiveness evaluation

Effectiveness evaluations are important to determine whether an intervention demonstrates good results in real-world settings (Glasgow, Lichtenstein, & Marcus, 2003; Marchand, Stice, Rohde, & Becker, 2011). When moving interventions into real-world settings, researchers have much less control over the surroundings than they do in efficacy trials delivered under strict, highly controlled and optimal conditions (Marchand et al., 2011). The non-optimal conditions in real-world settings generally mean that the service providers might not have enough time to receive full training and supervision, the problems displayed are more complex (e.g., difficult family situations), or the intervention might not be conducted as intensively as needed (Weisz, McCarty, & Valeri, 2006). Hence, it is important that interventions can prove their effect even under such conditions; therefore, results from effectiveness studies have strong external validity.

Researchers generally consider randomized controlled trials (RCTs) the gold standard when evaluating health care interventions (Schulz, Altman, Moher, & CONSORT Group, 2010). Due to the randomization of individuals to control and intervention conditions, the chance of systematic bias between groups, which may occur in other designs (e.g., cohort designs), is greatly diminished. Thus, a positive effect observed in the intervention group can be attributed to the intervention tested.

Another issue associated with effectiveness trials in schools is the possibility of spillover effects between the intervention and control groups. When implementing interventions in school settings, the risk of contamination between individuals in the intervention group and the control group increases within the same school. Because of this contamination effect and due to practical issues, it is common to use the school as the unit of randomization, clustering the children within the same school (Ukoununne et al., 1999).

Different approaches may be taken to assess preventive interventions. It is most common to evaluate the effect of the intervention by testing the participants at different time points (typically before and after the intervention) (Shadish, Cook, & Campbell, 2002), and the only way to establish whether an intervention is actually working or not is by conducting an effect evaluation. Different standards have been developed to describe the evidence and evaluate quality in research on interventions (Flay et al., 2005; Gottfredson et al., 2015), including measuring user satisfaction, conducting cost-benefit analyses, and/or performing process evaluations. User satisfaction is valuable for determining whether the participants like the

intervention and find it helpful, and cost-benefit analyses assess profitability. Process evaluations concentrate more on the implementation and fidelity of the intervention. By understanding the implementation process and the contextual influences, the ultimate goal is to translate interventions into the practice field without diminishing their effect (Marchand et al., 2011). Implementation is therefore an important element in effectiveness evaluation, as results indicate that effectiveness trials alone without process evaluations and implementation research could falsely promote or discredit an intervention (Durlak & DuPre, 2008; Glasgow et al., 2003).

Implementation

In the early 1980s, the impact of implementation and its relevance for outcome research began to emerge, and studies including implementation research began to evolve.

Implementation research has since become an important part of studies within areas such as education; health science; mental health treatment, prevention and promotion; and program evaluation (Meyers, Durlak, & Wandersman, 2012).

Within behavioral health, implementation is defined as “[a] specified set of activities designed to put into practice an activity or program of known dimensions“ (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005, p. 5). In other words, when implementing an intervention or program within a particular setting (e.g., schools), implementation often refers to the program’s content and what is being delivered. It is well known, however, that implementation is a longitudinal and recursive process (Fixsen, Blase, Naoom, & Wallace, 2009; Metz & Bartley, 2012) that comprises several activities to consider (e.g., making decisions, preparing the organizations, and managing change) (Metz & Bartley, 2012). Other factors, such as transferring successfully to new settings or organizations, ensuring quality of delivery and maintaining implementation over time, are also important parts of the implementation process (Fixsen et al., 2005; Rogers, 2003).

Implementing evidence-based interventions in municipal services is important for improving the mental health services offered to children and adolescents. Transferring and implementing interventions in municipal services is a challenging process, compounded by issues related to both the implementing organization/service and the intervention. This includes factors such as uptake by the services, limited control by the researchers, and restricted resources (Mendel, Meredith, Schoenbaum, Sherbourne, & Wells, 2008), as well as factors linked to the acceptability and feasibility of the intervention (Proctor et al., 2011). By improving the

transfer from research to practice, the effect and quality of the interventions delivered will also increase, and research has shown that focusing on the implementation process clearly produces better results for the youths involved (Durlak & DuPre, 2008). Generally, studies conducted outside highly controlled research settings with effective interventions produce weaker results than more controlled studies, suggesting lower treatment quality (Dusenbury, Brannigan, Hansen, Walsh, & Falco, 2005; Gottfredson & Gottfredson, 2002).

Primarily driven by empirical studies, implementation science has been criticised for its lack of a theoretical foundation (Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005; Sales, Smith, Curran, & Kochevar, 2006). Recently, however, there has been an increased focus on providing the field with a theoretical underpinning (Nilsen, 2015). This has led to the development of different theories, models, and frameworks for grappling with the multi-faceted nature of implementation and understanding which factors lead to success or failure.

Implementation theories, frameworks and models

Given the assumption that implementation requires both behavioral (individual) and organizational (collective) change, implementation research has borrowed theories from psychology, sociology and organizational studies (e.g., theory of planned behavior; Ajzen, 1985, 1991) (Eccles et al., 2005; Nilsen, 2015). Within municipal services, there are several factors that influence the implementation process (e.g., policies, stakeholders, agency leaders, staff) (Novins, Green, Legha, & Aarons, 2013). Several theoretical frameworks or models have attempted to explain the different components of the implementation process (Tabak et al., 2012) and the complexity associated with bringing systematic change to mental health care practice. The models have considerable overlap and encompass many of the same key concepts, including the (a) characteristics of the intervention being implemented; (b) organizational characteristics; (c) characteristics of individual practitioners, and (d) implementation process or stages (e.g., Aarons, 2005; Aarons, Hurlburt, & Horwitz, 2011; Fixsen et al., 2005; Glisson & Hemmelgarn, 1998; Glisson & James, 2002; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Klein & Sorra, 1996; Rogers, 2003).

The theoretical framework most referred to within the context of this thesis is Aarons and colleagues' (2011) conceptual model for implementation – *The Exploration, Preparation, Implementation and Sustainment (EPIS) model*. The model is a comprehensive multi-level framework that derives from the public service setting for children and families. It consists of four key phases, framing implementation factors across different levels within each phase

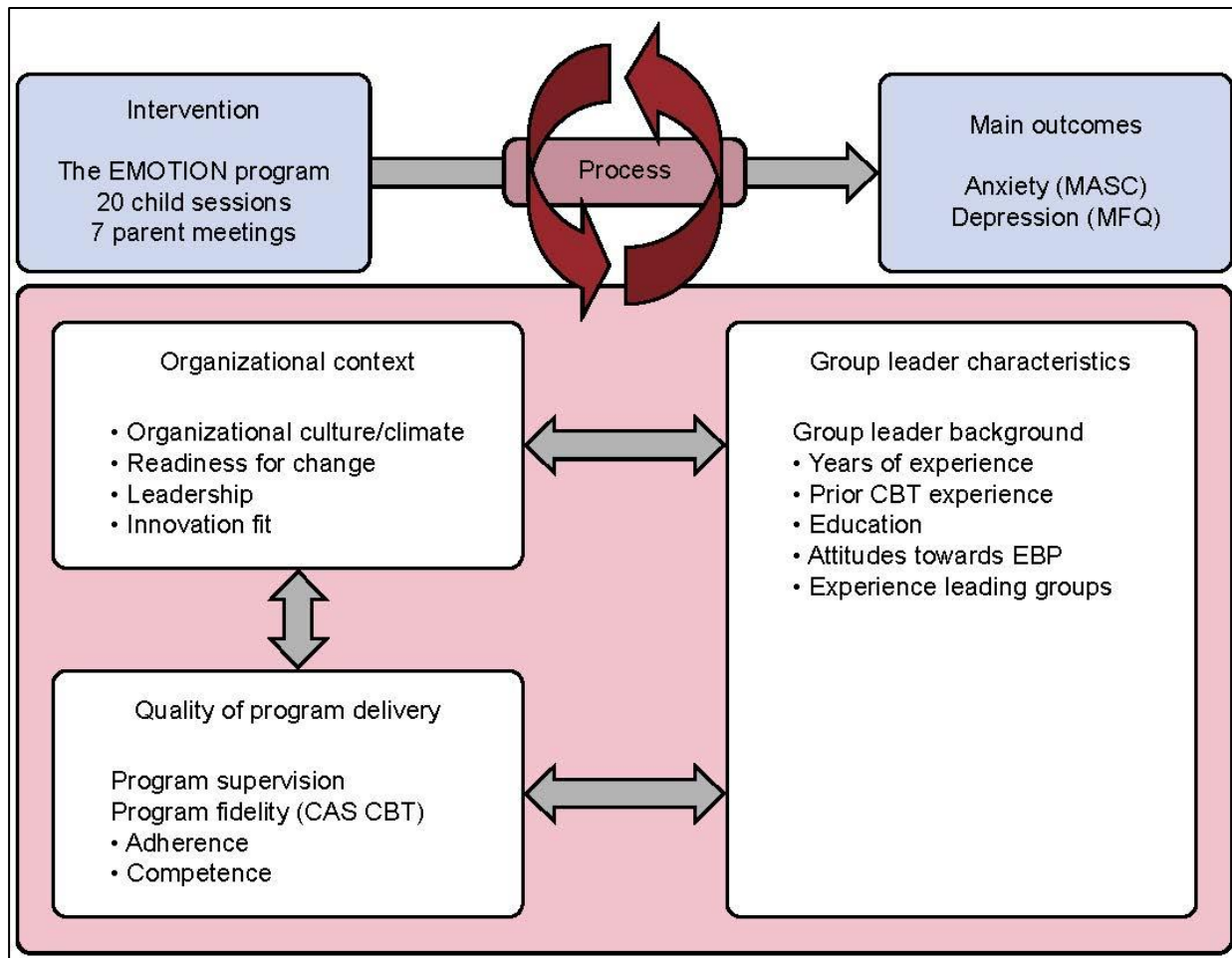
(Aarons, Hurlburt, et al., 2011), and was developed to address important issues particularly relevant within this setting. Therefore, because providers employed in mental health services outside the schools delivered the EMOTION intervention, this model was relevant for this study, as it emphasizes that implementation is shaped by the service context.

The EPIS model (Aarons, Hurlburt, et al., 2011) organizes implementation into the following phases: exploration, adoption decision/preparation, active implementation, and sustainment. Within each phase is a list of factors inside the adopting organization (inner context) and external factors that influence the organization (outer context). These factors are to some extent present in all phases but are more distinct in some and comprise different issues depending on the phase. The exploration phase involves directing attention to issues in the service field or raising awareness regarding challenges in the organization that are not met, whereas the preparation/adoption phase broadly explores the different decisions that must be made before active implementation (Aarons, Hurlburt, et al., 2011). The active implementation phase refers to the specific factors relevant during actual implementation, while the sustainment phase involves factors related to the continued use of the innovation (Aarons, Hurlburt, et al., 2011). The model encompasses a multitude of variables within each phase; however, within the context of this thesis, the *active implementation* phase, especially the inner context, is the most relevant. This is because we are investigating pertinent issues during the ongoing implementation of a new intervention that we could readily collect data from. The other stages that are described in the EPIS model, though instructive and helpful in certain situations, were not included in the present study, as we were focusing on implementation within the context of the effectiveness study.

