General discussion
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Introduction
The studies in this thesis aimed to enhance our understanding of the concept of psychopathic traits in preadolescent children. They did so in two ways. First, through the development of a self-report instrument for measuring psychopathic traits in preadolescent children and second, by providing a deeper understanding of problematic socio-emotional functioning of children with psychopathic traits.

Self-reported psychopathic traits
The aim of the first three studies in this thesis was to develop and validate a new instrument for measuring psychopathic traits in preadolescent children by means of self-report: the Youth Psychopathic traits Inventory-Child Version (YPI-CV) and its abbreviated version, the YPI-Short Child Version (YPI-SCV). The results with respect to the instrument’s reliability, stability and construct validity confirmed the hypothesis that psychopathic traits can be measured reliably and validly through self-report in preadolescent children from the community (chapters 2 and 3).

Internal consistency and factor structure – A three factor structure, similar to that of the adolescent YPI and consistent with recent theoretical models (Cooke & Michie, 2001) was shown to fit the data well, in both boys and girls. Good to excellent internal consistencies were found for the YPI-CV total score and the three dimensions (chapter 2).

Stability – Moderate to high stability was found for the total score and all dimension scores of the YPI-CV over 6- and 18 month periods (chapters 2 and 3). These stability indices are comparable to previous findings in both adolescents and children (Barry et al., 2008; Dadds et al., 2005; Forsman, Lichtenstein, Andershed, & Larsson, 2008; Munoz & Frick, 2007). Additionally, children with persistently high levels of psychopathic traits exhibited higher levels of problematic behaviors (conduct problems and proactive aggression) at follow-up (18-month-period) than those with unstable or stable low psychopathic traits (chapter 3). These findings are consistent with the results of recent studies that found high stability of psychopathic traits to predict seriousness of antisocial behavior in adolescents (Pardini & Loeber, 2008) and a worse outcome of a parent-training intervention in clinic-referred preadolescent boys (Hawes & Dadds, 2007).

Construct validity – The construct validity of the YPI-CV was assessed in two ways. First, the three dimensions of the YPI-CV were differentially validated by relating each of them to an external criterion measuring a similar, a-priori selected, construct (e.g. narcissism for the grandiose-manipulative dimension). The expected unique relationships between each of the three dimensions and their respective counterparts were
found in both boys and girls (chapter 2). Second, we provided additional evidence for the construct validity of the YPI-CV by showing concurrent and prospective associations between self-reported psychopathic traits and behaviors that have typically been associated with these traits in all age groups: conduct problems and aggression (chapter 3). As expected, self-reported psychopathic traits were related to higher rates of self, peer and teacher reported conduct problems both concurrently and at follow-up, 18 months later, even after controlling for initial levels of conduct problems. Self-reported psychopathic traits were also associated with higher levels of self-reported aggression at follow-up, particularly proactive aggression. These findings are again consistent with previous research in various age groups (e.g. Andershed et al., 2002; Christian, Frick, Hill, & Tyler, 1997; Dadds et al., 2005; Flight & Forth, 2007; Hare, 2003; Lynam, 1997; Porter & Woodworth, 2006; Waschbusch & Willoughby, 2008).

The research described in chapter 4 concerned the development of psychometrically sound and comparable short versions of both the adolescent and child YPI instruments. Step-wise parallel reduction of the items of both questionnaires resulted in two highly similar 18 items YPI short versions (YPI-S and YPI-SCV), which, despite the removal of around two-thirds of the items, were reliable and covered all core characteristics of the psychopathic personality construct. The short versions showed high convergence with the original long instruments and similar correlations to external criterion measures were found for both the long and short versions. Moreover, these findings cross-validated from one sample to another.

To conclude, even though some authors have expressed concerns about the possible lack of reliability of self-report of psychopathic traits in preadolescent age groups (Kamphaus & Frick, 1996) the present research shows that children in this age group can in fact, be considered reliable and valid reporters of psychopathic traits. Self-reported psychopathic traits in this age group form a coherent structure in both boys and girls, are stable over time, and relate to a range of problematic functioning variables both concurrently and prospectively, consistent with theoretical models and previous empirical work.

