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Chapter 8

Predictors of Externalising Behaviour Problems in Childhood and Adolescence

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Introduction

As noted in Chapter 7, externalising behaviour problems represent some of the most prevalent mental health problems in childhood and adolescence (Heiervang et al., 2007; Kessler et al., 2012; Mathiesen et al., 2007; Wichstrom et al., 2012), and the burden on individuals, families and neighbourhoods, and on society at large is substantial (Washington State Institute for Public Policy, 2016; World Health Organization, 2001). Theoretical propositions and empirical findings within the field both point to the importance of focusing on a wide range of child, family and contextual factors in order to understand the development of externalising behaviours (Bronfenbrenner & Morris, 2006; Moffitt, 1993; Reid, Patterson, & Snyder, 2002). Knowledge about risk and protective factors for externalising problem development can be utilised in preventive and intervention efforts aimed at curbing the development of externalising problems.

This chapter addresses risk and protective factors for externalising behaviour problems in childhood and adolescence. It starts with a general introduction to the current empirical literature, followed by theoretical models that consider both risk and protective factors. Then we present and discuss findings from the TOPP study, with a specific focus on early child and family risk factors for long-term externalising problems (see also Chapter 3 on behavioural problems in early childhood and Chapter 7 on externalising behaviour problems in childhood and adolescence). Risk and protective factors for externalising behaviour problems can be organised along two dimensions, which are discussed in turn below. The first dimension refers to how close the factors are to the child in time and space (from proximal to distal), and the second dimension involves the timing and stability of risk exposure.

Proximal and Distal Risk Factors

Bronfenbrenner's bioecological model conceptualises risk and protective factors in the form of nested social systems (Bronfenbrenner & Morris, 2006). Biological and psychological characteristics of the developing child (e.g., child temperament) and the child's primary socialisation arenas like family (e.g., family interaction patterns) and kindergarten (e.g., quality of childcare arrangements) are referred to as factors at the micro system level, representing factors that are proximal to the child. The interactions between microsystem domains, e.g., between family and kindergarten or family and school, are referred to as factors at the meso system level. Broader aspects, such as neighbourhood and parental work environments, are described as factors at the exo system level. Even broader societal factors that can influence child development, like social and cultural values and norms and the quality of healthcare and educational systems, are referred to as the macro system. According to Bronfenbrenner's model, proximal factors have a direct impact on the child, while the more distal factors (those at meso, exo

and macro levels) work through the factors closer to the child (Bronfenbrenner & Morris, 2006). In the discussion below, risk and protective factors are discussed from the most to least proximal.

Child factors

Several individual factors in the child, such as child temperament/personality, other behavioural or mental health problems (e.g., hyperactivity and internalising problems) and social development (e.g., social competence), and child gender have been linked to the development of externalising behaviour problems in childhood and adolescence.

First, aspects of child temperament, defined as constitutionally based individual differences in self-regulation and reactivity (Rothbart & Bates, 2006), appear to be one contributor to externalising behaviour problems. Certain temperament characteristics present from infancy, such as high levels of emotional reactivity, poor emotional regulation and high sociability, are generally linked to the development of externalising problems (Rothbart & Bates, 2006; Sanson, Hemphill, Yagmurlu, & McClowry, 2011). Temperamental shyness has, on the other hand, been shown to protect children against the development of externalising behaviour (Sanson, Hemphill, & Smart, 2004). Also, some researchers have linked externalising behaviour problems to a personality type called callous-unemotional (Viding, Fontaine, & McCrory, 2012). This personality type is characterised by lack of empathy and guilt, and shallow affect, and the aetiology behind the externalising behaviours of such children appears to be different from the externalising behaviours of children who are more emotionally reactive.

Second, externalising problems can be comorbid with other behavioural or mental health problems, and these may influence each other. Findings from a study of low income 2–10-year-old boys in the USA show that hyperactivity and externalising problems followed similar developmental trajectories, where 55% of the children who followed a chronic externalising trajectory also followed a persistent hyperactivity trajectory, while only 19% of those with persistent hyperactivity had chronic externalising problems (Shaw, Lacourse, & Nagin, 2005).

Child internalising symptoms may also co-occur with externalising problems. Using data from the US National Institute of Child Health and Human Development Study of Early Child Care (NICHD ECCRN, 2004) researchers found that 3.7% of the 2–12-year-olds followed chronic co-occurring internalising and externalising trajectories, while 12.6% had high internalising problems that co-occurred with externalising problems which desisted over time (Fanti & Henrich, 2010). Further, in one study, children with elevated levels of internalising problems at age 10 were more likely to have externalising problems four years later (Bornstein, Hahn, & Haynes, 2010) (also see Chapter 7 on how externalising behaviour may precede internalising problems). Thus, the direction of effects between internalising and externalising seems to be complex and to go both ways.