Based on the active implementation phase in the EPIS model (Aarons, Hurlburt, et al., 2011), we developed an implementation framework for our study reflecting relevant issues that were important to address (see Figure 1). The implementation framework for the Early Intervention – Coping Kids study [Tidlig Intervensjon – Mestrende barn] (the TIM study) highlights some of the processes and different mechanisms involved in the implementation of the EMOTION intervention – a transdiagnostic intervention combining 20 child sessions and seven parental meetings. During this active implementation phase, characteristics within the organization, such as organizational culture and organizational climate, are important issues to consider. Together with readiness for change, innovation fit and adopter characteristics, these are essential factors in the implementation process. Leadership and how the different service

providers experience support from leaders are also considered central to the implementation.

Figure 1. The implementation framework for the Early Intervention – Coping Kids study [Tidlig Intervensjon – Mestrende barn] (the TIM study).



Illustrated by: Joshua Patras.

Organizational culture and climate.

Related but still distinct concepts, organizational culture and organizational climate influence the work environment in organizations (Glisson, Dukes, & Green, 2006). Glisson and James (2002) define organizational culture as the “normative beliefs and shared behavioral expectations” within the organization, whereas organizational climate denotes how the employees perceive the general work environment (Glisson & James, 2002, p. 769-770). Organizational culture is ultimately what makes the organization unique and reflects the history and values of the organization and how individuals communicate with each other (Aarons, Moullin, & Ehrhart, 2017). Organizational climate reflects individuals’ perceptions of how the work environment affects “well-being” at work (e.g., management practices and

procedures). Recently, researchers have further divided organizational climate into molar/generic and strategic climate (Aarons et al., 2017); the latter approach is most relevant for implementation research. Strategic climate includes specific elements inside the organization (e.g., attitudes towards EBPs) and further how staff perceive the management's emphasis on these particular issues.

Organizational readiness for change

Organizational readiness for change generally concerns the ability to change and depends on multiple factors within the organization (e.g., structure, process, equipment and technology, and staff skills and attitudes). Hence, the organization's financial, material, and human resources; context; and supportive processes indicate its innovation-specific capacity (Scaccia et al., 2015). However, one key aspect is staff members' motivation and willingness to change (Aarons et al., 2017). Often, motivation is separated into collective commitment (a shared intention to implement) and collective efficacy (the shared belief that implementation is manageable within the service setting) (Aarons et al., 2017). Hence, settings that are open and support new ideas and interventions are viewed as receptive contexts for implementation.

Leadership

The organizational climate and culture needed for the adoption of new interventions are largely affected by leadership (Aarons, Hurlburt, et al., 2011). According to leadership theories in general, transformational leadership is associated with positive outcomes and is considered more effective than other leadership styles (e.g., transactional or laissez-faire) (Judge, Piccolo, & Ilies, 2004). A transformational leadership style includes a vision where the leader works together with the staff to inspire, encourage, motivate, and serve as a role model to achieve organizational goals (Bass, 1985; Woods & West, 2010). Being more task-oriented, a transactional leadership style uses rewards and punishment to motivate employees and improve their performance, whereas laissez-fair largely represents a lack of leadership (Woods & West, 2010). Leadership is particularly important during the implementation of new interventions. Such processes potentially lead to substantial changes in the organization, and having supportive leaders may serve to buffer a negative organizational climate, reduce frictions, and decrease staff turnover (Aarons, Sommerfeld, & Willging, 2011). Leaders are also in charge of making decisions related to how individuals work and how resources are spent. Thus, having supportive leaders that are capable of ensuring staff members' motivation and creating an environment for change means that the implementation is more likely to succeed (Aarons, 2006; Flodgren et al., 2007). Aarons, Sommerfeld, and Willging (2011)

further demonstrated that leadership is associated with turnover and turnover intention in personnel through its impact on the organizational climate. This indicates the importance of the relationship between organizational factors and leadership, particularly during organizational change; however, more research linking leadership to implementation factors is necessary (Ogden & Fixsen, 2014).

Innovation fit

Innovation fit, also highlighted by Aarons, Hurlburt, and Horwitz (2011) in the EPIS model, is an important aspect of an organization's inner context. Innovation fit is organizations' and individuals' understanding of how the innovation incorporates the organization's values and purpose and service providers' tasks and responsibilities. Proctor et al. (2011) refer to this as the *appropriateness* of an innovation, in which perceived fit enhances implementation efforts. Appropriateness refers to the intervention's relevance and applicability within the service setting. *Acceptability* is the perceived satisfaction with an intervention and reflects whether the content and complexity of the intervention are acceptable given the service setting (Proctor et al., 2011). The difference between appropriateness and acceptability lies in the structure of the intervention: the intervention may be appropriate and compatible with the service setting but unacceptable to conduct (due to resource demands, an extensive manual, etc.). *Feasibility* refers to how well an intervention can be carried out in a given service setting. This often relates to issues such as training, supervision or other requirements, which could have an impact on the completion of the intervention. Other intervention-related issues addressed in the literature are *adaptability*, which refers to the suitability of new interventions and how they fit into the service setting, as well as topics such as cost and treatment fidelity (Proctor et al., 2011).

Group leader characteristics (individual adopter characteristics)

The individual characteristics of the adopters must also be considered in the implementation process in general, but particularly within the active implementation phase. Demographic variables such as education and clinical experience, personal values and goals, and adaptability and attitudes toward interventions are all factors that potentially affect the future utilization of a new intervention. Previous research has shown a relationship between educational level, professional experience, and openness toward adopting EBPs (Aarons, 2004, 2005; Aarons et al., 2010). Furthermore, results vary when evaluating the relation of clinical experience to an implementation outcome such as training (e.g., Carpenter et al., 2012; Garner, Hunter, Godley, & Godley, 2012; Beidas et al., 2014). However, according to

Damschroder et al. (2009), the dynamic relation between individuals and their organization has received limited attention, particularly regarding how that interaction influences behavior change. Nevertheless, the individuals on the front line executing and implementing an intervention clearly indicate that demographic factors and individual characteristics have an impact on adoption and how the intervention is conducted.

Treatment fidelity

Fidelity commonly refers to the program providers' ability to follow the core components in an intervention as designed by the program developers and avoid drift or systematic use of other elements that the program developers have not assigned to the program (Perepletchikova, Treat, & Kazdin, 2007). Treatment outcome is often linked to a high degree of fidelity towards an effective program, and therefore, fidelity is considered highly relevant for implementation quality (Durlak & DuPre, 2008).

In the evaluation of treatment outcome, researchers identify several important aspects of implementation quality and recognize that there are different approaches to measure it. Adherence or the structural dimension of fidelity reflects whether the main elements or key components of the program were delivered and to what degree the program manual was followed (O'Donnell, 2008; Odom, 2008). Process and relational skills (or the procedural dimension) addresses the quality of the relationship between the program providers and those receiving the program (O'Donnell, 2008). However, there is considerable overlap between these dimensions.

Other aspects of fidelity, such as dosage, are also important. Dosage refers to the amount or frequency of the intervention received (Dusenbury, Brannigan, Falco, & Hansen, 2003; Perepletchikova et al., 2007). Dane and Schneider (1998) also focused on participant responsiveness, which reflects how respondents receive the intervention and the degree of engagement displayed. It is argued that all features of fidelity should be measured (Dane & Schneider, 1998); however, other researchers believe that including specific measures will allow for a relevant contribution to the assessment of fidelity (Carroll et al., 2007; Mihalic, 2004). Nevertheless, it is important to have sufficient measures to evaluate fidelity.

Measuring fidelity

Program fidelity is often assessed indirectly by self-reports (e.g., intervention logs, diaries, or checklists) or directly via observations (e.g., in-person observation, "shadowing" or

audio/video recordings), with the latter approach being considered the gold standard (Allen, Shelton, Emmons, & Linnan, 2017). In direct observation, the data are considered to be more accurate, whereas self-reports are more inclined to exhibit reporter bias (Bellg et al., 2004; Lillehoj, Griffin, & Spoth, 2004). Direct observations are more costly and less feasible, however, than self-reports, which are relatively inexpensive and less time consuming (Allen et al., 2017).

Measuring fidelity to ensure that the providers of the intervention follow the program manual and core components of the intervention requires an adequate tool. Monitoring fidelity could also be helpful to determine which elements of the intervention are most beneficial for the children and thereby guide the future development and implementation of the program (Allen et al., 2017). It is therefore necessary to have specific, predefined core elements to measure intervention fidelity accurately. Having psychometrically appropriate measures is also of utmost importance, although there are few assessment tools focusing on fidelity (and implementation in general) that have been evaluated sufficiently (Allen et al., 2017; Martinez, Lewis, & Weiner, 2014).

Investigating the psychometric properties of an instrument is a central element in research to ensure that the tool measures what it is designed to measure and that it can be applied to other contexts (American Educational Research Association (AERA), 2014; EFPA, 2013). The field considers reliability and validity the most important aspects when assessing the psychometric properties of an instrument. Reliability reflects the consistency of the obtained scores and may be estimated in different ways, (e.g., test-retest reliability or internal consistency). When assessing instruments where different observers evaluate a specific behavior (e.g., CAS-CBT; Bjaastad et al., 2016), interrater reliability is the most applicable method to test instrument reliability.

Test validity has many aspects, but the most important one is construct validity. Construct validity commonly refers to whether the intended construct is actually being measured by the instrument (Cook & Beckman, 2006; Streiner & Norman, 2003). One way of examining construct validity is by using confirmatory factor analysis (CFA) (EFPA, 2013; Floyd & Widaman, 1995). According to Martinez, Lewis and Weiner (2014), one should strive to assess structural validity to investigate whether the data represent a unidimensional structure or multiple latent factors according to the theory. Thus, instrument evaluation is important in

all aspects of research, including fidelity assessment and during the implementation of intervention programs in general.

Implementation of CBT programs for emotional problems

In the literature regarding the implementation of CBT interventions for children with emotional issues, several promoters and inhibitors are identified. Previous studies from both the community setting and the school setting support the implementation of CBT interventions for clinical anxiety disorders (Beidas, Mychailyszyn, et al., 2012; Ginsburg et al., 2008; Ringle et al., 2015). Ringle and colleagues (2015) examined CBT in a community setting and identified factors related to the clients (e.g., motivation, complex issues), the intervention itself (e.g., structure), and the organization (e.g., support), which all seemed to influence future use of the intervention. They also found that factors that were facilitators for some of the providers could be regarded as barriers for others. For example, the CBT structure was useful for some, whereas others felt constrained (Ringle et al., 2015). In a similar setting, Beidas et al. (2014) examined related issues regarding the treatment of anxiety. They found an association between variables linked to the inner context (e.g., individual adopter characteristics) and implementation outcomes (e.g., adherence and skills reflecting therapist fidelity).