Implications for clinical practice and future research – A number of the results from chapters 2 through 4 may have relevance for clinical practice and future research. With respect to clinical practice, although the YPI and its child version were developed primarily as research instruments, they may prove to be useful as clinical assessment tools as well (e.g. Poythress, Dembo, Wareham, & Greenbaum, 2006; Wareham, Dembo, Poythress, Childs, & Schmeidler, 2009). In fact, our group has begun to test the utility of the short version of the adolescent YPI (YPI-S; chapter 4) as part of a risk and mental health screening battery in a juvenile justice institute in The Netherlands. With respect to future research, the YPI instruments may be well suited for longitudinal research. Numerous studies in adolescence and children, including those in the current thesis, have shown that psychopathic traits are stable.
over time and present similarly across age groups. Despite these indications, one key question has yet to be answered: do children with high psychopathic traits grow up to be adults with high psychopathic traits? The answer to this question lies in the study of psychopathic traits over the lifespan. The YPI instruments could prove to be particularly serviceable tools for this type of research, because short and almost identical questionnaires are now available for children and adolescents. These studies could even reach into adulthood as there is some support for the applicability of the YPI in adults (Kansi, 2003). Moreover, the use of a self-report measure avoids problems related to external rater variance that is likely to complicate research. For example, teachers change mostly yearly. With regards to parents, variance occurs due to their own individual development over time but also the changing relationship to their children.

An interesting recent development, unique to the child and adolescent psychopathy literature, is the synonymous use of the term psychopathy to one of its dimensions: the callous and unemotional traits (CU, Frick & White, 2008). This has led some authors to abandon the other two dimensions in the study of psychopathy in youth (e.g. Burke, Loeber, & Lahey, 2007; Essau, Sasagawa, & Frick, 2006; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Frick & White, 2008; Waschbusch, Walsh, Andrade, King, & Carrey, 2007). In the current thesis, the relationships between the three YPI-CV factors and criterion variables were reported on in chapters 2, 3 and 6. The investigation of the unique position of the CU dimension within the construct of childhood psychopathy was neither a main research goal, nor a consistent finding. In fact, for a number of reasons, it may be argued not to abandon of the study of full-faceted psychopathy in children, and to continue the use of instruments that provide information on all factors. First, several studies in children and youth have shown the cluster with high scores on all factors of psychopathy, rather than those high on just one or two factors, to demonstrate the highest levels of societally harmful behaviors. This finding was consistent over age group, sample (e.g. forensic and community) and instrument (Andershed et al., 2002; Andershed, Kohler, Louden, & Hinrichs, 2008; Christian et al., 1997; Dolan & Rennie, 2006; Vincent, Vitacco, Grisso, & Corrado, 2003; Wareham et al., 2009). Moreover, various studies in children and youth have shown evidence for the importance of the total psychopathy score for predicting serious problem behavior (e.g. Lynam, 1997; Piatigorsky & Hinshaw, 2004) chapter 3 and 5 of the current thesis) and emotional and cognitive irregularities (e.g. Blair, 1999; Blair, Budhani, Colledge, & Scott, 2005; Blair & Coles, 2000; Blair, Colledge, Murray, & Mitchell, 2001; Sharp, van Goozen, & Goodyer, 2006). Second, the presence of subtypes within psychopathy has been well established in adults (e.g. primary versus secondary psychopath; Karpman, 1948) and is gaining acceptance in adolescence as well (e.g. Wareham et al., 2009). This subtyping is based, in part, on differences in the relative importance of the dimensions (e.g. secondary psy-
chopathy being characterized by higher impulsivity; Ray, Poythress, Weir, & Rickelm, 2009). By abandoning the dimensions other than the CU, we restrict our focus to one particular subtype of children ‘high in psychopathic traits’ and may risk overlooking the existence of other important subgroups.