Third, aspects of social development may have a two-way influence on externalising behaviour problems. Social competence is a broad construct that encompasses several interpersonal skills, including turn-taking and prosocial behaviour. Findings from a longitudinal study show that lower social competence at age 4 predicted more externalising problems at ages 10 and 14 years (Bornstein et al., 2010). Findings from another longitudinal study indicate that social competence and externalising problems are strongly inversely interrelated in late childhood, but not in adolescence or early adulthood (Burt, Obradovic, Long, & Masten, 2008).

Finally, there has been much interest in whether the process leading to externalising behaviours is different for girls and boys (Dodge, Coie, & Lynam, 2006). Analyses from the Dunedin Multidisciplinary Health and Development Study indicate that, in general, both genders are vulnerable to the same risk factors. Still, there is some weak evidence that family adversity, difficult child temperament and hyperactivity had somewhat stronger effects on boys than on girls (Moffitt, Caspi, Rutter, & Silva, 2001). Individual variations in genetic makeup may also underpin children's risk of and protection against externalising behaviour problems. For instance, genetic factors influence individual differenc-

es in child temperament (Saudino & Micalizzi, 2015). Genetic influences may also work in complex ways; for example, there is evidence that maternal insensitivity at 14 months is associated with higher levels of externalising problems at 18 months, but only for children with at least one 7-repeat allele on the DRD4 gene (Windhorst et al., 2015). This finding accords with the differential susceptibility model, discussed in Section 8.1.3 below. Further, polygenic risk approaches (which focus on the combined effects of many variants of small magnitude across the genome) indicate that polygenic risk scores predict externalising problems in adolescence and early adulthood (Salvatore et al., 2015).

Parenting and Parent–Child Relationships

Aspects of parent–child relationships (e.g., physical and/or psychological aggression from the parent towards the child) and parenting styles (e.g., authoritarian parenting) are also central to the development of externalising problems. On the other hand, positive, sensitive parenting reduces the likelihood of child conduct problems (Boeldt et al., 2012; Sulik, Blair, Mills-Koonce, Berry, & Greenberg, 2015).

Harsh, negative parenting is a broad phenomenon that includes negative behaviours from the parent towards the child such as physical aggression (e.g., the use of physical punishment) and/or psychological aggression and hostility (e.g., shouting, screaming or yelling at the child), as well as low warmth (e.g., low levels of positive emotions and appreciation, and little praise towards the child). An extensive body of research has linked harsh and negative parenting practices and aversive parent–child interactions to externalising problems that begin in childhood (Odgers et al., 2008; Shaw, Gilliom, Ingoldsby, & Nagin, 2003; Wiggins, Mitchell, Hyde, & Monk, 2015). For example, harsh parenting uniquely contributed to externalising problems over the period from child age 3 to 9 years (Wiggins et al., 2015). Further, harsh parenting and child non-compliance are found to have a reciprocal adverse relationship that predicts child externalising problems at ages 2–5 and 7–8 years (Smith et al., 2014; see Section 8.1.3 for further discussion). Inconsistent parenting is another dimension of parenting that has been related to externalising problems (e.g., Odgers et al., 2008).

A conceptualisation that has been central to research on the parenting of adolescents is Baumrind's combination of two different dimensions of parenting, namely warmth and control, into four parenting styles labelled authoritarian (characterised by high control and low warmth), authoritative (high control, high warmth), neglecting/rejecting (low control, low warmth) and permissive (low control, high warmth), respectively (Baumrind, 1991a, 1991b). Authoritarian parenting is related to higher levels of externalising problems (Thompson, Hollis, & Dagger, 2003), while authoritative parenting is related to a decline in externalising behaviours across childhood and adolescence (Williams et al., 2009).

Monitoring is another aspect of parenting that has received considerable attention. Monitoring has often been used to refer to parents' active tracking of their child's whereabouts and activities, and empirical studies indicate this as an important parenting skill in preventing or reducing youth involvement with externalising behaviours (e.g., Sampson & Laub, 1994). However, Stattin and Kerr's (2000) critical review of the literature on parental monitoring concludes that measures of parental monitoring in fact tap into parental knowledge about their child's whereabouts, which is itself based on children's willingness to disclose this information, and it is this willingness to disclose that appears to be the critical factor (Stattin & Kerr, 2000).

