Summary and Discussion

The general aim of this thesis was to examine the problem behavior and socio-emotional competence of internationally adopted adolescents, and to investigate the influence of early, middle childhood and concurrent factors. Research on adopted children and adoptive families is carried out to obtain specific knowledge on the adjustment of adopted children and to improve the assistance and resources for the families involved. Moreover, research on adopted children and adoptive families is carried out to investigate influences of child-rearing or social-interactive factors on the development of all children, independent of shared genetic factors between children and parents. In families with biologically related parents and children, the associations between parent-child variables and parent variables on the one hand and child variables on the other hand, may always be affected by the genetic link between child and parent, instead of parenting influences. Studies with adopted children make it possible to examine the unique contributions of parenting variables to children’s development excluding of the influence of genetic similarities.

The first study (Chapter 2) examined the prevalence of problem behaviors in samples of adolescents who were adopted from a foreign country as infants or young children and explored the domains in which any problems were manifested (Bimmel, Juffer, Van IJzendoorn, & Bakermans-Kranenburg, 2003). A meta-analysis of ten studies (N = 2,317 internationally adopted adolescents) showed that internationally adopted adolescents did exhibit more behavior problems than did non-adopted adolescents (d = 0.08, p < .05), with the difference revealed in externalizing (d = 0.11, p < -.001) but not in internalizing (d = 0.05, p = 0.12) behavior problems. However, according to conventional criteria, the effect sizes were very small. In the sample of internationally adopted adolescents of the longitudinal study described in the current thesis (N = 177 internationally adopted adolescents; Chapters 3 and 4), we also found more behavior problems in the adopted adolescents (d = 0.44, p < .001), with the difference revealed in both externalizing (d = 0.50, p < .001) and internalizing (d = 0.25, p < 0.001) behavior problems. The effect sizes were small to medium and were larger than the effect sizes found in the meta-analysis. In a meta-analysis of 47 studies (N = 15,790 internationally adopted children), Juffer and Van IJzendoorn (2005) also found more total behavior problems (d = 0.11, p < .001), more externalizing behavior problems (d = 0.10, p < .001), and more internalizing behavior problems (d = 0.07, p < .001) in internationally adopted children in younger and older age cohorts. However, all effect sizes were very small. It should be noted that the effect sizes found in our sample of internationally adopted adolescents were significantly larger than the effect sizes found in both
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meta-analyses. An explanation of this may be found in the composition of the sample. The sample of adopted adolescents of the longitudinal study included also children who were referred to mental health services or were placed out of home because of problems, whereas many studies do not include these children (e.g., Sharma, McGue, & Benson, 1998). Also, although these children were adopted at a young age (i.e., before six months), unknown risks in their pre-adoption histories, such as pre- or peri-natal risks, may be partly responsible for the over-representation of behavior problems.

Moreover, the meta-analysis presented in the current thesis (Chapter 2) showed that the percentage of internationally adopted adolescents with behavior problems of clinical significance was larger than the percentage of ‘clinical cases’ in non-adopted adolescents (d's: 0.08 - 0.15, p-values < .05; Bimmel et al., 2003). In the sample of internationally adopted adolescents of the longitudinal study described in the current thesis (Chapters 3 and 4), we also found a higher percentage of internationally adopted adolescents who scored in the clinical range compared with non-adopted adolescents (d's: 0.12 - 0.37, p-values < .05). In addition, in this sample we found that more adopted adolescents were placed out of home because of serious difficulties (2.11% compared with 0.25% in non-adopted children, p < .001). In their meta-analysis, Juffer and Van IJzendoorn (2005) found that international adoptees were overrepresented in mental health referrals (d = 0.37, p < .001). Again, the effect sizes found in our sample of internationally adopted adolescents were larger than the effect sizes found in both meta-analyses. The same reasons mentioned before may account for this difference. In all three studies (the two meta-analyses and our study) the effect sizes of the number of clinical cases were larger than the effect sizes of the general behavior problem scores, that is, the differences between adopted and non-adopted children were larger when we considered the percentage of clinical cases. A curvilinear association may be the cause of this, with cumulation of behavior problems on the extreme right side of the distribution (e.g., Juffer & Van IJzendoorn, 2005).

