Treatment, prediction, and assessment of childhood aggression

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2019

document version
Publisher's PDF, also known as Version of record

Link to publication in VU Research Portal

citation for published version (APA)
Chapter 7

Summary and Discussion
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 childhood 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.

Table 1. Research aim and highlights of each chapter.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Research aim</th>
<th>Highlights</th>
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<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 inclusion. 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 nonshared 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...
behavior in 7-year-old children. Data were from the Netherlands Twin Register (NTR) and the Twin Early Development Study (TEDS) from the UK, both of which utilized the BSID-III to assess infant cognitive and motor development and the CBCL to assess behavioral problems. Multivariate analyses revealed that the proportion of variance in externalizing behavior explained by genetic factors was higher in twins than in their parents, and that the genetic effects were similar across sites. However, the proportion of variance explained by environmental factors was higher in the UK than in the Netherlands, suggesting that genetic factors may play a larger role in the development of externalizing behavior in the UK. Further, the contribution of shared environmental factors was lower in the UK than in the Netherlands, indicating that the environmental influences on externalizing behavior may be more specific to the cultural context. Overall, these findings suggest that genetic and environmental factors contribute to the development of externalizing behavior, and that the relative contributions of these factors may vary across different cultural contexts. The results of this study have implications for the development of interventions aimed at reducing externalizing behavior in young children. Future research should continue to examine the genetic and environmental influences on externalizing behavior in different cultural contexts.
yielded higher agreement (i.e., moderate to strong) than clinical cut-off scores. Genetic correlations ranged from weak to very strong, which generally indicated high overlap in underlying genetics between the different measures of aggressive behavior. Unlike observed correlations, such as the analyses of clinical concordance and correlation in the present study, genetic correlations were not influenced by measurement error. Therefore, the high genetic correlations may suggest that if we were to account for measurement error, the constructs that underlie the different measures of aggressive behavior in the present study were highly consistent.

Implications for Treatment, Prediction, and Assessment
This section discusses implications with regards to improvement of development and implementation of treatment and prevention programs for childhood aggression. In addition, this section will translate the outcomes of this dissertation into implications with regards to the assessment and prediction of childhood aggression. Chapter 2 concluded that general treatment effects on childhood aggression were weak. Nevertheless, the treatments may have positively affected children or their families on other aspects than aggressive symptoms. Many of the treatments, especially the prevention programs, focused on skills and risk factors associated with childhood aggression such as social and emotional learning, academic performance, or classroom management for teachers (Durik et al., 2011; Weisz et al., 2011; Park Higgerson, Perumean Chaney, Bartolucci, Grimley, & Singh, 2008). In addition, found treatment effects were larger for social and emotional learning and academic performance than for childhood aggression (e.g., Durik et al., 2011). Because Chapter 2 did not consider such outcomes of treatment effectiveness for childhood aggression, the effectiveness of treatments for childhood aggression might be more promising than our findings suggest. Childhood aggression is associated with many adversities and other psychosocial problems (Bartels et al., 2018), burden for parents, and high financial costs for society (Meitner, Ford, Goodman, & Vostanis, 2011; Riverbank et al., 2018; Roberts, McCroy, Joffe, de Lima, & Viding, 2017). Although treatments may not have been effective in reducing aggression, they may have been effective for comorbid problems, indirectly preventing the aggravation of childhood aggression. Future studies examining the direct and indirect effects of treatments for childhood aggression would be promising.

In addition, Chapter 2 revealed that a significant moderator of treatment effectiveness for childhood aggression was parental involvement. Parents are important because they shape the environment in which children grow up. If parents suffer from emotional or behavioral problems, this may disrupt their parenting behaviors (Belsky, Hsieh, & Cunic, 1998; Berg Nielsen, Vikan, & Dahl, 2002). Prior research suggests that treatments that solely focus on the parents' emotional and behavioral health, in which children are not involved, positively affect their children (Hudziak & Ivanova, 2016; Ivanova, Dewey, Swift, Weinberger, & Hudziak, 2019). Parental psychopathology is associated with higher child psychopathology (Wesseldijk, Dielemans, van Steensel, Bleijenberg, et al., 2018). Moreover, children with behavioral problems and parents with a psychiatric disorder have worse longitudinal outcomes than children with behavioral problems with parents that do not have a psychiatric disorder (Roetman et al., 2019). Conversely, parents of children with behavior problems are at higher risk for a psychiatric disorder (Wesseldijk, Dielemans, van Steensel, Bartels, et al., 2018). Additionally, because of the strong contribution of genetic factors to individual differences in aggression (Burt, 2009; Tuivblad & Baker, 2011; Waites, Chiocchetti, & Freitag, 2016), it is not unlikely that parents of children with (symptoms of) aggression show aggression-related symptoms themselves (Frick et al., 1992). Altogether, these findings support the importance of parental involvement in treatment for childhood aggression. This suggests that it would be beneficial to screen for parental psychiatric disorders for the treatment of childhood behavior problems (Roetman et al., 2019; Wesseldijk, Dielemans, van Steensel, Bleijenberg, et al., 2018). A better understanding of direct and indirect treatment effects and the contribution of parental influences to treatment effectiveness for childhood aggression would be promising and could be informative for policy making.