Within the school context, a recent study by Beidas and colleagues (2012) investigated provider and organizational factors related to training in and implementation of CBT for children with anxiety. They reported that provider attitudes regarding EBPs affected implementation, whereas other provider-level factors or organizational factors did not display any significant associations (Beidas, Mychailyszyn, et al., 2012).

With respect to the implementation of CBT for youth depression, Lewis and Simons (2011) explored these issues in a preliminary report within the community setting. The results indicated that therapist variables, such as attitudes towards empirically supported treatments (ESTs) and readiness for change, correlated positively both before and after training in CBT (Lewis & Simons, 2011). However, this study also found that the therapists' attitudes correlated negatively with perceived client barriers to the implementation of CBT and that factors related to the work setting and clients were negatively associated with implementation, as reported by the therapists (Lewis & Simons, 2011).

Implementation research regarding CBT interventions for children with depression in school settings is limited, however, focusing mostly on the feasibility of the interventions and how best to transport them into school settings (Phillips, Corcoran, & Grossman, 2003; Ruffolo & Fischer, 2009). One study by Langley and colleagues (2010) explored potential barriers and facilitators in the implementation of the Cognitive Behavioral Intervention for Trauma in Schools (CBITS). CBITS is a school-based group intervention targeting youths (ages 11-15 years) with symptoms of PTSD and depression who have been exposed to traumatic events. In their study, program providers were interviewed, reporting several barriers (i.e., competing responsibilities, logistics, parental consent, and administrator/teacher support) and facilitating factors (i.e., professional networks and financial resources) (Langley et al., 2010).

Targeting both anxiety and depression, Lyon and colleagues (2011) examined the feasibility and implementation of modular psychotherapy in a school-based setting. They focused on the therapists from the school-based health centers (SBHC) and found that with full training and a support system, the selection of children, administration of measures to monitor symptom change, and ability to follow the children's use of treatment modules were adequate. However, these results were preliminary and on a small scale. Further, since the results reflect CBT interventions aimed at clinical disorders, different outcomes may be found within a preventive setting.

Kösters and colleagues (2017) investigated program integrity in the context of the implementation of the FRIENDS for Life program (Barrett, 2004a, 2004b), used as an indicated program in a Dutch natural school setting. The results showed lower adherence to the program protocol, which has primarily been used as a preventive intervention for emotional problems, than in previous studies (e.g., Barrett, Sonderegger, & Xenos, 2003; Rodgers & Dunsmuir, 2015). Overall, preventive school-based CBT interventions investigating the effects on both anxiousness and sadness have shown positive results and a reduction in symptoms in the intervention condition (Mychailyszyn et al., 2012; Stockings et al., 2016; Werner-Seidler et al., 2017). Looking closer at the implementation factors, Werner-Seidler and colleagues' (2017) systematic review and meta-analysis of school-based depression and anxiety prevention found that 58% of the investigated studies (of 81 studies total) reported information on fidelity to varying degrees. Furthermore, program dosage was infrequently reported but included information on attendance (e.g., mean number of sessions attended).

Studies focusing on the implementation process during the assessment of preventive interventions have been sparse (Durlak & DuPre, 2008; Durlak & Wells, 1997). The results also indicate that these interventions fail to implement with full fidelity and high quality (Dusenbury et al., 2005; Gottfredson & Gottfredson, 2002; Ringwalt et al., 2003), and little is known regarding continued use and future sustainability. Further, investigations of school health care systems and the factors related to implementation within this context are limited (Forman et al., 2013; Lyon et al., 2011). Despite the challenges encountered in delivering interventions in the school setting, the advantages in terms of accessibility and the ability to reach children at an early stage justify the continual development and implementation of interventions in these settings (Lyon et al., 2011).

Novins and colleagues (2013) conducted a systematic review investigating the existing knowledge regarding the dissemination and implementation of EBPs in child and adolescent mental health service settings, including both prevention and treatment interventions. Organized in accordance with the EPIS model, the results showed that of 73 articles, 23 papers were from the prevention field and addressed issues from the active implementation phase (which is most applicable to this study). Similar to the present study, these papers focused solely on internal contextual factors, including training/fidelity, monitoring and support, and individual characteristics (Novins et al., 2013). The results from this review showed that adherence/fidelity to the intervention increases with ongoing supervision, fidelity monitoring, and support to providers, which ultimately have an impact on the intervention outcome for children and adolescents.

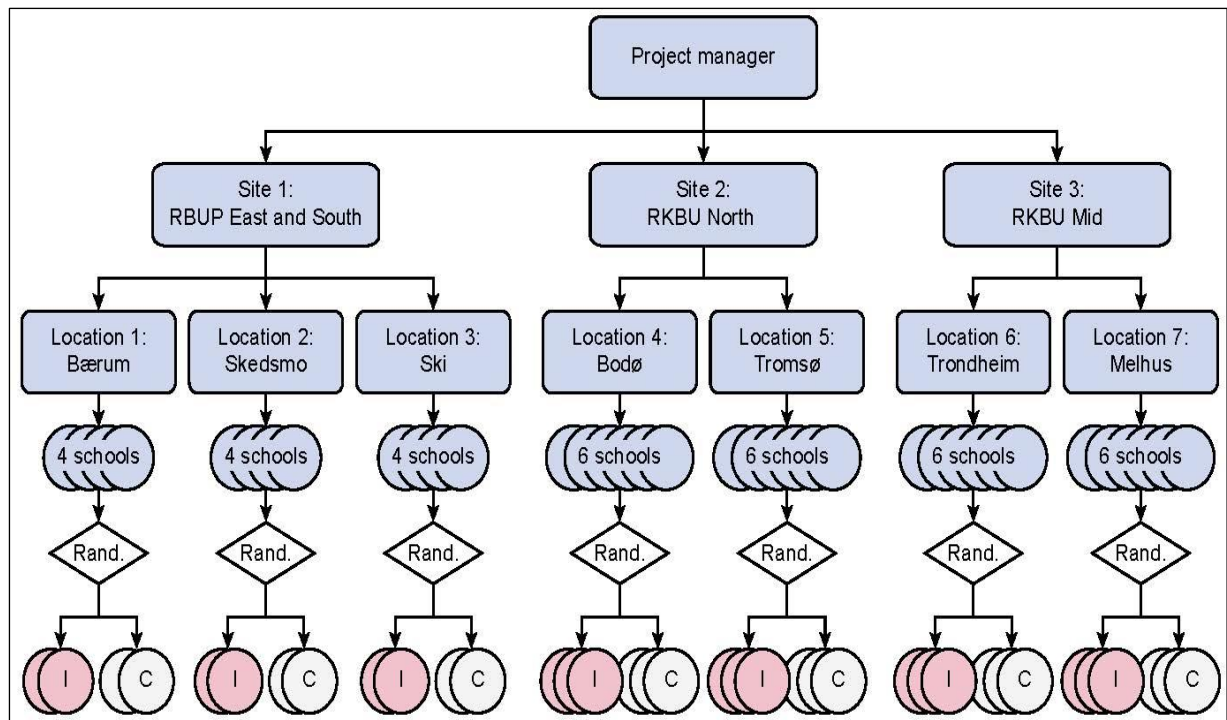
In summary, the research regarding the implementation of CBT-based programs for emotional problems often diverges depending on whether it is community-based or school-based and whether it studies therapy or prevention. Many of the studies exploring implementation factors were preliminary studies, presenting results with limited data. Further, existing research focuses solely on evidence-based interventions with established effective results but does not study how to transfer them into real-world practice in the same extent. In the study presented in this thesis, the implementation research took place during the effectiveness trial, and the main goal was to investigate implementation issues related to further use of a new program. New implementation studies are underway; however, further investigations are needed to strengthen the empirical evidence, particularly regarding preventive interventions delivered in schools by employees from different municipal services.

The TIM study

The data presented and discussed in this thesis are part of a large, multi-site study with a clustered randomized design following the extended CONSORT guidelines (Campbell, Elbourne, & Altman, 2004). For a full description of the protocol of the TIM study [Tidlig Intervensjon – Mestrende barn], see Patras et al. (2016).

The study used a clustered randomized design with restricted randomization, which requires controlling the allocations of the study conditions to some extent to ensure balance across the locations (e.g., blocking, stratification, or minimization) (Higham, Tharmanathan, & Birks, 2015). In this study, there were three participating sites: North, Mid, and South East Norway. At each site, there were at least two geographical locations, including four or more schools, and each school represented a cluster. Hence, because of theoretical and practical considerations (Ukoumunne et al., 1999), the schools were the unit of randomization and were recruited through meetings with the school staff and school leaders. Allocation of the schools to the (a) intervention or (b) control group involved pairing schools based on geographical area, school size and demography and then randomly assigning schools to one condition (See Figure 2). The school remained in the randomly chosen condition during the entire project period, which meant that each semester, the group leaders conducted the intervention with a new group at the intervention schools (i.e., up to two groups per school per year). Beyond supporting the children during screening and being the context of the intervention delivery, the schools had limited responsibility for delivering the intervention. The control schools followed usual care (health nurse, family physician, etc.) and in both the control and intervention schools, we offered teachers and other school personnel a general one-day information workshop on how to detect and help children with symptoms of anxiety and depression. The schools did not receive any compensation for participating.

Figure 2. Illustration of sites, locations and clusters



Data

For the articles presented in this thesis, data collection took place during the active delivery and implementation of the EMOTION program (Martinsen et al., 2014), which lasted from spring 2014 until spring 2016 (five cohorts). The data collection was conducted before the groups were run (T1) and after the groups had ended (T2) for both the children and the group leaders participating. The data were collected electronically using the Conformat software system managed from RBUP East and South.

Paper 1 contains pre-post data for the children and their parents. Paper 2 includes the baseline data for the group leaders (first completion of the surveys). In addition, the qualitative material included in paper 2 was gathered from August 2015 to February 2016. Paper 3 includes video recordings of randomly selected sessions during the group interventions to assess adherence to and competence in using the program.

In 2011, Martinsen and colleagues (2016) tested the feasibility and acceptability of the program manual in a pilot study. The results from this study led to some revisions of the manual, including one less parent session and increased focus on the session structure cohering with the content. These revisions were included in the effectiveness study (paper 1).

The EMOTION program

EMOTION: “*Coping Kids*” *Managing Anxiety and Depression* (Martinsen et al., 2014) is an indicated prevention program targeting children aged 8-12 years with elevated symptoms of anxiety and depression. The program is a newly developed, group-based intervention built upon general CBT principles (Beck, 1976; Martinsen et al., 2014). The trans-diagnostic approach was introduced by combining the well-established programs Coping Cat (Kendall & Hedtke, 2006), aimed at anxiety disorders, and Action (Stark et al., 2007), directed towards depression. Two group leaders delivered the program in one-hour sessions twice a week for 10 weeks during regular school hours or immediately after. The first ten sessions include psychoeducation as well as learning different coping skills and strategies to overcome difficulties related to anxiousness and sadness. The last ten sessions focus more on cognitive restructuring, exposure training/behavioral activation and building a positive self-schema. Additionally, the parents receive seven group sessions, and the children attend four of these. The parent meetings include elements such as positive time with the child, positive reinforcement, instruction on how to deal with punishment and consequences, and ultimately guidance on how to support and help the child handle negative feelings. During the intervention, children (and parents) actively participate through games, role-play, exposure training/behavioral activation, and a variety of tasks, carefully chosen to enhance knowledge of and ability to cope with anxiousness and sadness.