In sum, internationally adopted children and adolescents show somewhat more total, internalizing, and externalizing behavior problems compared with non-adopted children and adolescents, but effect sizes are weak. A higher percentage of internationally adopted children and adolescents have behavior problems of clinical significance and they are overrepresented in mental health referrals. The larger number of severely disturbed (‘clinical’) children may be responsible for the elevated rate of behavior problems in the entire group of internationally adopted children. The majority of the internationally adopted children are well adjusted, although a relatively large minority of adopted children have behavior problems of clinical significance or are referred to mental health services compared with non-adopted children.

However, another reason for the relatively high percentage of referrals among adopted children may be that the threshold to seek professional help might be lower for adoptive parents than for birth parents (Miller, Fan, Grotevant et al., 2000; Warren, 1992). Due to their expectations of the adopted
child (Geerars, Hoksbergen, & Rooda, 1995), adoptive parents may notice or identify problems sooner. In addition, adoptive parents are familiar with social service agencies, which may lower the threshold to seek professional help. Warren (1992), for example, found that adopted adolescents were more likely than non-adopted adolescents to receive psychiatric treatment, even when the level of behavior problems was controlled for (see also Miller, Fan, Grotevant et al., 2000).

Moreover, it should be stressed that adoption itself is not a risk factor in the adjustment of children (Haugaard, 1998; Stams, Juffer, Rispens, & Hoksbergen, 2000). Compared with children who were born illegitimately but remained with their biological mothers (Maughan & Pickles, 1990; Seglow, Pringle, & Wedge, 1972), children who were placed in institutions (Bohman & Sigvardsson, 1990; Colombo, De la Parra, & López, 1992; Tizard & Hodges, 1978; Van IJzendoorn, Juffer, & Klein Poelhuis, 2005), and children who were relinquished for adoption but later restored to their birth parents (Colombo, De la Parra, & López, 1992; Tizard & Hodges, 1978; Hodges & Tizard, 1989a; Hodges & Tizard, 1989b; Van IJzendoorn et al., 2005), adopted children were better adjusted. Since alternative living arrangements for children who were relinquished for adoption would be living in an institution or staying with or being restored to overburdened birth parents, adoption may even be considered as a protective factor (Van IJzendoorn et al., 2005). Furthermore, children who experienced severe deprivation in an institutional setting showed substantial developmental recovery after adoptive placement (Morison, Ames, & Chisholm, 1995; Rutter et al., 1998). Another alternative for children who were given up for adoption is being adopted within the country. However, in their meta-analysis, Juffer and Van IJzendoorn (2005) found that internationally adopted children showed better behavioral and mental health outcomes than locally adopted children. Because of a lack of empirical studies on local adoptions in the developing countries, outcomes of these adoptions are yet unidentified.

In sum, although more adopted than non-adopted children and adolescents are referred to mental health services, adoption may often be the best solution for a child who would otherwise be raised in an institution or in similar adverse environments. Nevertheless, parents, social workers, and other professionals should be aware of the adversity that many adopted children have experienced, and of the influence that such disadvantages may exert on the adopted children’s behavior (Grotevant & McRoy, 1990).

The second study (Chapter 3) examined resting heart rate and its reactivity to a stressful situation in adopted adolescents with aggressive, delinquent, or internalizing behavior problems and adopted adolescents without behavior problems ($N = 151$). This study was the first to assess the association between heart rate and behavior problems in adopted children, who are raised by their biologically unrelated adoptive parents. In non-adoptive families, the parents may transmit a genetic predisposition for, for example, antisocial behavior and/or lower heart rate to their children, and also provide a rearing
environment that provokes or reinforces antisocial behaviors. Therefore, the rearing environment of these children may cause or intensify a possible relation between lower heart rate and antisocial behavior. In adoptive families, genetic influences that predispose children for developing behavior problems are less likely to be intensified by a problematic rearing environment compared to non-adoptive families (Golombok, MacCallum, & Goodman, 2001; Golombok, MacCallum, Goodman, & Rutter, 2002).