Chapter 3 revealed an association between national level policies for child and adolescent mental and adolescent mental health. For further advancement of our understanding of this association, two approaches might be beneficial. First, longitudinal research which monitors the implementation of policies in countries and levels of adolescent mental health before and after the implementation of a specific CAMH policy may potentially reveal information about the direction of effect (e.g., better adolescent mental health as a result of more policies for child and adolescent mental health or vice versa). Longitudinal research also allows assessment of changes over time in the association between policies for child and adolescent mental health and adolescent mental health (e.g., some policies might become increasingly effective over time, or policies may lose their impact over time). To illustrate, it may take time before an increase in child and adolescent mental health services affects child and adolescent mental health, because it may take time for services to accommodate to the needs of children and adolescents and overcome barriers related to availability, accessibility, acceptability, and equity (Taylor, Haier, Graham, Churchill, & Sanci, 2007).

Second, research on more intermediate geographical levels, such as provinces or smaller regions, in addition to our country level analyses, might reveal a stronger association between policies for child and adolescent mental health and adolescent mental health. Indeed, the implementation of policies for child and mental health...
As demonstrated in Chapter 4, children with higher levels of aggression were more likely to have a higher probability of interparental violence, peer aggression, and psycho-physiological factors. The results from Chapter 5 indicated that the shared environment contributes more strongly to individual differences in aggression in children from low and medium SES backgrounds. The finding suggests that children from low and medium SES backgrounds, who are more likely to experience more stressful life events and have less access to positive social attachments (Bremer, 2006; Burt et al., 2004), are more likely to display aggressive behavior. In contrast, children from high SES backgrounds, who are more likely to experience less stressful life events and have more access to positive social attachments (Bremer, 2006; Burt et al., 2004), are less likely to display aggressive behavior.
influence disappears in adolescence (Porsch et al., 2016, Wesneska et al., 2017). It would be useful to examine at what age childhood aggression is best predicted by which risk factors to optimally detect children most likely to become aggressive early enough to prevent worse outcomes from later diagnosis and treatment (e.g., Campbell, Lutudent, Lansan, Lichtenstein, & Elger, 2018).

**General Conclusion**

The research in this dissertation, especially in Chapters 3, 4, 5, and 6, focused on the more overt and physical types of aggression. Nonetheless, childhood aggression may take other forms, such as indirect or relational aggression. These types of aggression do not occur in direct confrontation, as is the case for fighting or bullying, but may occur in social interaction. Rosenberg (2003, p. 10) notes that “social aggression such as manipulation or social exclusion may be the predictors for childhood aggression found in Chapter 4, such as lying, being easily distracted, and hyperactivity. These social skills have been found to be useful for early detection and treatment of different types of aggression.”

The conclusions are not as clear, however, the longitudinal research may reveal the direction of effect, such as whether the predictors in Chapter 3 and Chapter 4 are a cause or an effect of higher levels of aggression. In addition, the chapter did not allow for an examination of developmental trajectories of childhood aggression. A cross-sectional study of different childhood aggression trajectories across age groups has different developmental stages with accompanying ADHD, which is a result of socioeconomic background. High levels of aggression are likely to occur more often in young children who have been diagnosed with ADHD. Further, the longitudinal data of the children diagnosed with ADHD are used for comparison with the non-ADHD group. The research indicates that children with ADHD may have higher levels of aggression than their non-ADHD counterparts. It is important to note that the findings cannot be generalized to other populations. However, the study provides insight into the potential mechanisms underlying childhood aggression and helps to understand the complex nature of this phenomenon.