Other Family and Contextual Risk Factors

Additional family factors and conditions that put stress on parents and family life have been related to externalising problems in children and adolescents. Some of the most important of these factors are discussed below.

Depressive symptoms in mothers predict externalising problems in their children. For example, in the NICHD ECCRN study, maternal depressive symptoms strongly differentiated between a high-aggression trajectory between ages 2 to 9 years and two low-aggression trajectories (National Institute of

Child Health and Human Development, 2004). Similarly, Shaw and colleagues found that higher levels of maternal depression characterised a group with chronic conduct problems from age 2 to 10 years (Shaw et al., 2005).

Parental discord and marital satisfaction have also been found to influence child externalising behaviour in several studies (Campbell, 1995). For example, mutual hostility between spouses at child age 5 years predicted child externalising problems rated by teachers three years later (Katz & Gottman, 1993). Further, externalising problems are more likely to persist in the context of chronic family stress, defined as marital dissatisfaction and stressful life events such as the death of a close family member or friend and changes in personal relationships or work situations (Campbell, Pierce, Moore, Marakovitz, & Newby, 2009).

Further, the social support that parents receive from different sources is related to child externalising behaviour problems. For instance, lower satisfaction with social support from various sources like intimate relationships, friends, family, neighbours and organised groups, as measured at 18 months, was related to child externalising problems at school entry (Shaw, Owens, Giovannelli, & Winslow, 2001).

Considerable research has linked family socio-economic status and demographic factors to child externalising problems. Associations with externalising problems have been found with poor family financial situations and low income (Boe, Overland, Lundervold, & Hysing, 2012; Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006), mothers' and fathers' education levels (Boe et al., 2012; Nagin & Tremblay, 2001), non-intact families and single-mother families (Campbell, Spieker, Vandergrift, Belsky, & Burchinal, 2010; Nagin & Tremblay, 2001), as well as early motherhood (Cote, Vaillancourt, Barker, Nagin, & Tremblay, 2007). Further, large family size (Farrington, 1995) and the presence of a young sibling in the household (Nærde, Ogdén, Janson, & Zachrisson, 2014) are related to the development of externalising behaviour.

However, the presence of these associations should not be assumed to imply that these socio-economic and demographic factors have a direct causal role. Stressors associated with family socio-economic status are likely to influence children indirectly by affecting parents' psychological resources, hence contributing to maternal depression, affecting caregiving quality and/or affecting the parents' investment in the welfare of their children (Shaw & Shelleby, 2014). In addition, genetic factors can also exert an influence on aspects of the child's environment, i.e., family interaction patterns and family environment (Kendler & Baker, 2007).

Peer Processes

Exposure to externalising peers can contribute to the development and maintenance of externalising behaviour problems. For instance, in a low-risk sample of preschoolers and kindergarteners, exposure to externalising peers was related to increases in aggression after controlling for initial aggression level (Hanish, Martin, Fabes, Leonard, & Herzog, 2005). The construct of "deviancy training" describes how mutual reinforcement in friendships among antisocial peers shapes deviant attitudes and increases norm-violating behaviours (Dishion, McCord, & Poulin, 1999; Snyder et al., 2008).

Timing and Stability of Risk Factors

Despite empirical knowledge about the links between risk factors and externalising problems, knowledge about the impact of the timing and stability of these risk factors is sparse. There has been little research on questions such as: How are stability and change in risk factors and the timing of risk exposure related to externalising problems across childhood and adolescence? Are risk factors that are present in early childhood sufficient for the development and maintenance of externalising problems in later years, or are ongoing risk exposures necessary for externalising problems to persist over time? Do different types and timing of risk factors characterise different trajectories, i.e., typical longitudinal

patterns like childhood-onset, adolescent-onset and childhood-limited externalising problems (Moffitt 2006).

Studies indicate that externalising problems are related to child risk factors across time (Fanti & Henrich, 2010; Shaw et al., 2005). Barker and colleagues (2010) identified different trajectories of externalising problems over six measurement time points ranging from age 4 to 13 years, and examined how these trajectory groups were related to four other problem areas – hyperactivity, emotional difficulties, peer relational problems and low levels of prosocial behaviours. Results show that the development of problems in these other areas corresponded to the development of externalising problems and that the “Early onset persistent” externalising trajectory group had the highest scores on these other problems across time.