Results showed that although there were no significant differences between the groups in resting heart rate, heart rate reactivity to a stressful situation showed rather strong differences. Early-onset delinquents showed heart rate hyporeactivity to a stress-eliciting task compared with late-onset delinquent adolescents and adolescents without behavior problems. Heart rate variability suggested that these differences were in part mediated by differential responses of the parasympathetic nervous system. In their meta-analysis on heart rate and antisocial behavior in children and adolescents, Ortiz and Raine (2004) found a comparable effect size \( (d = 0.76) \) for heart rate reactivity during a stressor. Early-onset delinquents appeared to be less aroused by stress. We found no indications for environmental risk factors such as early-childhood parental sensitivity, parental socioeconomic status, or children’s health status in the first year of life in the childhood-onset delinquent adolescents, pointing to possible neurobiological or genetic biases towards hyporeactivity in these individuals (Bock & Goode, 1996; Carey, 1994). The differences in heart rate reactivity between the late-onset delinquents and adolescents without behavior problems were not significant. Adolescence-onset delinquents may develop in the same way as their non-antisocial peers (Fox, Schmidt, & Henderson, 2000), except for a period in which they are more affected by the typical exploratory and limit-testing behavior of puberty, for example delinquent or antisocial behavior (Caspi & Moffitt, 1995; Moffitt, 1993; Moffitt & Caspi, 2001). Early-onset delinquent behavior may point to a neurobiological or genetic risk for antisocial behavior in children, whereas late-onset delinquent behavior may be more strongly related to environmental risk factors.

The different forms of aggression (early-onset and late-onset aggression) did not show any significant differences in heart rate reactivity. The aggression and delinquency syndromes of the Child Behavior Checklist (CBCL; Achenbach, 1991) thus appear to refer to divergent patterns of problem behavior. Our findings show that delinquency and aggression may follow different developmental trajectories, and that early-onset delinquency— but not aggression—is characterized by stress hyporeactivity. The differentiation between delinquency and aggression, and between childhood-onset and adolescence-onset delinquency (Moffitt, 1993) is crucial for our understanding of the development of externalizing problem behaviors.

In the third study (Chapter 4), internationally adopted children placed before the age of 6 months were followed from infancy to age 14 to assess the continuity of their social development and to examine the relative influence of
early, middle childhood, and concurrent factors on social development in adolescence ($N = 120$). The emphasis was on maternal sensitivity and infant attachment security, attachment disorganization, and temperament as predictors in early childhood, and maternal sensitivity, child temperament and social development as predictors in middle childhood. The study controlled for concurrent contextual (parenting) and constitutional (gender, temperament) factors in examining the influence of early experiences on later social development. This study was the first to assess these associations in adopted children, who are raised by their biologically unrelated adoptive parents, and the study thus allowed for more conclusive evidence of the relative influence of early, middle childhood, and concurrent factors on adolescent’s social development, independent of shared genetic factors between children and parents.

Regression analysis showed that social development was rather stable from 7 to 14 years of age, even after controlling for significant background variables and child temperament. Early attachment security and attachment disorganization were not associated with social development in adolescence. Early maternal sensitivity and early temperament were associated with social development at 14 years, but they did not predict social development at 14 years after controlling for their contribution at 7 years. Girls were found to be better adjusted than boys, and stressful life events between 7-14 years predicted lower levels of social development. Structural equation modeling demonstrated continuity in temperament and social development from infancy through middle childhood to adolescence. Maternal sensitivity and temperament showed concurrent, but not predictive, influences on middle childhood and adolescent social development. Early parent-child relationships were indirectly associated with social development in adolescence, through the influence on social development in middle childhood.

