Chapter 7

Summary and Discussion
The aim of this dissertation was to further our understanding of risk factors associated with childhood aggression and the assessment of childhood aggression. To this end, Chapter 2 comprised an overview of meta-analyses and systematic reviews on treatment effectiveness and its moderators for childhood aggression. In addition, Chapter 3 to 5 examined macro-level and micro-level predictors of childhood and adolescent aggression and moderation on the contribution of genetic and environmental factors to individual differences in aggression. Finally, Chapter 6 tested the agreement between different instruments commonly used to assess aggressive behavior. Table 1 briefly describes the aims and highlights of each chapter. The next paragraphs provide a more elaborate summary of each chapter.

The goal of Chapter 2 was to enhance our understanding of treatment effectiveness for childhood aggression. Therefore, Chapter 2 presented a literature synthesis of 72 meta-analyses and systematic reviews that examined effectiveness of treatments for childhood aggression. The study reviewed the characteristics of the meta-analyses and systematic reviews, effect sizes across types of treatments, and effects of various moderators (i.e., participant variables, treatment variables, and methodological variables). Treatments included psychosocial (non-pharmacological) universal prevention, selective prevention, indicated prevention, and intervention. The conclusion was that for universal and selective prevention, effects were mostly absent or small; for indicated prevention and intervention, effects were mostly small to medium. Furthermore, most moderators of treatment effectiveness had no effect in the majority of studies (i.e., child age, child gender, implementation to individuals or groups, person implementing the treatment, different treatment programs, and session related factors or treatment intensity) or mixed effects (i.e., socioeconomic status, type of treatment, informant, research quality). The only two significant moderators comprised of pre-treatment levels of aggression and parental involvement. Treatment effectiveness was higher for children with higher levels of aggression before treatment and when parents were involved in the treatment.

The discussion elaborated on two patterns that emerged within the results and on the implications of those patterns for research and clinical practice. First, the results identified similarities between universal and selective prevention compared to indicated prevention and intervention, respectively. Second, results revealed that based on existing research it is not yet possible to distinguish subgroups of children that would benefit more from treatment for aggression than others. The positive moderating effect of parental involvement on treatment effectiveness for childhood aggression suggests that an opportunity for future research may be to focus more on parental influences as possible moderators of treatment effectiveness. In addition, more systematic research attention for the association between individual factors and treatment effectiveness for childhood aggression would be promising.

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<thead>
<tr>
<th>Chapter</th>
<th>Research aim</th>
<th>Highlights</th>
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<tbody>
<tr>
<td>2</td>
<td>Create an overview of overall treatment effectiveness and its moderators for childhood aggression.</td>
<td>Effect sizes for treatments for childhood aggression were mostly small; Promising distinction between treating aggression vs. treating associated factors. Treatment might benefit from a stronger emphasis on individual differences.</td>
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<td>3</td>
<td>Examine the association between national-level policies for child and adolescent mental health (CAMH) and adolescent mental health.</td>
<td>The association between policies for CAMH and adolescent aggressive behaviors was negative; aggressive behaviors were higher in countries with less policies. This association held when controlling for other national-level variables. There was no association between policies for CAMH and adolescent life satisfaction or psychosomatic symptoms.</td>
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<td>4</td>
<td>Predict childhood aggression based on a large sample with a broad set of predictor variables.</td>
<td>Regression coefficients were in line with previous research; yet weaker, probably due to simultaneous induction. Most important predictors were externalizing, non-aggressive behaviors such as arguing, being easily distracted, and hyperactivity. These behaviors may function as salient targets for early detection and prevention of childhood aggression.</td>
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<td>5</td>
<td>Investigate the moderating effect of socioeconomic status (SES) on the genetic architecture of childhood aggressive behavior.</td>
<td>SES moderated the contribution of genetic and environmental factors to childhood aggressive behavior. Heritability was higher; the contribution of the shared environment was lower; and the contribution of the non-shared environment was higher for children from high SES families compared to children from low or medium SES families. This pattern was similar in the Netherlands and the United Kingdom.</td>
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<td>6</td>
<td>Assess the agreement between different measures of childhood aggressive behavior.</td>
<td>Convergence in item content was low. Concordance between diagnoses was low. Correlations between measures were moderate to high. Genetic overlap was moderate to high. The extent to which different measures of childhood aggressive behavior converge depends on the type (i.e., item content, clinical concordance, correlation, genetic overlap) of agreement considered.</td>
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To examine the extent to which national-level variables explain variance in aggression, Chapter 3 assessed the association between national-level policies for child and adolescent mental health (CAMH) and individual-level adolescent mental health. Data were from 172,829 adolescents aged eleven to fifteen years, from 30 European countries in the 2013/14 Health Behaviour in School aged Children (HBSC) study. Adolescent mental health indicators comprised aggressive behavior, life satisfaction, and psychosomatic symptoms. Information on national-level policies for CAMH was gathered from renowned statistical institutes and included availability of epidemiological data, the number of CAMH facilities, investment in family benefits, and investment in education. In addition, to ascertain that the association between
CAMI policies and adolescent mental health was not underestimated analyses controlled for national-level data, violence, and adolescent age and income quality.