**Future research** – A number of questions regarding the YPI-CV remain unanswered and require further investigation. For example, the added value of self-report to third party reports has yet to be established. While our results show the self-report of psychopathic traits to be reliable and valid in children, previous research has shown that parent/teacher reports measure psychopathic traits reliably and validly as well (e.g. Christian et al., 1997; Dadds et al., 2005; Kimonis, Frick, Fazekas, & Loney, 2006; Lynam, 1997; Piatigorsky & Hinshaw, 2004). Future research could, therefore, compare the relative importance of judgments provided by each type of informant. Moreover, it would be worth investigating whether pooling information from multiple sources (i.e. parents, teachers and children) has greater diagnostic and predictive power than relying on a single source alone (Frick & Hare, 2001). Chapter 3 suggested that another way to potentially increase the predictive utility of psychopathic traits is to make use of repeated assessments rather than a single one. Future studies could investigate the optimal period between two assessments. One could, for instance, imagine that a test-retest-period of one week will not likely add much predictive power, while a one year period may be impractical for assessment purposes.

**Psychopathic traits and socio-emotional functioning in children**

Chapters 2 through 4 confirmed the viability of self-report, by means of the YPI-Child Version and its abbreviated version, for measuring psychopathic traits in preadolescent children from the community. This allowed for the use of these measures for a more in-depth investigation into how psychopathic traits relate to problematic socio-emotional functioning in this group. This was the aim of the remaining studies (chapters 5 and 6).

Chapter 5 aimed to investigate the relationship between psychopathic traits, measured through the short version of the YPI-CV (YPI-SCV, chapter 4), to social functioning. This is important because various indicators of problematic social adjustment (e.g. low social standing, low social problem solving skills, poor perspective taking skill) are known to predict future psychological maladjustment and antisocial behaviors and aggression (Hoglund et al., 2008; Lochman & Lampron, 1986; Lochman & Wayland, 1994; Lochman et al., 1993; Moffitt, 1993, 1996; Parker & Asher, 1987; Pardini et al., 2006). As children with psychopathic traits are already at risk for an antisocial development, problematic social functioning may further exacerbate psychopathic traits (Barry et al., 2008). The few previous studies investigating this relationship, though ground setting, have studied only a narrow range of social functioning variables. Also, they had a limited focus on the differential relationship
of the different psychopathy factors to social functioning. In our study, children with psychopathic traits proved to be less able and willing to empathize with others, had egocentric and instrumental motivations for acting kind to other children, and strived for dominance, admiration and respect from their peers rather than affiliation. Not surprisingly, they were not well liked by their peers. Thus, children with high psychopathic traits suffered from impaired social functioning on different levels: emotionally, motivationally and interpersonally. Callous-unemotional traits showed the most consistent negative relationship.

Previous research, including chapter 3 of the present thesis, has shown that psychopathic traits are positively related to aggression. However, the conditions under which these aggressive acts are likely to occur in children with psychopathic traits are not well understood. In chapter 6 we proposed that children with high psychopathic traits are aggressive because of their reduced sensitivity to other’s distress. Emotional cues, such as fear and sadness, function to make a perpetrator aware of the victim’s distress and supposedly inhibit aggression. As children high in psychopathic traits show a reduced sensitivity to others’ distress, these important interpersonal signals cannot perform their aggression inhibiting function. In our experimental design, children with high levels of psychopathic traits administered ‘blasts’ of noise to their opponents that reached well above the level that was previously explicitly described as “hurting the opponents’ ears”. However, when the distress of the opponent was made salient, their aggression was reduced to levels that did not differ from their counterparts with low psychopathic traits. Our experiment thus showed that children with psychopathic traits are indeed prone to act aggressively, but that their aggression can be attenuated by stimulating them to focus on their victim’s pain and discomfort.