However, as risk factors are often moderately to highly stable over time (Roberts & DelVecchio, 2000; Skipstein, Janson, Stoolmiller, & Mathiesen, 2010), it can be difficult to determine whether the timing of risk factors has an impact on externalising problems. Therefore, it is necessary to use statistical techniques to separate the variation in risk factors into the parts that remain stable over time and the parts that change over time, in order to better understand how time variations in risk dosages may relate to developmental patterns of externalising problems. Findings from a TOPP project that utilised an approach are discussed in Section 8.2.4 below.

Central Theoretical Propositions on Processes Linking Risk and Protective Factors to Externalising Behaviour Problems

Several theoretical models link the various risk and protective factors to externalising behaviour problems. Some important contributions are briefly presented here.

Coercion theory was formulated by Patterson and colleagues at the Oregon Social Learning Centre (1992) and posits that the central mechanism in externalising problems arising in early childhood is the use of “coercive” or aversive behaviours by one party contingent on the behaviour of the other (Reid et al., 2002). The model focuses on the connection between the child’s behaviour and the reaction of the caregiver, and also the child’s reaction to the caregiver’s behaviour, and how these can become escalating coercive cycles of increasingly negative interactions. Coercive parent–child interactions involve low parental warmth, harsh parenting strategies and less positive involvement with the child from their caregivers (Reid et al., 2002). In addition, negative interpretations of the child’s behaviours and intentions seem to help maintain coercive cycles (Patterson & Forgatch, 2010). Deficits in child social competence can result, as coercive interactions involve little opportunity for learning prosocial capacities like turn-taking, sensitivity to the perspective of others and willingness to follow instructions. Among the central risk factors for coercion are difficult child temperament, parental depression and/or difficult living conditions (Reid et al., 2002). For a description of how coercion theory has guided treatment approaches for child externalising problems being implemented on the national level in Norway, see Chapter 7.

Moffitt’s taxonomic theory (1993) postulates that adolescents involved in externalising (antisocial) behaviours fall into two subtypes with different ages of onset, causal factors and outcomes. She formulates the existence of a “life-course-persistent” group with onset in childhood related to a wide variety of individual, family and contextual risk factors, with a specific focus on neuropsychological problems and “criminogenic” environments. She also postulates an “adolescent limited” group with externalising behaviour problems limited to adolescence that are primarily driven by normative peer processes, due to a maturity gap between chronological age and social and emotional maturation in the adolescent transition period (Moffitt, 1993; 2006).

The differential susceptibility framework formulated by Belsky links genetic and environmental risk factors. This approach expands on the traditional diathesis-stress view, i.e., the perspective that some children are more vulnerable to environmental adversity due to temperamental characteristics and ge-

netic factors than others. The differential susceptibility model suggests that these operate as plasticity factors, rather than vulnerability factors, making some individuals more malleable to both positive and negative environmental exposures (Belsky & Pluess, 2009).

Findings from a meta-analysis of the associations between child-rearing environments and child outcomes and the role of dopamine-related genes indicate that children with less efficient dopamine-related genes do worse in negative environments (e.g., negative-intrusive parenting) but better in positive environments (e.g., warm-supportive parenting) (Bakermans-Kranenburg & van Ijzendoorn, 2011).

A further relevant model is the developmental cascade model, which describes how a child with externalising problems is likely to experience a diffusion of problems into several domains of life (Masten et al., 2005). The developmental cascade model is discussed in Chapter 7.

Findings From the TOPP Study on Risk and Protective Factors for Externalising Problems in Childhood and Adolescence

Gaining new knowledge about risk and protective factors for externalising behaviour problems has been a central interest in the TOPP study. Longitudinal data over the entire child and adolescent periods, starting in infancy, is one of the most important sources of such knowledge, and can aid in the development of effective prevention and early intervention efforts. Below we present findings from five TOPP projects.

The first two projects address the impact of risk factors present in infancy for the development of externalising problems in early childhood, and across childhood until mid-adolescence, respectively (Mathiesen, Sanson, Stoolmiller, & Karevold, 2009; Kjeldsen, Janson, Stoolmiller, Torgersen, & Mathiesen, 2014). The following three projects investigate the links between externalising problems and temperament clusters, the influence of the stability and timing of risk factors for externalising problems across childhood to mid-adolescence, as well as gender-specific pathways to externalising behaviour in middle childhood (Janson & Mathiesen, 2008; Kjeldsen, Nes, Sanson, Ystrom, & Karevold, 2013; Nilsen, Gustavson, Roysamb, Kjeldsen, & Karevold, 2015). Three of these projects are also discussed in other chapters (Mathiesen et al., 2009, see Chapter 3; Janson & Mathiesen 2009, see Chapter 4; Nilsen et al., 2015, see Chapter 6) and are only presented here briefly to give a thematic overview.