Early parent-child relationships were not directly associated with social development in adolescence. In their structural equation model, Carlson, Sroufe, and Egeland (2004) found a comparable non-significant standardized coefficient of .02 for the direct path from early experience (a latent variable with the observed variables attachment quality and toddler experience) to adolescent social functioning. It may be difficult to find direct significant influences of infant attachment and early maternal sensitive responsiveness on developmental domains over such a long period. It is also possible that it is difficult to find significant direct results of early relational predictors, such as infant attachment and maternal sensitive responsiveness, in a period when children are trying to become more autonomous and independent of parents, as in adolescence. A further explanation for the absence of a direct influence of early parent-child relationships on adolescent social development can be found in the strong influences of later and concurrent experiences and behavior. These later and concurrent influences eclipsed the predictive value of the direct associations between early parent-child relationships and adolescent social development. Finally, significant direct associations between early parent-child relationships
and later adjustment may be indicative of coherence in individual development (Sroufe, 1979; Sroufe, Carlson, Shulman, 1993) or of the confounding of parenting effects and genetic similarities between children and parents (Rowe, 1993a, 1993b). In adoptive families there are no genetic similarities between children and parents, which may be the cause of the low and non-significant standardized coefficient between early parent-child relationships and later adjustment.

We found indirect influences of early parent-child relationships on adolescent social development. The different steps of the indirect path found in our study from early maternal sensitivity, through infant attachment security and disorganization, through social development in middle childhood, to social development in adolescence are supported by attachment theory (Bowlby, 1973, 1980) and previous empirical studies (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Belsky, 1981, 1984; De Wolff & Van IJzendoorn, 1997; Elicker, Englund, & Sroufe, 1992; Main & Hesse, 1990; Schuengel, Bakermans-Kranenburg, & Van IJzendoorn, 1999; Stams, Juffer, & van IJzendoorn, 2002). Together, these paths may constitute indirect influences of early parent-child relationships on adolescent social development. Carlson et al. (2004) also found an indirect association between early experience and adolescent social functioning. In their study early experience had an influence on relationship representation and social behavior in early childhood, which in turn influenced later relationship representation and social behavior which finally influenced adolescent social functioning.

In sum, the results of the third study (Chapter 4) support coherence in individual development (Sroufe, 1979; Sroufe et al., 1993) from infancy through middle childhood to adolescence. Concurrent environmental experiences and child characteristics are essential influences on middle childhood and adolescent social development. Early parent-child relationships are associated with social development in adolescence through the influence on social development in middle childhood, even in the absence of genetic similarities between children and parents. Bowlby’s (1973, 1980) thesis that adaptation is always a product of both developmental history and current circumstances is supported.

Limitations and directions for further research

Some limitations of the studies of the present thesis should be mentioned. A limitation of the meta-analysis (first study, Chapter 2) is that considerable heterogeneity exists within the population of individuals who are adopted (Haugaard, 1998) and between the samples of the different studies included in the meta-analysis. Differences are seen not only in the personal characteristics of the adopted children, but also in the circumstances before their adoption. For example, in most of the studies included in our meta-analysis, the children were adopted from various different countries and cultures, the adoption procedures differed (e.g., some children stayed in institutions before placement, while others lived with their birth family or in a foster home), and the ages on arrival were divergent. Within the population of adopted children,
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there may be subgroups of youngsters who are at risk for the development of adjustment problems. Therefore, until additional research on adoption and adjustment in various subgroups is completed, clinicians and policy makers must be careful to avoid generalizing this risk to the entire population of adopted individuals (Haugaard, 1998). Nevertheless, effect sizes were homogeneous across the studies, so the computation of combined effect sizes is meaningful.

A second limitation is that the meta-analytic evidence is comparative, and the causal nature of the association between international adoption and problem behaviors has not been established. We cannot eliminate the possibility that for some internationally adopted children, problem behaviors (or a genetic disposition for such behaviors) may have been the reason why the children were given up for adoption. In this case, problem behaviors are a cause rather than a consequence of the adoption. A third limitation of the meta-analysis is that some of the differences between adopted and nonadopted adolescents may be explained by different perceptions of parents of adopted children and parents of birth children, for example a lower threshold to seek professional help for adoptive parents than for birth parents (Warren, 1992), as discussed before.