Implementation of EMOTION

Given that members of the research staff developed the intervention and that the research group is investigating it, the implementation of the EMOTION program reflects a top-down implementation strategy (Ogden & Fixsen, 2014). Employees from different municipal services perform the intervention but deliver the program in local schools, and the following implementation steps were undertaken during this study:

Recruitment.

Professionals from different municipal and regional health services were recruited as group leaders, mainly through meetings with leaders of the respective services and/or leaders of the local municipalities. The group leaders were qualified professionals working in different municipal services as health care and childcare providers (e.g., health care nurses, educational and psychological counsellors [EPCs], psychologists). In the Norwegian system, the educational and psychological service (EPS) is an advisory facility within all municipalities and counties. Its main responsibility is supporting preschools, schools and families regarding

education and related issues. A few of the group leaders were employed by the Child and Adolescent Psychiatric Clinic (BUP).

Training and supervision.

Group leader training consisted of a three-day training in the intervention. The first day was a general introduction to CBT principals, and a two-day workshop followed, going through each session. The program developer and the project manager of the study conducted the training, and to avoid bias, all sites received training from both trainers. In addition to lecture-style presentations, experiential learning was emphasized that involved role-play of several of the strategies in the program and discussions.

After most semesters, the research staff held a one-day booster session to discuss some of the challenges encountered during the execution of the intervention. The main topics covered in these booster sessions were reviews of the basic principles of exposure and behavioral activation, how to motivate and collaborate with parents, how to handle restless children in a group setting, flexible use of the manual, and the principles of running groups in general.

The different study locations also had CBT supervisors who were trained in the program to supervise the group leaders running the EMOTION groups. The supervisors met with the group leaders one session prior to startup and then every week during the ten-week program period (two on-site meetings, the remainder via Skype/telephone or face-to-face meetings). Additionally, the supervisors had regular Skype meetings with the trainers to discuss important issues during the intervention period and to ensure similar execution of the intervention across sites.

Quality assurance.

Fidelity. To measure fidelity to the program, the research staff gathered video tapes from 17% of the total number of sessions completed. Using the Competence and Adherence Scale for Cognitive Behavioral Therapy (Bjaastad et al., 2016), the total adherence to the program (rated from 0 = *None* to 6 = *Thorough*) was $M = 3.53$ ($SD = 1.25$), and the mean competence score (rated from 0 = *Poor skills* to 6 = *Excellent skills*) was $M = 3.59$ ($SD = 1.26$). Thus, the results in this study showed a lower mean score than, for example, the scores of the therapists in Bjaastad et al. (2016), who had a mean adherence of $M = 4.57$ ($SD = 0.91$) and mean competence of $M = 4.30$ ($SD = 0.91$).

Dosage. Over five semesters, 17 schools ran 53 EMOTION groups. Unfortunately, due to technical problems in the first semester, attendance (dosage) registration is not complete for all semesters. Therefore, there is a discrepancy between the registered attendance ($n = 241$) and the number of children who completed the intervention ($n = 266$). Furthermore, in some of the groups, parents were only registered as present, with no indication of whether it was the mother, father or both who attended. Nevertheless, the registered mean dosage for children was 89.8% (18 of 20 sessions). Over seven sessions, parents (mother, father or both) showed a mean attendance rate of 5.63 (80%).

Thesis aims

The overall goal of this thesis was to investigate the different aspects involved in providing a high-quality preventive intervention for children with symptoms of anxiety and depression. The different articles give a general idea of the three most important efforts to consider when implementing a new effectiveness intervention. The aim of the thesis was to 1) investigate the effectiveness of EMOTION: “*Coping Kids*” *Managing Anxiety and Depression*; 2) evaluate the facilitators of and barriers to implementation of the EMOTION program, delivered in municipal services; and 3) investigate the instrument assessing group leaders’ adherence and competence during delivery of the intervention. To provide a better overview of the objectives, participants and findings of the different studies, a summary of each paper is hereby presented.

Summary of the articles

Summary of article 1

Martinsen, K. D., **Rasmussen, L-M. P.**, Wentzel-Larsen, T., Holen, S., Sund, A. M., Loevaas, M. E., Patras, J., Waaktaar, T., Neumer, S-P., & Kendall, P. (2018). Prevention of anxiety and depression in school-aged children: Effectiveness of the transdiagnostic EMOTION program. *Journal of Consulting and Clinical Psychology*, 37, 212-219. doi: 10.1037/ccp0000360

Objectives

The objective of the first paper was to investigate the effectiveness of the EMOTION program using a randomized controlled trial (RCT) measuring symptom levels before and after the intervention period (pre-post control group design). EMOTION is an indicated preventive program for children from third to 6th grade (9-12 years) with symptoms of anxiety and depression.

Sample and data collection

Of the total number of children ($N = 7322$ from 36 participating schools) receiving information about the study, $N = 1692$ (23.1%) completed the initial screening. Of these, 837 children scored above the predefined cut-off and were invited to participate in the study (43.1% boys); $N = 430$ were enrolled in the intervention group (IG) and $N = 443$ were part of the control condition (CC). After withdrawal, exclusion criteria (e.g., mental retardation, pervasive developmental disorder) and exclusion due to lack of resources (e.g., not enough group leaders to conduct more than one group) were accounted for, the IG consisted of 266 children, and the control group included $N = 428$. Age was calculated using grade levels, for a mean age of 9.64 years ($SD = 0.93$), and over 95% of the children were Norwegian, Nordic or of Western European origin. In the IG, $N = 268$ parents completed the pre-assessment, and $N = 193$ completed the post-assessment. The parents in the CC completed $N = 301$ pre-assessments and $N = 228$ post-assessments.

Recruitment of children to the effectiveness study followed a stepwise procedure: first, research staff attended school or parent meetings and handed out information regarding the study to the students and parents. Second, with knowledge that this was an effectiveness study for children with symptoms of anxiety and depression, parents were required to give their consent if the children wanted to participate. Third, the children then completed an online

questionnaire at school that screened for symptoms of anxiety and depression. Finally, all children who scored one SD above a predefined cut-off (based on the population mean) on anxiety, depression or both received an invitation to participate in the study. We did not have an upper limit for inclusion. We applied gender-specific cut-off scores for anxiety due to the discrepancy in the mean scores.

Measures

MASC

The Multidimensional Anxiety Scale for Children (MASC-C; March, 1997) is a 39-item multidimensional self-report instrument assessing anxiety in children 8-19 years old over the two last weeks. The instrument consists of four scales: (1) Physical symptoms, (2) Harm avoidance, (3) Social anxiety and (4) Separation anxiety/panic; three of these have additional subscales (March, 1997). The responses are rated from 0 (*never true about me*) to 3 (*often true about me*). A similar version exists for parents (MASC-P). In this study, the internal consistency was $\alpha = 0.91$ for the MASC-C and $\alpha = 0.90$ for the MASC-P.

MFQ-S

The Mood and Feelings Questionnaire-short version (SMFQ; Angold et al., 1995) is a 13-item screening tool for identifying symptoms of depression in children aged 8-18 years within the last two weeks. In addition, we added one item about suicidality. The SMFQ-S was rated on a scale of 0 = *Not true*, 1 = *Sometimes* and 2 = *True*. Similarly, a parent version (SMFQ-P) exists for this instrument as well. In this study, $\alpha = 0.94$ for the child version and $\alpha = 0.88$ for the parent version.

Analyses

Mixed model analyses were used in this study, where the fixed effect was a time by randomization group interaction, including analyses adjusting for gender and age group (3rd and 4th grade = younger; 5th and 6th = older). The R package nlme (The R Foundation for Statistical Computing, Vienna, Austria) was used to estimate the models and included intent-to-treat (ITT) analysis.

Results

The results showed a significant Time \times Condition interaction for anxious symptoms ($p < .001$) and depressive symptoms ($p = .040$) indicating that the intervention group had a significantly larger symptom reduction compared to the control group, as reported by

children. At post-test, there was a significant difference between IG and CC, where the CC scored higher (5.35 points). In the IG, the anxious symptoms decreased 11.83 points overall, $p < .001$, which demonstrated a reduction between 17.4% and 19.7%, depending on age (older and younger children) and gender. For comparison, the CC had an overall reduction of 4.63 points, $p < .001$, which yielded a decrease between 7.0% and 8.0%. The subgroup analysis of anxious symptoms showed a significant symptom reduction in all groups, where boys and older children decreased the most. Further, for depressive symptoms, there was a reduction of 2.31 points ($p < .001$) in the IG, ranging between 21.0% and 25.0% for the different groups examined, compared to the CC with a 1.50-point ($p < .001$) decrease, which indicated a reduction between 14.6% and 17.6%. The subgroup analysis showed a significant symptom reduction in older children (3.30 points).

Similar results were obtained for parent-reported symptoms regarding depression but not anxiousness. The pre-intervention results were significantly higher in the IG for both anxiety and depression, but at post-intervention for the depressive symptoms, the results were not. This indicates a significant reduction in parent-reported depressive symptoms ($p < .001$) compared to the CC ($p < .133$). Subgroup analyses for gender and age showed a decrease in anxious symptoms in both, whereas for depression, only older children reported a significant reduction. Overall, parents reported about 1 *SD* lower on both anxious and depressive symptoms compared to the child reports.

Conclusion

The transdiagnostic indicated prevention program resulted in a decrease in both anxious and depressive symptoms as reported by children. Parents also reported symptom reduction for depression. Hence, the EMOTION program has the potential to reduce internalizing problems in youths and thereby prevent the onset of emotional disorders.

Summary of article 2

Rasmussen, L-M., Patras, J., Neumer, S-P., Adolfsen, F., Martinsen, K. D., Holen, S., Sund, A. M., & 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

Objectives

The objectives of the second article were to identify characteristics that might facilitate or inhibit the implementation process of the EMOTION program. By using a mixed methods design, we investigated organizational and individual factors promoting or inhibiting implementation. We also examined group leaders' satisfaction and intention to continue with the program. In addition, we explored the group leaders' experiences with implementing the intervention in the municipal services by conducting qualitative interviews.

Sample and data collection

Of 68 group leaders trained in the intervention, 63 completed the group leader questionnaire prior to running the groups (93% participation rate), and 97% ($N = 66$) completed the post-intervention questionnaire after the groups were finished. Almost 95% of the sample was female, and the mean age of the total sample was 39.6 years ($SD = 9.7$). The group leaders were recruited from seven municipalities within the three participating regions (North, Mid, and South East) in Norway.