The Impact of Risk Factors Present in Infancy for the Development of Externalising Problems Across Childhood

Few datasets have been available to identify persistent effects of early risk experiences in infancy and early childhood onwards for later externalising problems. Two projects using TOPP data have contributed to filling this gap (Mathiesen et al., 2009; Kjeldsen et al., 2014).

First, Mathiesen, Sanson, Stoolmiller, and Karevold (2009) studied “undercontrolled” problems, a core externalising construct consisting of oppositional, irritable, inattentive and overactive behaviours from 18 months to 4 years, through latent growth modelling. This analysis made it possible to study the capacity of early risk factors to predict both the stability of externalising scores from the initial levels and further (intercept), and the predictors of changes in externalising scores over the developmental period (slope). They found that child temperament and family factors present at 18 months predicted 43% of the stability (i.e., the intercept) in undercontrolled problems and 20% of the change (i.e., slope) in undercontrolled problems from 18 months to 4 years. Lower initial levels of partner support to the mother and higher initial levels of child emotionality predicted a steeper escalation of undercontrolled problems over time. (For more on this study, see Chapter 3.)

Later, Kjeldsen, Janson, Stoolmiller, Torgersen, and Mathiesen (2014) used TOPP data over 13 years to explore whether risk factors measured at child age 18 months could uniquely discriminate the children who would follow a High Stable trajectory of externalising behaviour problems from age 18 months to 14 years. Using latent class analyses and logistic regression analyses, five trajectories of externalising problems were identified – High Stable, Adolescent Onset, High and Medium Childhood Limited and Low Stable (see the trajectory model presented in Chapter 7). Then the discriminative capacity of 18 predictors measured at child age 18 months was assessed, one at a time. As with Mathiesen et al. (2009), early child temperament and family factors were linked to externalising development. More specifically, child temperamental emotionality, maternal depressive symptoms, family stress, support from family and friends, maternal education, maternal age, child gender and support from partner all differed across the five trajectory classes. Next, the six most influential risk factors were combined in the model. This shows that child negative emotionality differed most strongly between the five trajectory classes, followed by maternal symptoms of depression, child gender, family stress, maternal age and the presence of siblings. Most interestingly, the risks connected to (low) maternal age and (high) family stress at child age 18 months were able to uniquely discriminate the High Stable externalising trajectory from all the other trajectories. Further exploratory analyses regarding the family stress construct show that problems in the relationship between mothers and their partners and their partner's health were the aspects most strongly related to child membership in the High Stable class.

Profiles of Temperament Predicting Child Externalising Problems in Early to Late Childhood

As discussed above, child temperament traits are well-known risk and protective factors for externalising behaviour problems. Temperament traits can be combined into configurations of several traits, i.e., temperament profiles. Janson and Mathiesen (2008) used a person-oriented analytical approach named I-States of Objects Analysis to classify maternal reports of child activity, sociability, emotionality and shyness into typical temperament profiles at ages 18 months, 2, 4 and 8 years in the TOPP study. They further explored how these profiles were related to child externalising problems at the various time points.

Overall, they identified a temperament profile labelled “undercontrolled” (characterised by high levels of emotionality, activity and sociability, and low shyness) that was related to externalising behaviour problems at all time points. They also found that an “uneasy” temperament profile (characterised by high emotionality and shyness, and around average scores on activity and sociability) was linked to externalising problems but to a lesser extent. Children with “confident,” “unremarkable” or “inhibited” temperament profiles were less likely to have externalising problems. (See Chapter 4 for a more detailed description of this study.)

Internalising Problems as a Risk Factor for Externalising Problems in Girls in Late Childhood

Nilsen, Gustavson, Roysamb, Kjeldsen, and Karevold (2013) studied pathways from child problem behaviours (internalising and externalising) across childhood. They did not find pathways from internalising to externalising problems between the five time points from child ages 18 months to 12 years. They did, however, find a significant positive pathway between internalising problems at age 8 and externalising problems at age 12. This is in accordance with former findings of positive associations between internalising and externalising problems. However, this pathway was only significant for girls and this finding thus indicates a gender-specific pathway between internalising and externalising in middle childhood. (See Chapter 6 for a more detailed description.)