Implications for clinical practice – Our findings from chapters 5 and 6 may bear clinical relevance, particularly for future treatment programs of conduct problems and psychopathy. At present, little data is available on the treatment of psychopathic traits and their behavioral consequences in children. The available research has, however, shown the presence of psychopathic traits to be relatively resistant to parenting efforts (Edens, Skopp, & Cahill, 2008; Oxford, Cavell, & Hughes, 2003; Wootton, Frick, Shelton, & Silverthorn, 1997) and to negatively influence the effectiveness of a parent-training intervention (Hawes & Dadds, 2005). Children with high psychopathic traits may thus require parenting skills and treatment that go above and beyond what has proven effective for related constructs such as ODD and CD. One type of behavioral problems that is typically associated with psychopathic traits is aggression (Dadds et al., 2005; Frick, Cornell, Barry, Bodin, & Dane, 2003; Frick et al., 1994; Marsee et al., 2005; chapter 3 of the present thesis). In chapter 6 we demonstrated that aggression could be diminished to normal levels if children with high psychopathic traits were
stimulated to focus on their victim’s pain and discomfort (i.e. an empathy induction). The results of a recent study by Dadds et al. (2006) are consistent with our findings, and suggest that a better understanding and awareness of a victim’s emotional situation may be an important mediating factor in this process. These authors demonstrated that in boys with high psychopathic traits the instruction to focus on emotional cues in others (i.e. pay attention to the eyes region) increased their distress (i.e. fear) recognition abilities in the immediate situation. These, and our, results suggest that it is possible to stimulate emotion recognition capabilities as well as normative emotional and behavioral responses in children with psychopathic traits. One can speculate on how these findings may fuel the intervention programs of tomorrow. For example, parents of children with high psychopathic traits could be stimulated to focus the attention of the transgressing child on the feelings of the victim by heightening the salience of the victim’s distress and emphasizing the responsibility of the transgressing child in causing these feelings (an empathy inducting parenting style, Hoffman, 2000). Additionally, emotion (recognition) skills teaching could be part of a personal curriculum in the preadolescent school years for children with high psychopathic traits (Sharp, 2008). It is essential for these types of interventions to take place early in the developmental trajectory when interventions are more effective (Loeber & Farrington, 2000). The development of effective intervention strategies to tackle the emotional problems of children with psychopathic traits may require many more years of additional research. Meanwhile, another potentially effective approach may be taken. In chapter 5, we identified a number of variables relevant to the social functioning of children with psychopathic traits. As recent research has shown that problematic social functioning aggravates psychopathic traits in children (Barry et al., 2008), social emotions, social goals and social status may be important targets for intervention, in order to prevent negative chain reactions that may worsen the prospects of these children even further. These types of interventions, which focus on peer-relations, social emotional functioning, or social cognitions, are already available for children (e.g. Greenberg, Kusche, & Mihalic, 1998; Lochman & Wells, 2002; Grizenko, Zappitelli, Langevin, Hrychko, El-Messidi, Kaminester, Pawliuk, Ter Stepanian, 2000) and can readily be applied to the group of children with high psychopathic traits. Alternatively, ‘standard’ ODD/CD treatment programs that employ cognitive behavioral strategies aimed at multiple levels (children, parents and, in some cases, schools) may also be used for children with psychopathic traits. It is important to note that the reported negative effect of psychopathic traits on treatment success of an ODD parent training program (Hawes & Dadds, 2005) does not imply that children with high psychopathic traits will not at all benefit from this type of intervention. In fact, Hawes & Dadds (2007) reported a moderate to large positive change (d=.57) in parent-reported psychopathic traits from pre- to 6-month post-treatment for their ODD/CD parent training program.
Future research – The studies in chapter 5 and 6 aimed at a better understanding of developmental mechanisms and processes that may be useful for interventions. However, the direct implications of these findings are still speculative and many issues need to be addressed in future research. For example, more research is needed on the, most likely, complex interaction between psychopathic traits, social relationship problems, and problematic behaviors such as aggression. For example, relational aggression and social status are known to reciprocally influence each other (Puckett, Aikins, & Cillessen, 2007). Low peer status has been shown to result in higher aggression (Cillessen & Mayeux, 2004), but the reverse is also true (Newcomb, Bukowski, Pattee, 1993). Indirect meditational relations between social functioning and problematic behaviors have been shown as well. For example, social responses such as aggression and prosocial acts mediated the relation between social goals (communal and agentic) and peer status (Ojanen, Gronroos, & Salmivalli, 2005). Regarding our findings in chapter 6, one could well imagine high psychopathic traits to be the starting point of a reduced need for affiliation with others and an instrumental attitude toward social relationships, which could then directly, or indirectly through its contribution to aggressive and antisocial behaviors, result in negative peer perception. As low peer status has been shown to intensify the development of psychopathic traits (Barry et al., 2008), a self-perpetuating downward spiral of psychopathic traits, social functioning and behavior might be the result. Future studies should further investigate these complex transactional models to find ways to break this cycle. In chapter 6 it was demonstrated that increasing the salience of the opponent’s distress results in lower levels of aggression. However, the exact mechanism through which this happened was not directly examined. Both automated affective responding, cognitive perspective taking or a combination of the two could have played a role in the relation between distress and empathic responding (i.e. the inhibition of aggression). Future research should investigate the mediating role of cognitive and affective forms of empathy (reduced sensitivity to others’ feelings) in the relation between psychopathic traits and aggressive behaviors. (Chapter 5 showed children with high psychopathic traits to be impaired in both). Importantly, our experiment showed that aggression could be momentarily reduced after an empathy induction in children with high psychopathic traits. For this finding to have relevance for future treatment programs, it will need to be demonstrated that repeated empathy inductions (i.e. an empathy inducting parenting style) attenuates aggressive behaviors in the long run and outside of the laboratory.