Additionally, eleven qualitative interviews of $n = 12$ group leaders (two informants were present at the same time in one of the interviews) were conducted. The interviews took place at the practitioners' workplace or in other suitable settings (e.g., a nearby café) and lasted approximately 1-1.5 hours. All interviews were audio recorded and verbatim transcription of the interviews then followed. The participants were four health care nurses, four psychologists and four educators. All the informants were women, and all except one worked in the local municipal health services (e.g., school health service).

Measures

Group leader questionnaire (T1)

Demographics. Fourteen questions regarding gender, age, work place and municipality, profession, percentage of full-time employment (e.g., 50%, 100%), clinical or other

specialties and experience related to work (e.g., years in the field, anxiety and/or depression, treatment methods) were included.

Work environment and innovation fit. To address issues relevant within this context, ten questions concerning work environment and intervention fit were developed for this study. An exploratory factor analysis yielded three subscales: “Innovation fit” ($\alpha = .95$), “Organizational support” ($\alpha = .69$) and “Attitudes towards evidence-based programs” ($\alpha = .83$). The item “I have such a large workload that it will be difficult to find time to run the EMOTION program” did not fit any of the subscales and was therefore treated separately. All items were rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

Organizational Readiness for Change (ORC). Inspired by the Employee Problem Scale from the Organizational Readiness for Change questionnaire (ORC; Lehman, Greener, & Simpson, 2002), a subset of 32 questions was developed for this study. The items were rated from 1 (Strongly disagree) to 7 (Strongly agree) and comprised six subscales: Adaptability ($\alpha = .62$), Program goals ($\alpha = .59$), Cohesion ($\alpha = .77$), Efficacy ($\alpha = .80$), Autonomy ($\alpha = .66$) and Communication ($\alpha = .80$). Six questions were included from the following subscales because of their relevance to this study: Adaptability (one item), Efficacy (four items) and Autonomy (one item). Reliability analyses showed that including these items maintained or increased the alpha coefficients. In addition, four items were removed because they did not fit within this context (e.g., “You have the skills needed to conduct individual counseling”). Of course, the wording of the items was changed from second person (you) to first person (I) to resemble the other questions in this study.

Readiness for Organizational Learning and Evaluation Instrument (ROLE). From the Readiness for Organizational Learning and Evaluation Instrument (ROLE; Preskill & Torres, 1999), we included items reflecting work culture and leadership. The subscale Work Culture ($\alpha = .91$) comprised 17 items, whereas the Leadership scale consisted of nine items ($\alpha = .89$). These items were rated on a five-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree).

Post-intervention questionnaire (T2)

After finishing the intervention, the group leaders completed the post-intervention questionnaire (T2). This survey consisted of 14 questions asking the group leaders to report on the number of sessions led and their satisfaction with being a group leader and intention to

continue with the EMOTION program. The responses were reported on a scale from 1 (Very dissatisfied) to 5 (Very satisfied). The last question regarding the intention to continue with the program was rated from 1 (Very unlikely) to 5 (Very likely).

Qualitative interview

For this study, we developed a semi-structured interview guide focusing on the group leaders' organizational setting as well as the strengths and weaknesses within the organization and with the program regarding implementation. Building upon Aarons and colleagues' (2011) conceptual model of implementation, the main goal of the interview was to explore the group leaders' experience working with EMOTION within their organizational context.

Analyses

To conduct the quantitative descriptive analysis, we used Pearson's r (two-tailed), and to assess the Cronbach's alpha for testing internal consistency in the different subscales, we used the statistical package IBM SPSS (24).

The qualitative analyses were conducted using Lacey and Luff's (2001) analytical framework, which is theoretically driven and consists of five main stages: familiarization (initial reading and familiarization with the text), identify a thematic framework (initial coding of the data), indexing (searching for themes), charting (organize the data), and finally interpretation (searching for patterns relevant to this study). To validate the qualitative data, one of the co-authors with experience regarding qualitative analyses read and discussed the data with me until we agreed on the main results.

Results

This study showed that several factors are important in the active phase of implementation and affect the group leaders' inclination to continue with the EMOTION program. Although the program received positive responses and was considered meaningful in the service context (e.g., 90% of the group leaders slightly agreed, agreed or strongly agreed that the intervention was needed in the service setting), some issues warrant more attention. Particularly, organizational factors such as time constraints, a heavy workload and lack of support from leaders seem to influence future use of the program. For instance, the leadership scale evaluating the management and leadership support in the organization was endorsed (group leaders agreed or strongly agreed with the statements) by less than 30% of respondents. We

also found a negative correlation between heavy workload and satisfaction with being a group leader ($r = -.36, p < .01$) and intention to continue ($r = -.29, p < .05$).

The qualitative material supported these results, as the three main findings from the interviews – *organizational factors*, *interventional aspects* and *school investment* – included both facilitators of and barriers to the implementation of the intervention. The group leaders found their workplace highly suitable for delivering the program. However, the main barriers were closely linked to time, resources and general support from leaders. Interventional aspects reflected an overall need for the intervention but indicated that it could be further adjusted to better fit the services. In particular, our last finding importantly highlighted the fact that increased collaboration between the schools involved and the services during delivery of the intervention would improve the offer to the children.

Conclusion

The group leaders highlighted several important aspects of the facilitators and barriers in the implementation of a new intervention targeting anxiety and depression in municipal services. Although the program provides the services with extra tools to handle these issues, there are still some barriers (e.g., lack of time and resources), which could affect future utilization of the EMOTION program. Supportive leaders and a cooperative school are also important for continued use of the intervention.

Summary of article 3

Rasmussen, L-M., Patras, J., Handegård, B-H., Neumer, S-P., Martinsen, K. D., Adolfsen, F., Sund, A. M., & Martinussen, M. (*In review*). A validation of an adapted version of the Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT).

Objectives

The objective of the third article was to investigate the factor structure and reliability of an adapted version of the Cognitive and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT; Bjaastad et al., 2016) by conducting a confirmatory factor analysis (CFA) in our sample and testing the instrument in a group format, which has not previously been done.

Sample and data collection

The group leaders received video cameras and a list of sessions (a block of 4 child and 2 parent sessions) prior to starting new groups. Randomly selected videos were collected in blocks to ease the data collection, meaning that if the group leaders in one group started with session 4, then sessions 5, 6, and 7 followed. After completion of the groups, the group leaders handed in the video cameras, and the video files were stored on a secure server. A total of $N = 239$ sessions (17% of all sessions) were recorded and scored for $N = 52$ groups led by the group leaders. During the project period, a total of $N = 266$ children participated in the intervention (mean age of 9.64 years, $SD = 0.93$).

Measures

CAS-CBT

The Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT; Bjaastad et al., 2016) is an instrument used to evaluate adherence and competence in cognitive behavioral therapy (CBT) with children and adolescents and was originally developed for anxiety disorders. The 11-item instrument comprises three main sections covering the key domains in CBT for children with anxiety (Bjaastad et al., 2016): cognitive therapy structure (e.g., homework, session structure and progress), process and relational skills (e.g., reinforcement, collaboration, flexibility) and goals (specific goals for the session from the treatment protocol). Then, a competence score is assessed globally for each of the three main sections (e.g., competence score for cognitive therapy structure). In addition, the observers make an overall evaluation of the group leaders' adherence and competence in the session. The adherence score ranges from 0 (*None*) to 6 (*Thorough*). The competence score

also ranges from 0 (*Poor skills*) to 6 (*Excellent skills*), with an explanation attached to the ratings indicating the different qualities that must be exhibited. There are also three general questions about the video quality and challenges with the session.

In this study, we made a few adaptations to fit the EMOTION program under consultation with the CAS-CBT developer. On the CAS-CBT, the parents are included with one item called “parental involvement” (Bjaastad et al., 2016). In EMOTION, the parents participated in seven individual sessions, and therefore, the item was removed. The parent sessions were rated separately with the same instrument. Additionally, in the original version, there are two program goals to be rated, but in our version, we had up to three goals, so one item assessing the third goal was added. The instrument developer approved the modifications. The CAS-CBT has previously shown good internal consistency ($\alpha = .87$), good to excellent interrater reliability and high rater stability (Bjaastad et al., 2016).

Analyses

To examine the interrater reliability between the expert scorer and the student scorer during the fidelity checks, as well as the internal consistency and Pearson’s r , SPSS statistical packages (24.0) were used. In addition, using Mplus 7.0 statistical software with the weighted least squares estimator (WLSMV; Muthèn & Muthèn, 1998-2010) with ordered categorical (ordinal) indicators, we performed a confirmatory factor analysis (CFA). We further investigated the structure of the CAS-CBT by testing different models. Several fit indices were used to assess how well the model fit the data, including chi square, the root mean square error of approximation (RMSEA; Steiger and Lind 1980), Bentler’s comparative fit index (CFI; Bentler, 1990) and the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973). A significant chi square result ($p < .05$) indicates misfit (Kline, 2011), whereas an RMSEA $< .08$ and a CFI and TLI $> .90$ indicate adequate model fit. Preferably, an RMSEA $< .05$ and CFI and TLI $> .95$ indicate a good model fit. In addition, a p-value is given for the RMSEA and is interpreted as the probability that the RMSEA is $< .05$.

Results

The findings from this study indicated fair to good interrater reliability, ranging from $\alpha = .40$ to $.74$. When conducting the CFA, we first tested a unidimensional model, which showed poor model fit ($\chi^2 = 497.076$, $p < .05$, $df = 44$, RMSEA = 0.208, $p < .05$, CFI = .953, and TLI = .941). Then, we investigated a second model based on the structure and scoring of the CAS-

CBT. The results implied a model misspecification, indicating that the model was not trustworthy. We then tried to replicate Bjaastad et al. (2016), but the results did not show adequate fit on all indices ($\chi^2 = 183.69, p < .05, df = 43$; RMSEA = 0.117 $p < .05$; CFI = .985; and TLI = .981). A modified version of the previous model (correlating the residuals of two items based on theory) yielded the following results: $\chi^2 = 162.10, p < .05, df = 42$; RMSEA = 0.109, $p < .05$; CFI = .987; and TLI = .984. In a further modification of this model, we correlated the residuals between two items with a strong association, but model fit did not improve ($\chi^2 = 163.37, p < .05, df = 41$; RMSEA = 0.112, $p < .05$; CFI = .987; and TLI = .983). Finally, we tested a model in which all the items evaluating the session goals were removed. This improved model fit to some extent ($\chi^2 = 23.26, p < .05, df = 11$; RMSEA = 0.068, $p = .19$; CFI = .998; and TLI = .997). Internal consistency estimates for the two subscales derived from the last model showed good reliability for the subscale “CBT structure” ($\alpha = .85$) and an excellent alpha value for the subscale “Process and relational skills” ($\alpha = .93$).

Conclusion

This study showed that when conducting a CFA in our sample, we were unable to estimate a good model fit, especially when the items evaluating the session goals were included. When we removed these items, however, we were still not able to achieve an adequate model fit, although it improved. This implies that the CAS-CBT might benefit from further development to effectively evaluate CBT group interventions for children with anxiousness and sadness.