The second (Chapter 3) and third (Chapter 4) study share some related limitations. First, we only assessed mother-child-interactions. Future studies should include father-child-interactions (Grossmann, 1997; Grossmann et al., 2002) and, because of the growing influence of peers in adolescence, peer-interactions as well. Sroufe, Egeland, and Carlson (1999) showed that peer relationships at any given age predicted later social competence and that such predictive peer competencies were themselves predicted by qualities of parent-child relationships that preceded them. In their study, peer and parent-child relationships together predicted later social functioning better than either domain alone (Sroufe et al., 1999). A second limitation is the rather high percentage of securely attached children (76%, which is higher than the normative percentage in nonclinical samples; Van IJzendoorn & Kroonenberg, 1988), and the low percentage of resistant children (3%, which is lower than the normative percentage in nonclinical samples; Van IJzendoorn & Kroonenberg, 1988). The lack of resistant children precluded analyses by attachment classification. Third, we included only one dimension of parenting, namely maternal sensitive responsiveness. Behavior problems and social development may be influenced by other aspects of parenting, for example discipline or cognitive stimulation, or other environmental factors.

Finally, it is often claimed that adoptees and adoptive parents are broadly comparable with the general population, but in some fundamental respects this is not the case (Rutter, Silberg, O’Connor, & Simonoff, 1999). Adoptees differ with respect to adoption-specific aspects. However, in the second and third study (Chapters 3 and 4) adoption-specific aspects (e.g., country of origin, age on arrival, health condition on arrival, mixed vs. all-adoptive families) were not associated with adjustment in adolescence. In addition, an increasingly number of adoptions involve older children,
particularly those with special needs of one kind or another (Rutter et al., 1999). The adopted children in the present study were adopted at a very early age (before the age of six months) and were not selected on the basis of special needs. Moreover, adoptive parents differ from other parents in being better educated and more socially advantaged, as was the case in our sample (Stams et al., 2002; see also Rutter et al., 1999), and having a better mental health (Van Londen, 2002). To the extent that the adoptive families provide an under-representation of high-risk environments, the effect will be to underestimate the strength of environmental effects. For example, investigators studying more economically advanced families have not consistently documented significant associations between early parent-child relationships and later behavior problems (Bates, Bayles, Bennett, Ridge, & Brown, 1991; Fagot & Kavanagh, 1990; Goldberg, Perrotta, Minde, & Corter, 1986). Nevertheless, the third study (Chapter 4) found indirect influences of early parent-child relationships on social development in adolescence.

In sum, the first study of this thesis (Chapter 2) showed that the majority of the internationally adopted children are well adjusted, although a relatively large minority of adopted children had behavior problems of clinical significance or were referred to mental health services compared with non-adopted children. Nevertheless, adoption may often be the best solution for a child who would otherwise be raised in an institution or in other adverse environments (see also Juffer, 2002; Van Ijzendoorn et al., 2005). The second and third study (Chapters 3 and 4) showed several longitudinal and concurrent influences on the behavioral and social development of adopted adolescents. The second study (Chapter 3) showed that early-onset delinquency was associated with stress hyporeactivity. The differentiation between delinquency and aggression, and between childhood-onset and adolescence-onset delinquency (Moffitt, 1993) appeared to be important for our understanding of the development of externalizing problem behaviors. The third study (Chapter 4) showed that individual development from infancy through middle childhood to adolescence was rather stable and that concurrent environmental experiences and child characteristics were essential influences on middle childhood and adolescent social development. Early parent-child relationships did not determine in final form social development in adolescence, but they provided the basis for healthy social development through the influence on earlier social development, even in the absence of genetic similarities between children and parents. Bowlby’s (1973, 1980) thesis that adaptation is always a product of both developmental history and current circumstances was supported.
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Chapter 5