Strengths, limitations and cautionary notes

A strength of the current thesis is that we used different informants and methodologies to investigate psychopathic traits in children. Consistent relations with self-report, teacher report and peer report of criterion measures were found, which attests
to the robustness of our findings. Furthermore, we used not only questionnaires, which are inherently subjective, but also performance measures of both aggression (chapter 5) and empathy (chapters 2 and 6). Finally, we provided cross-sectional as well as longitudinal data on the relationship between psychopathy and aggression.

Despite these strengths, the findings in this thesis need to be valued in the light of a number of limitations. First, the YPI and its child version were constructed specifically to minimize response bias by expressing items in a positive tone (Andershed et al., 2002). However, response bias was not empirically tested in the current thesis, or any previous study. Second, the follow-up period of our longitudinal study was rather modest. It would be worth investigating predictive utility of self-reported psychopathic traits over a longer period and, particularly, across developmental stages (i.e. from childhood to adolescence). Third, we studied psychopathic traits in community samples, and whether our findings generalize to high-risk or clinic-referred samples remains to be demonstrated. It should, however, be noted that studies investigating psychopathic traits in children in community samples have generally produced quite similar results to clinic-referred, or high-risk samples. Specifically, the adolescent equivalent of the YPI-CV has shown to be reliable and valid in community as well as forensic samples (Andershed et al., 2007; Andershed et al., 2002; Larsson et al., 2007; Poythress et al., 2006; Skeem & Cauffman, 2003; Wareham et al., 2009). Nonetheless, the validity of the YPI-CV will need to be formally substantiated in other samples. Finally, the YPI-CV instrument was developed as a research instrument and the current thesis only supports its reliability and validity at the group-level. Research has shown that instruments making accurate predictions of, for example, future violent behaviors on group-level can be quite inaccurate on the individual level (Hart, Michie, & Cooke, 2007). As such, one should be very cautious when using the YPI instruments to draw inferences about future behavior of individual children.

The study of psychopathic traits in children is not without debate (e.g. Edens, Skeem, Cruise & Cauffman, 2001; Seagrave & Grisso, 2002). Legitimate concerns have been raised regarding the potential harm of the use of the psychopathy-label, which has a particularly negative connotation, to children and adolescents. Therefore, one has to be very careful to avoid labeling children as ‘psychopathic’ or ‘psychopath’. Instead, we have been careful to use ‘psychopathic traits’ throughout this thesis. Another concern bears on the danger of mistaking transient, developmentally normative, behaviors as psychopathic. Seagrave and Grisso (2002) expressed concerns about the danger of high numbers of false positives when using current psychopathy measures in youth. They argued that a number of behaviors, such as impulsivity, risk-taking and self-centeredness, which are normative and transient phenomena in normal adolescent development, could wrongfully be interpreted as reflecting psychopathic tendencies. By contrast, others (Frick, 2002; Frick & Marsee, 2006) have argued that the assessment of psychopathic traits in children and adolescents is
wrongfully regarded as uniquely problematic compared to other psychopathological constructs. Normative developmental stage issues play a role in most, if not all, child psychopathologies and normative variants of the ‘symptoms’ of a disorder are also commonly found (Cicchetti & Richters, 1997). To conclude, although it is important for researchers, mental health professionals and those involved in the juvenile justice system to be sensitive to the potential dangers of the label ‘psychopathy’ in youth and children, current insights, including those presented in this thesis, underscore the need to continue research in this important and fascinating field of study.