Research ethics

The Regional Committee for Health and Medical Research Ethics (REK) approved the study (2013/1909/REK Sør-Øst). Hence, all procedures performed in this study were in accordance with the ethical standards of the regional research committee and with the 1964 Helsinki declaration (World Medical Association, 2013) and its later amendments or comparable ethical standards. We obtained informed consent from all individual participants included in the study, and parents consented on behalf of their children. The raters who scored the video recordings of the sessions signed a declaration of confidentiality.

However, when conducting research on humans, and children in particular, there will always be some ethical considerations requiring extra attention. According to the Health Research Act [Helseforskningsloven] and national ethical guidelines [De nasjonale forskningsetiske komiteene] (NEM National Committee for Medical and Health Research Ethics; NESH The National Committee for Research Ethics in the Social Sciences and Humanities, 2016), all participants need to understand all aspects of a research project, including the purpose and consequences of participation. In this project, we include children aged 8-12 years. They do not have the competence to give informed consent and are thus, by definition, labelled a “vulnerable group” (NESH The National Committee for Research Ethics in the Social Sciences and Humanities, 2016). Hence, we as researchers have a responsibility to provide appropriate information to ensure that the participants understand what they are participating in.

In this study, this was prudently taken into consideration when the information letters to all participants were produced and later approved by the REK. During project presentations at the schools, the children received age-appropriate information and had the opportunity to ask questions. If possible, the research group held parent meetings to inform parents about the project and respond to any questions they might have. Furthermore, in the information letter to the parents, we emphasized that participation was voluntary and that they could withdraw from the study at any time.

As this study targeted symptomatic children, the possibility that some children would experience stigma was present. First, one could be exposed to stigma by handing in the informed consent. However, the research group instructed all the children to hand in the consent form and (after discussion with the parents about participation) to check the box that

was most suitable for that particular child (we want/do not want to participate in the study). Second, the children could experience potential stigma by participating in the groups, as they were delivered during school hours or immediately after. We wanted to reduce this issue as much as possible and therefore carefully selected how we presented and communicated the project to the participants. Further, the issue of stigma was also investigated in the pilot study (Martinsen et al., 2016), which indicated that the potential benefits of participating in an indicative intervention outweighed the potential negative effects.

In this project, we also included two different qualitative methods – observation (video recordings of the group sessions) and interviews. In both of these methods, it is important to follow national ethical guidelines and strive to ensure the integrity of the participants (NESH The National Committee for Research Ethics in the Social Sciences and Humanities, 2016). We informed the group leaders thoroughly about the study and the option to withdraw their participation at any time. During the interviews and in the interpretation of the material afterwards, the intention was solely to ensure an accurate presentation of the participants. Regarding the video observations, the group leaders received instructions to arrange the recordings of the sessions, thereby leaving the choice to participate up to them. Furthermore, video observations require researchers to be especially careful because observing the participants and interpreting their behavior might be considered degrading (NESH The National Committee for Research Ethics in the Social Sciences and Humanities, 2016). This care was ensured during the training of the raters and when they signed the declaration of confidentiality.

Discussion

The major goal of this thesis was to investigate both the effectiveness and implementation of the EMOTION program. The EMOTION program seems to show a potential benefit in reducing anxiousness and sadness. For further use of the program, however, implementation efforts must be considered. The results from the studies in this thesis indicate that different factors affect implementation, including factors closely linked to the organization where the employees delivering the intervention worked and other collaborators (e.g., schools). Additionally, aspects of the intervention and issues regarding the measurements all seem to have an impact on the continued use of the intervention.

Discussion of the main findings in Paper 1

The effectiveness evaluation of the intervention revealed a decrease in both anxious and depressive symptoms, as reported by the children. This clearly shows that the indicated prevention program EMOTION has the potential to reduce internalizing problems in young school children. Although both the intervention group and the control condition experienced symptom reduction, this reduction was significantly greater in the intervention group. These results are well aligned with those of other studies investigating CBT interventions delivered in school settings, although interventions for depression have shown less distinct results (Calear & Christensen, 2010; Mychailyszyn et al., 2012; Werner-Seidler et al., 2017). Furthermore, anxiousness often precedes depressive symptoms (e.g., social phobia leads to loneliness and sad feelings; Kovacs & Lopez-Duran, 2010), which highlights the importance of targeting both issues. One reason for the lower symptom reduction in sad children could stem from the more abstract features of depression, such as negative thoughts and a general feeling of sadness.

Subgroup analyses for gender and age (older = 5th and 6th grade, younger = 3rd and 4th grade) supported this notion to some extent. The results showed a significant decrease in anxious symptoms in the intervention condition for both subgroups. Previous studies have presented similar results, demonstrating symptom reduction in different subgroups (Gillham, Hamilton, Freres, Patton, & Gallop, 2006). Among the more depressed youths, however, only the older children showed a significant reduction in symptoms. Depression typically has a later onset than anxiety (Stice et al., 2009), which could explain why older children gained more from the intervention than younger children. Furthermore, low self-esteem, solitude and general fatigue generally reflect depressive symptoms. This may imply that compared to treating

more specific anxious symptoms (such as being afraid of the dark or speaking aloud in the classroom), when treating depressive symptoms, the children need to reach a certain age to understand the therapeutic mechanisms (e.g., cognitive restructuring) and abstract reasoning. Thus, given the nature of anxiety and depression, it is easier to identify specific goals for anxious children than for depressed children and thereby develop a plan to reach these goals.

Parents reported similar results as the children; however, the decrease in anxious symptoms was not significant. The results related to parent reports of child anxiousness have been diverse, which could indicate that parents are unaware of the children's difficulties. In general, the parents reported lower symptoms than the children. This reflects a disagreement between parents and children, which has been shown in previous studies as well (De Los Reyes et al., 2015; Wei, Cummings, Villabø, & Kendall, 2014). This illustrates the importance of including self-reports, because parents might not be aware of the child's situation, particularly with relation to internalizing problems (Wei, Hoff, et al., 2014). Additionally, as previously mentioned, anxious or depressive symptoms may be more relevant in other settings (e.g., schools) than in the home context, causing parents to underreport a child's difficulties (De Los Reyes et al., 2015). Thus, it is important to gather information from children and other informants, including parents and teachers.

Discussion of the main findings in Paper 2

In the second paper, we sought to identify the facilitating and hindering factors closely linked to the implementation and future utilization of the EMOTION program. The results from this study show the complexity of implementation in primary care using group leaders employed in mental health and municipal services outside of the schools.

Although the mental health professionals enjoyed the intervention and found it necessary within the services, they still had some concerns regarding future utilization of the program. In Aarons et al.'s (2011) EPIS model, innovation-values fit is considered an essential aspect of implementation. These authors state that interventions that fit the goals, tasks and duties of organizations and individuals, as well as other administrative and practical tasks, will most likely promote implementation. In this study, the results implied that while the group leaders appreciated developing their competence within this area, it was also clear that some features of the program were unacceptable to carry out (e.g., the extensive manual). Other studies have also highlighted the importance of satisfaction with and the feasibility of an intervention for continued implementation (Forman, Fagley, Chu, & Walkup, 2012; Proctor et al., 2011).

However, positive attitudes towards the intervention are not enough to change practice, proving that other factors, such as the implementing organization, have an impact on the active implementation process. The results from this study further showed that the lack of time to conduct the EMOTION program and the heavy workload were some of the most prominent hindering factors of implementation. In fact, approximately 50% of the participants were unsure if they would continue as group leaders after the initial project period. Furthermore, 73% of the group leaders indicated that the heavy workload interfered with the continuation of EMOTION. Additionally, during the interviews, the group leaders highlighted the limited time and resources assigned to run the intervention as important factors for the future utilization of the program. These findings reflected a huge barrier to continued use of the program that unfortunately is not unique to this particular study. Recent studies (Beidas et al., 2016; Bond et al., 2014) support these results, identifying time issues and the limited resources allocated (e.g., time, money, tangible support) as major threats to the implementation of interventions. Furthermore, Langley et al. (2010) reported that competing responsibilities were the strongest barrier during implementation and were also highlighted frequently by the successful implementers as among the main barriers. Similar results have been shown previously as well (Forman, Olin, Hoagwood, Crowe, & Saka, 2009) and clearly emphasize the issues related to limited resources when implementing interventions in schools and municipal services, which should be considered in future studies.

Related to the organizational factors, another important issue for the group leaders was the experience of autonomy and support from leaders in the organizations. Particularly in the interviews, the importance of autonomy and being able to manage the time spent on the EMOTION groups was considered a promoting factor for continued use. Additionally, supportive and positive leaders were deemed important, implying that without the direct backing of the leader, further implementation of the program was impossible. Other studies have shown the significant contribution of positive and effective leadership in organizations (e.g., Corrigan & Garman, 1999) and how leadership affects attitudes towards EBPs (Aarons & Sommerfeld, 2012), thereby influencing future use and continued implementation of interventions (Aarons, 2006; Rodriguez, Lau, Wright, Regan, & Brookman-Frazer, 2018). Recently, however, researchers have started to investigate leadership and implementation, particularly looking closer at strategic leadership (e.g., implementation leadership), and which leadership behaviors are important during organizational change (Aarons, Ehrhart, & Farahnak, 2014; Gifford, Graham, Ehrhart, Davies, & Aarons, 2017). This has led to the

development of the Implementation Leadership Scale (ILS; Aarons et al., 2014), which assesses the strategic climate in organizations. Additionally, there are approaches looking specifically at the connection between transformational leadership and ways to integrate it in implementation leadership and implementation effectiveness (A. Richter et al., 2016).

Another important finding from this study was related to the schools' investment and engagement in the implementation of the intervention. Having support from the teachers and school staff in general facilitated the completion of the EMOTION groups, both practically and by raising awareness of internalizing issues in this population. The importance of teachers and school staff in the successful implementation of school-based interventions has been demonstrated in prior studies as well (Domitrovich et al., 2008; Forman et al., 2009; Langley et al., 2010). This highlights the need to include schools to an even greater degree in future studies, especially if the school is still the context of delivery.

Discussion of the main findings in Paper 3

The third article of this thesis investigated the psychometric properties of the observation measure – the CAS-CBT (Bjaastad et al., 2016), which was used to evaluate the group leaders' quality of delivery (fidelity). We assessed the group leaders' adherence and competence during completion of the program manual by scoring video-recorded sessions of the EMOTION groups.

We performed CFA in Mplus, and the results showed that we were not able to replicate the original factor structure proposed by Bjaastad et al. (2016), particularly when we included the items assessing the goals for the session. Internal consistency estimates were, however, good to excellent for the two structures (excluding the session goal items) tested in this study. We further investigated the structure of the instrument and found that when we correlated the residuals of specific items (which theoretically were strongly associated), model fit improved slightly. Finally, we removed the session goals from the scale, which yielded an acceptable model fit, indicating that these items did not fit the scale adequately.

