First, focusing on the country level, Chapter 3 examines the association between adolescent aggressive behavior and national level policies for child and adolescent mental health in 30 European countries. Data are from the 2013/2014 Health Behaviour in School Aged Children (HBSC) study, which includes 172,829 eleven to fifteen year olds from 30 European countries (Currie et al., 2014, 2012). To assess whether the association between child and adolescent mental health policies (Erskine et al., 2017; Eurostat, 2016; OECD Social Policy Division, 2016; Signorini et al., 2017) and adolescent mental health varies across indicators of adolescent mental health, the study included adolescent life satisfaction and psychosomatic symptoms, in addition to adolescent aggressive behavior.

Second, after a focus on country level predictors, Chapter 4 focuses on proximal predictors of childhood aggression. To this end, I analyze data from 62,227 children from the Child and Adolescent Twin Study in Sweden (Anckarsäter et al., 2011) and the Netherlands Twin Register (Van Beijsterveldt et al., 2013). The outcome is a psychometrically harmonized physical/overt aggression score for 9 year old children (Luningharn et al., submitted). Predictor variables include demographics, prenatal characteristics, physical development, family environment, parenting, parental education level, life events, and behavioral symptoms. Simultaneous assessment of these predictors provides insight into the relative importance of each predictor variable in relation to other predictors. The large sample allows for sophisticated analysis steps in independent parts of data. These steps include 1) exploratory data analysis and tuning meta parameters for the data mining, 2) fitting increasingly complex data mining models to assess which predictors have which type of effects (i.e., linear, non-linear, interaction), 3) assessment of model performance and importance of predictor variables, and 4) a confirmatory prediction model of childhood aggression that integrates the results of the data mining analyses. As such, the analyses allow us to explore the type of effects of predictor variables and examine their effects simultaneously to obtain a robust prediction of childhood aggression.

Third, to explore complexity in the etiology of childhood aggression due to gene-environment interaction, Chapter 5 examines a possible moderator of the contribution of genetic and environmental variables to individual differences in childhood aggressive behavior. Chapter 5 investigates the moderating effect of socioeconomic status (SES) on the genetic architecture of childhood aggression in large samples of 7 year old twins from the Netherlands Twin Register (N = 24,112; Van Beijsterveldt et al., 2013) and the Twins Early Development Study (N = 19,644; Haworth, Davis, & Plomin, 2013) from the United Kingdom.

The advantages of consortia such as ACTION are that they make efficient use of a wealth of existing data, combine experts from different backgrounds, and increase generalizability through examination of different samples. Also, combining samples allows us to answer new questions compared to single-cohort studies. Nevertheless, it induces heterogeneity, for instance, because data are collected with different research purposes and consequently cohorts vary in their instruments to assess aggression. In ACTION, several cohorts participate, such as the Child and Adolescent Twin Study in Sweden (CATSS, Anckarsäter et al., 2011), the Netherlands Twin Register (NTR, Van Beijsterveldt et al., 2013), and the Twin Early Development Study (TEDS, Haworth, Davis, & Plomin, 2013). These cohorts use various instruments to assess childhood aggression, among which are the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach, Ivanova, & Rescorla, 2017; Achenbach & Rescorla, 2001) and the Strengths and Difficulties Questionnaire (Goodman, 2001; Goodman & Scott, 1999). It is unclear to what extent this heterogeneity affects comparability of results across cohorts, and how to best deal with heterogeneity due to different measures for childhood aggression.

Therefore, Chapter 6 examines the agreement between different measures of aggressive behavior in Chapter 6. The sample consists of 1,254 twin pairs from the Netherlands Twin Register for whom mother and father reports are available on aggressive behavior as assessed with the Autism-s, attention deficit hyperactivity disorder, and other comorbidities (A-TAC; Hansson et al., 2005), the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001), and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). This study assesses agreement between these measures with regard to convergence of their item content, concordance at the recommended clinical cutoff, correlation among the scores of the different scales, and the extent to which they measure the same underlying genetic mechanisms.

Finally, Chapter 7 provides a discussion of the results from this dissertation with the aim to improve the development and implementation of treatment and prevention programs for childhood aggressive behavior. Moreover, Chapter 7 translates the findings of this dissertation into its implications for our understanding of childhood aggression, its risk factors, and assessment. To this end, Chapter 7 provides a summary, a discussion of the implications, and a general conclusion of this dissertation.