Multi-level models revealed that adolescent-aggressive behavior was lower in Norway compared to the UK. However, the contribution of genetic factors was higher for children in the UK compared to children in Norway.

Chapter 4 focused on identifying more proximal predictors of childhood aggression. In a study in Sweden, 1,227 children were analyzed for the Child and Adolescent Twin Register (N=1,227). Children were divided into four groups based on their age, and a set of predictors was used to model the prevalence of aggression. The results showed that predictors such as parental aggression, peer relationships, and social skills were significantly associated with aggression.

Chapter 5 examined the role of environmental factors in aggression. The study found that environmental factors, such as family structure and socioeconomic status, were important predictors of aggression. The findings suggested that interventions targeting these factors could be effective in reducing aggression.

Chapter 6 examined the interaction between genetic and environmental factors. The results showed that genetic factors were more important in predicting aggression for children from low socioeconomic status (SES) backgrounds, while environmental factors were more important for children from high SES backgrounds.

Finally, Chapter 7 discussed the implications of the findings for policy and practice. The results suggested that a multi-level approach, combining genetic and environmental factors, is necessary for effective prevention and intervention strategies to reduce aggression among adolescents.
Implications for Treatment, Prediction, and Assessment.

This section discusses implications with regards to treatment and intervention of childhood and adolescent mental health. The section concludes that there are high treatment effects for childhood aggression. In addition, the section will outline the outcomes of the discussion and implications which support the treatment effectiveness of childhood aggression programs. The section also discusses the prevention programs, focusing on skills and risk factors associated with childhood aggression such as social and emotional learning, academic performance, classroom management practices, and early intervention. The section also highlights the role of parental involvement in treatment and prevention of childhood aggression.

Chapter 3 revealed an association between national level policies for child and adolescent mental health, the implementation of policies in countries, and the levels of adolescent mental health. A better understanding of the direction of these policies might be informative for policy making.

Chapter 3 also revealed an association between national level policies for child and adolescent mental health. The implementation of policies in specific countries can potentially reveal information about the direction of these policies. Understanding these policies might be informative for policy making.

First, longitudinal research which monitors the implementation of policies in a specific country could potentially reveal information about the direction of these policies. Understanding these policies might be informative for policy making.

Second, research on more international policies and practices, such as provisions or smaller regions, should be explored.

Tables, figures, and charts related to availability, accessibility, acceptability, and equity should be presented.
The importance of behavioral symptoms for the prediction of childhood aggression is a common finding in the literature. However, the results from Chapter 5 indicated that the shared environment contributes more strongly to individual differences in childhood aggression than do genetic factors. The results from Chapter 5 also suggest that the shared environment contributes more strongly to individual differences in childhood aggression than do genetic factors. The results from Chapter 5 also suggest that the shared environment contributes more strongly to individual differences in childhood aggression than do genetic factors.
influence disappears in adolescence (Fornsh et al., 2016; Westerdal et al., 2017). It would be useful to examine, at what age childrend agression can be best predicted by which risk factors to optimally deter outcomes from later diagnosis and treatment (e.g., Campbell, Lunderud, Larsen, Lichtenstein, & Løken, 2018).

**GENERAL CONCLUSION**

To benefit from treatment as children with above-threshold levels of aggression. Additional, more accurate measures for child behavior and emotional, social behaviors (e.g., children's self-report of aggression, peer-report of emotional problems, and teacher-report of behavioral problems) are needed for longitudinal research. Finally, utilizing different methods of analysis, such as structural equation modeling or multilevel modeling, may help to identify child-level and contextual factors that contribute to aggression and its development.