In our model, the theoretical justification for removing the session goal items was based on the structure of the instruments. The observers rated the goals for the sessions independently, and as these items varied from session to session, they accordingly were difficult to adjust to the instrument structure. Furthermore, given the transdiagnostic and comprehensive nature of the program, choosing the goals for the different sessions was not an easy task for the

program developer(s). Furthermore, the items assessing adherence to the session goals correlated better with the items reflecting relational skill than with the items within the same subscale (CBT structure). This could therefore explain why these items did not fit the model originally tested. Model modifications, however, are subject to some skepticism (Schreiber, Nora, Stage, Barlow, & King, 2006). Modifications generally include altering the model parameters, which could remove the researcher from the initial model, and therefore require a theoretical defense (Schreiber et al., 2006).

In the wake of treatment manual development, which subsequently facilitated the monitoring of treatment protocols, the importance of measuring treatment fidelity has begun to be explored. In a systematic review, Prowse, Nagel, Meadows, and Enticott (2015) found that in general, measuring both adherence and competence provided better results on treatment fidelity quality. This indicates that building solid evidence of effectiveness requires adequate measures of treatment quality (Prowse et al., 2015). However, there is limited use of fidelity measures in the field, which creates a valuable opening for future research, proposing the inclusion of such procedures to promote better treatment fidelity.

General discussion

This mixed- and multi-method study has provided insightful knowledge regarding the effectiveness and implementation of an indicated preventive intervention for children with symptoms of anxiety and depression. The transdiagnostic EMOTION program seems to promote a significant reduction in anxious and depressive symptoms in children at risk, confirming the initial hypotheses; the intervention group (IG) showed a larger decrease in child-reported depressive and anxious symptoms than the control condition (CC). The hypothesis was also confirmed regarding parent-reported symptoms of depression, indicating that the IG displayed a greater reduction than the CC. Anxious symptoms as reported by parents in the IG, however, were not significantly different from those in the control group.

Implementing an indicated intervention for children with anxious and depressive symptoms in municipal services requires considerable effort. First, having an effective intervention that is appropriate, accepted, and feasible for the participants and within the service context is important (Aarons, Hurlburt, et al., 2011; Proctor et al., 2011). During the main study, attendance rates were 94% for the children and 75% for the parents. Additionally, after the EMOTION groups began, the dropout rate was low. This generally reflects a high degree of

satisfaction with the program, especially considering its intensity, as 20 child sessions and 7 parent sessions were conducted over a 10-week period.

The group leaders also found the intervention acceptable and highly important; however, there was some apprehension about its feasibility. Conducting the EMOTION program in addition to regular work, as mentioned previously, was one of the major barriers to implementation. Awareness of the complexity of implementing new interventions in municipal services, particularly when schools provide the context of delivery, should be exercised in future studies. Implementation within this context generally involves individuals employed in different organizations who are part of complicated intra- and interorganizational settings, including being subject to external policies (Lewis, Proctor, & Brownson, 2017; Novins et al., 2013). The experienced barriers may therefore be a result of municipal services and organizational leaders not being aware of or capable of handling the efforts needed to implement new interventions, which could indicate poor “readiness for change”. This situation could be accommodated by introducing some requirements for the organizations (e.g., assessing capacity) and preparing the organizations more extensively before starting a new intervention (e.g., increasing knowledge about implementation, especially as it involves organizational leaders).

According to Durlak and DuPre (2008), the main goal is to find the right balance between adapting the intervention to fit local needs and fidelity to the program to ensure that program core components are delivered as intended and hence produce outcomes as anticipated. Although the literature highlights the importance of ongoing fidelity assessments (Botvin, 2004; Novins et al., 2013), fidelity during the implementation of adopted school-based programs is achieved 50% or less of the time (Gottfredson & Gottfredson, 2002). The results of the fidelity scoring (fidelity was rated on a scale from 0 = *(None/Poor skills)* to 6 = *(Thorough/Excellent skills)*) of the sessions in this project indicated a large variation during completion of the groups. The mean adherence score was $M = 3.53$ ($SD = 1.25$), with a range from 0.43 to 6.00 (mean of seven items). The mean competence was $M = 3.59$ ($SD = 1.26$), with a range from 0.25 to 6.00 (mean of four items). The variation between groups was extensive, ranging from 0.25 to 6.00. Compared to those of therapists conducting individual therapy for anxious youths (Bjaastad et al., 2016), the results in this study were somewhat lower. The reasons for this discrepancy could be the different approaches, as some of the tasks are easier to conduct during individual therapy than in indicative prevention in groups. Furthermore, clinicians often have more experience with anxious and depressive children and

how to use CBT, whereas many of those working in the prevention field do not have formal CBT training. In a systematic review conducted by Rapley and Loades (2018), they found few studies, with mixed and inconclusive results, regarding therapists' adherence and competence when treating children during individual CBT, indicating that more research is warranted.

In the TIM study, the EPIS model was chosen to frame the structure of the implementation research. However, as with all such models and frameworks, it is difficult to cover all aspects. Although personal characteristics are mentioned, the EPIS model may not embrace them within an organizational setting, as it is more focused on the inner (and outer) settings and does not sufficiently acknowledge individual contributions. This could be particularly relevant within the Norwegian context, where professionals are often permanently employed and given a high degree of autonomy to conduct their work. Hence, to counter this, we could also have chosen Damschroder and colleagues' (2009) Consolidated Framework for Implementation Research (CFIR), which focuses more on individual characteristics; however, we were mostly oriented towards the organizational settings in this thesis. Furthermore, because the EPIS model focuses on the public service sector, where most children and adolescents receive mental health, we found it most applicable to our study. In the future, emphasizing individual characteristics in the EPIS model more extensively in addition to the organizational factors should be undertaken. Alternatively, integrating the individual characteristics identified in the CFIR model as a framework for the research could be applied.

Methodological considerations

Overall, the effectiveness evaluation of the EMOTION program was conducted with good empirical and methodological quality. However, due to practical considerations, which are a significant part of conducting research in real-life situations, there will always be some issues affecting internal validity. Cluster randomization, for instance, was chosen to address potential spill-over effects. Hence, randomization took place at the school level, and the schools continued in the same condition (intervention or control) throughout the project period. Therefore, the children and families were aware of which condition they were assigned after the first semester their school participated. This could lead to a contamination effect between different participants at the same school. Additionally, bringing attention to internalizing issues might have contributed to a positive effect in both conditions, even though the children in the control schools did not receive the intervention. This could reduce or diminish the difference between the two experimental conditions and lead to more

conservative results. Further, the “blinding” of which condition the children were recruited to was impossible. Thus, the elevated symptoms consistently reported by the children in the intervention condition could be a response to *self-selection bias*. Another bias to consider is *performance bias*, in which the children and parents anticipate an effect because they know they are part of the intervention; in addition, those in the control condition could seek other forms of care knowing they are in the control group (Porta, 2016).

Using only child self-reports for the recruitment of such young children also merits some attention. Querying multiple informants (e.g., parents, teachers) is generally considered the best approach to ascertaining a child’s mental health status. However, previous research has shown a divergence between child and parent reports (De Los Reyes et al., 2015; Villabø, Gere, Torgersen, March, & Kendall, 2012). In this study, the parents consistently rated the children’s symptom level lower than the children themselves did, which clearly could have yielded fewer children to be included. Furthermore, relying on the children’s understanding and interpretation of the instrument questions could be insufficient. However, the measures used were tested prior to this study, including on other Norwegian samples (J. Richter & Sund, 2013; Villabø et al., 2012), and showed good psychometric properties. The psychometrics of MASC screening for anxiety symptoms were assessed during this study, supporting previous results (Martinsen et al., 2017). Furthermore, using diagnostic interviews, which could present a more accurate picture of the children’s health status, is not considered applicable within a school setting. Thus, according to Dierker et al. (2001), rating scales provide acceptable results when screening for symptoms in a preventive setting.

Although ours was a preventive setting, we were recruiting “at-risk” children with increased symptoms of anxiety and depression. Therefore, it was important to identify a cut-off for inclusion to indicate which children experienced symptoms affecting normal function and could benefit from the program. However, having a high cut-off might have excluded many symptomatic children and would have made this a treatment program rather than a prevention. Based on Norwegian, Nordic and international norm studies, as well as discussions with Norwegian experts, the inclusion cut-off in our sample was one SD above the population mean (no upper limit). Not having an upper limit might have led to the recruitment of children fulfilling the criteria for a clinical diagnosis and hence qualifying for treatment. Therefore, children in this study might display higher symptom levels than expected for participants in a purely preventive intervention from which participants fulfilling diagnostic criteria should be excluded. This may have resulted in an overestimation of the treatment effect in this study.

Regression to the mean is also an issue worth discussing, bearing in mind the elevated symptom level of the indicated sample of children in this project. Regression towards the mean implies that at post-assessment, the children who initially reported high symptom levels moved closer to the population mean (Ostermann, Willich, & Lüdtkke, 2008). Having a control group not receiving the intervention typically resolves this issue, thus providing more assurance that the intervention caused the effect. In our study, both conditions potentially regressed towards the mean; however, the intervention group displayed greater symptom reduction than the control group, indicating that the intervention had an effect. Furthermore, because we were recruiting children with symptoms of anxiety and depression, the sample inherently experienced more internalizing problems.

Ultimately, it would have been interesting to investigate the relation between implementation factors and child outcomes. However, as the overall study primarily focused on the recruitment of the children, this resulted in a small sample size of group leaders, which makes it harder to detect any differences. Ogden and Fixsen (2014), among others, have also addressed this issue, emphasizing the need to focus on the research design of implementation studies to facilitate testing of the associations between the experimental variables and outcomes. Additionally, in our study, we did not assign the group leaders a primary or secondary role, and therefore, we had to merge the results from the group leaders in the analyses, creating a group mean score based on the group leader variables. This might have cancelled out any differences and further made it impossible for us to study growth. Additionally, because the group leader pairs often changed from one semester to the next, we were not able to conduct comparisons with the results from previous groups.

Further, this raises a general issue in the implementation field – the methodological challenges, particularly those related to measures. We observed relatively high mean scores and small standard deviations on the group leader questionnaires, indicating low variation in the response categories, at least for some of the questions. This is a general problem in implementation research, as there are few psychometrically validated measures, thereby increasing the use of self-made questionnaires (Lewis et al., 2015; Lewis et al., 2017). According to Lewis and colleagues (2017), the measurement issues encountered in implementation science result in a smaller pool of information that could provide field-targeted implementation strategies to overcome barriers. One reason for this could be the considerable number of theories, models and frameworks applied in the field, which also

produces a taxonomical and linguistic lack of clarity. Hence, there is a need to operationalize and standardize implementation constructs and then develop instruments that measure these accordingly (Lewis et al., 2017; Martinez et al., 2014; Ogden & Fixsen, 2014). In a systematic review conducted by Chaudoir, Dugan, and Barr (2013), they identified 62 available measures, mostly at the organizational, provider, and innovation levels. Few of these were associated with implementation outcomes. They also concluded that specifying and refining the constructs and measurements must be undertaken to improve implementation success. These issues should be addressed in future studies with the goal of investigating the relationship between implementation and outcome empirically.

However, another explanation for the lack of variation between the group leaders could be that in general the implementation was robust and of high quality. Although the group leaders conducting this intervention were primarily working in the municipal services and had varied experience with training in CBT and manualized interventions, all the group leaders received the same follow-up during the project. We maintained high standards for training and supervision, including supervision of supervisors (which is not even common in outpatient clinics). The group leaders attended a three-day training in the program, had weekly supervision by a trained CBT therapist and were offered a booster session at the end of the semesters. Furthermore, we conducted quality assessments of the group leaders (e.g., adherence and competence ratings) upon completion of the groups. Additionally, the group leaders volunteered to participate, as they had a general interest in the topic, which may have resulted in little variation across individuals.

By using a mixed methods design (paper 2), we did address some of the measurement issues we were challenged with. Using qualitative methods in implementation research can be a suitable approach for triangulation (to verify the results) and can provide new information (Palinkas et al., 2011). Qualitative methods are an important information source in the implementation field, particularly when the sample size is limited (Novins et al., 2013; Palinkas et al., 2011). However, we interviewed only the group leaders in our study, and to strengthen the results, it would have been beneficial to interview organizational leaders and school personnel as well.

Finally, validation of instruments is an important asset of psychometric testing, particularly regarding implementation and fidelity. This is because, as previously mentioned, well-established instruments with adequate psychometric properties seem to be missing in this

research area (Lewis et al., 2017; Martinez et al., 2014). Although construct validity represents an important validation approach, a potential limitation in paper 3 could be the lack of other types of validation methods. Assessing convergent/divergent validity against similar instruments could have been beneficial. However, this requires other validated observational tools assessing adherence and competence in CBT for internalizing youths to rate the CAS-CBT against, which seem to be lacking. Additionally, it would require extensive resources, training of raters, and ethical approval to test for convergence and divergence with other observation instruments. Furthermore, one important yet highly understudied issue in general is assessing criterion-related validity regarding the relationship between instruments and the theoretical frameworks defining the constructs included (e.g., organizational culture, leadership) (Chaudoir et al., 2013; Martinez et al., 2014). This is important because we are trying to predict implementation efforts based on the instruments, which are built upon the theoretical frameworks. Hence, information on instruments' concurrent and predictive validity may result in a revision of theoretical constructs and thereby affect the direction of implementation science in the future (Proctor et al., 2009b).

Optimally, a multilevel analysis to assess the between-level (groups) and within-level (group leaders) data would have been the best approach. However, the two group leaders were treated as the unit of analysis at the between level because the composition of the pairs differed at different measurement points. Furthermore, estimating such models requires a substantial amount of data, which was not possible to obtain in this study due to the relatively small sample size.

Future research

Based on the feedback from the participants in the study, a revised version of EMOTION has already been introduced to the services (16 child sessions and 5 parent sessions). This more flexible version of the program should be tested and further developed, with the goal of finding the right balance between session number, adherence and adaptation by the services. Another interesting approach is testing a version where some of the sessions are web-based (completed at home) to minimize the burden on the group leaders. Using an innovative research design, such as a factorial design (Collins, Dziak, Kugler, & Trail, 2014), allows testing of two or more independent variables simultaneously. Hence, investigating different versions of the intervention (e.g., brief vs. long, web-based vs. regular) could provide an

indicated program that is feasible within the prevention field but still provides the amount of treatment that is needed by these children.

Identifying the facilitators of and barriers to future utilization of the program in this context was essential. However, the next step is to gain in-depth knowledge on which factors are critical for obtaining change and maintaining it over time. Hence, it is important to increase the knowledge and follow-up of implementation within the services. Previous research has shown the importance of evaluating organizations' readiness to implement a new intervention and allocating resources to provide an adequate support system for the providers of the intervention (Armenakis, Harris, & Mossholder, 1993; Lehman et al., 2002; Wanless & Domitrovich, 2015). To advance this, an increased focus on the organizational implementation context (OIC), as suggested by Lyon and colleagues (2018), is relevant for further development of the implementation process in an organization. The OIC reflects specific factors that are important during implementation within a specific setting (e.g., schools) that are closely linked to the implementers' behavior. One of the constructs presented as part of the OIC is strategic implementation leadership (ILS), comprising specific behaviors facilitating or impeding implementation (e.g., supporting and preserving during the implementation process). To address some of the main barriers from the TIM study, focusing on leadership training and developing implementation leadership is important for future use of interventions (Aarons et al., 2017; Lyon et al., 2018), particularly in the municipal services.

Additionally, specifying the group leader tasks, especially the main goals of each session, and assigning the group leaders a primary and a secondary role could promote the feasibility of the intervention. Both considering the research and emphasizing the structural and relational processes of program implementation could enhance some of the core elements of the program and help identify the most important change mechanisms. Through continued feedback to the providers using a measurement feedback system (MFS; Bickman, 2008; Bickman, Kelley, & Athay, 2012), for instance, the group leaders could tailor the intervention to the children's development during the completion of the groups. Similarly, an implementation and/or research team could monitor the implementation process more closely, thereby capturing unanticipated influences and actuating efforts if necessary.

Options to address the issues regarding the group leader sample size and statistical power encountered in this study could include a continued focus on data collection (e.g., estimating statistical power for group leader data) or pooling datasets. Another possibility could be to

explore new research designs (e.g., rollout designs). Rollout designs consist of several cohorts of providers or organizations randomized in sequence, and the cohorts then function as the control group for the previous cohort (Landsverk, Brown, Rolls Reutz, Palinkas, & Horwitz, 2011; Novins et al., 2013). Using established and validated measures with good psychometric properties will also continue to remedy the methodological issues in the field. This also includes revising the CAS-CBT (Bjaastad et al., 2016) to fit the group format, and tailoring the assessment of the group leaders to this context is a necessary, important effort.

Furthermore, in this study, we did not test or manipulate any of the implementation factors or strategies (e.g., recruitment, training, supervision, administrative support; Fixsen et al., 2009). Research shows, however, that by focusing on implementation outcomes, implementation success can be modeled and tested (Proctor et al., 2011). The implementation outcome is different from the outcomes related to the services or individuals and can be viewed as a way to measure the implementation process. Proctor and colleagues (2011, p. 65) define it as “the effects of deliberate and purposive actions to implement new treatments, practices, and services”, and implementation effectiveness is therefore a measure of how well the intervention was implemented. This is important because we want to distinguish whether an intervention was ineffective within a new setting or whether the intervention was implemented incorrectly (Proctor et al., 2011).

One possibility could be to test different strategies related to training or supervision (e.g., brief vs. intensive, in person vs. video lectures, or high supervision vs. no-supervision/co-supervision). Previous research has not been able to reveal any significant discrepancies between different training approaches (Beidas, Edmunds, Marcus, & Kendall, 2012; Herschell et al., 2009; Rohrbach, Graham, & Hansen, 1993; Vismara, Young, Stahmer, Griffith, & Rogers, 2009). However, including ongoing support or consultation seems to be a distinct implementation strategy that should be included in the training process (Edmunds, Beidas, & Kendall, 2013; Nadeem, Gleacher, & Beidas, 2013). In the future, testing different combinations of training and supervision could therefore be the next step on the agenda.

The testing of different implementation strategies seems to be increasing in the field, and multiple studies are in development (Eiraldi et al., 2016; Kilbourne et al., 2014) but have yet to publish any results. However, as the implementation field is in continuous movement and consistently needs to accommodate complex settings, it is important to recognize that some implementation research questions are not that easily solved with experimental designs (e.g.,

changes in policy); thus, rigorous experimental designs encompassing all of the possible influential variables are impossible to execute.

Conclusion

The main goals of this thesis were to examine the effectiveness of the EMOTION program and to simultaneously investigate the factors associated with the implementation of the program. We also closely examined the quality of delivery, evaluated by assessing the group leaders' adherence and competence. To our knowledge, this is one of the first studies using a transdiagnostic approach targeting anxious and depressive schoolchildren, identifying potential implementation issues at the same time. Although there has been an increased emphasis on implementation and its influence, implementation is notoriously under-studied in large trials.

The results from this thesis indicate that the EMOTION program shows positive results in reducing symptoms of anxiety and depression in children aged 8-12 years, as reported by self-reports. Parents reported a significant symptom reduction for depression but not for anxiousness compared to the levels in the control group. Hence, the initial effects indicate that the children profited from the intervention. Further, targeting both anxiety and depression in a group format was found to be applicable, which implies the possibility of widening the scope of children reached. Thus, delivering effective programs in primary care settings is critical for increasing their potential public health impact.

Implementation is, however, a tedious and laborious process, indicating that support and guidance are needed when adopting innovations in new contexts and populations (Meyers et al., 2012). The findings derived from the current study using both quantitative and qualitative methods indicated that overall, the group leaders found the EMOTION program to be highly relevant within the municipal services. Barriers such as a lack of organizational support, time issues and insufficient resources to conduct the groups did, however, have an impact on intention to continue with the program. Collaboration with the participating schools was also an issue that needs attention in future application of the program. Additionally, an increased focus on further development of appropriate measures to assess implementation factors, including fidelity, was an important learning outcome from this study.

Furthermore, regardless of the growing body of theoretical frameworks and models applied in the field, it is important to preserve an understanding of the implementation process and strive

to carry out each step of the process with high quality. This generally entails an increased focus on high-quality implementation conducted with proper training, ongoing supervision, and the use of well-established instruments to assess the implementation process and keep track of the different implementation strategies. In practice, this will necessitate an increased focus of the service organizations, in collaboration with the program developers, on establishing procedures to accommodate these issues and maintain them over time. When the organizational and other implementation issues are identified, it is imperative to develop strategies to overcome them and thereby improve the implementation process (Aarons et al., 2017). This leads to more effectively implemented interventions, which improves care and, ultimately, benefits the children and families in need.

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Paper 1

Martinsen, K. D., **Rasmussen, L-M. P.**, Wentzel-Larsen, T., Holen, S., Sund, A. M., Loevaas, M. E., Patras, J., Kendall, P., Waaktaar, T., & Neumer, S.-P. (2018). Prevention of anxiety and depression in school-aged children: Effectiveness of the transdiagnostic EMOTION program. *Journal of Consulting and Clinical Psychology, 87*. doi:10.1037/ccp0000360

Paper 2

Rasmussen, L-M. P., Patras, J., Neumer, S-P., Adolfsen, F., Martinsen, K. D., Holen, S., Sund, A. M., & Martinussen, M. (2019). Facilitators and barriers to the implementation of EMOTION: An indicated intervention for young schoolchildren. *Scandinavian Journal of Educational Research*, doi:10.1080/00313831.2019.1596976.

Paper 3

Rasmussen, L-M. P., Patras, J., Handegård, B. H., Neumer, S-P., Martinsen, K. D., Adolfsen, F., Sund, A. M., & Martinussen, M. (*In review*). A validation of the adapted version of the Competence and Adherence Scale for Cognitive Behavioral Therapy (CAS-CBT).