Impact of the Timing and Stability of Risk factors for Externalising Behaviour Development

Addressing the questions discussed in Section 8.1.2, Kjeldsen, Nes, Sanson, Ystrom and Karevold (2012) used data from the TOPP study over 13 years to examine the links between a wide range of child and family risk factors and trajectories of externalising problems across time. Stable and emerging influences from various child risk factors (i.e., temperament, internalising and hyperactivity) along with family risk factors (i.e., maternal depressive symptoms, partner relationship and health stressors, stressors associated with the family's socio-economic status, and social support from friends, family and neighbours) were examined in four developmental periods: infancy, early childhood, mid-childhood and mid-adolescence. The five-trajectory model of externalising problems discussed in Chapter 7 was used (with High Stable, Adolescent Onset, High and Medium Childhood Limited and Low Stable trajectories). ~~The separation of stable from emerging risks at successive developmental periods was made possible by the use of a Cholesky factorisation model.~~

Overall, the striking pattern of temporal correspondence between externalising levels and risk exposures was identified. Trajectories with high levels of externalising behaviour problems pertaining to a given developmental period also showed high levels of stable and/or emerging risk exposures pertaining to the same period. Children on the High Stable externalising trajectory were exposed to high levels of family adversity that were stable from infancy onwards, as well as new family risks emerging over the successive time periods until mid-adolescence. These children were also highly emotional in infancy and became increasingly so with age. Further, co-occurring shyness, hyperactivity and internalising problems developed with time.

Some intriguing exceptions to the temporal correspondence pattern were, however, found for the Adolescent Onset, High Childhood Limited and Medium Childhood Limited trajectory classes in certain developmental periods. The findings show that the Adolescent Onset youths had been exposed to family risks many years before externalising behaviour had its onset. Further, the High Childhood Limited children had experienced a continuous exposure to maternal mental distress and child internalising and hyperactivity, while at the same time reducing externalising problems. Finally, while the Medium Childhood Limited class showed a continuation in hyperactivity problems only, they showed a similar reduction in externalising problems. Thus, these developmental patterns indicate unique discrepancies between levels of risk exposures and externalising problems.

Concluding Discussion and Practical Implications

The TOPP findings on risk and protective factors for externalising behaviour development confirm that results from previous research in other countries and using non-population based samples also hold for a population-based sample in Norway. The TOPP findings also contribute new knowledge about: 1) how early in life it is possible to identify children who are at risk of embarking on a High Stable trajectory of externalising problems; 2) how particular child and family factors contribute to adverse externalising development; and 3) ~~how the timing, stability and emergence in risk factors affect the development, maintenance, remission and late debut of externalising behaviour problems, emphasising the importance of taking a dynamic view of risks.~~

Discriminating normative but transient externalising behaviours early in development from externalising behaviour that remains elevated is vital for prevention and early intervention efforts to curb the latter's development (Wakschlag, Tolan, & Leventhal, 2010). The TOPP findings on the persistent negative effects of ~~both early risk factors and exposure to ongoing high risk doses that are either stable from infancy or emerging in successive time periods~~ point towards the need for early problem identification and for preventive interventions to start very early in life and to address multiple aspects of children's lives. The findings indicate that it is possible to identify children at risk of embarking on a High Stable trajectory of externalising behaviour problems even at age 18 months, based on the presence of

certain risk factors. Thus, these are practically important findings that may be useful for prevention and early intervention efforts aiming to minimise the long-term negative effects of early childhood externalising problems. Chapter 7 has discussed how this knowledge could supplement existing approaches in an ongoing nationwide Norwegian strategy for improving services to children and youth at risk of developing severe externalising behaviour problems.

References

- Bakermans-Kranenburg, M., & van Ijzendoorn, M. H. (2011). Differential susceptibility to rearing environment depending on dopamine-related genes: New evidence and a meta-analysis. *Development and Psychopathology*, 23, 39–52. <http://doi.org/10.1017/S0954579410000635>
- Baumrind, D. (1991a). Effective parenting during the early adolescent transition. In P. A. Cowan & M. Hetherington (Eds.), *Family transitions*. Mahwah, NJ: Erlbaum.
- Baumrind, D. (1991b). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence*, 11(1), 56–95. <http://doi.org/10.1177/0272431691111004>
- Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin*, 135, 885–908. <http://doi.org/10.1037/a0017376>
- Boe, T., Overland, S., Lundervold, A. J., & Hysing, M. (2012). Socioeconomic status and children's mental health: Results from the Bergen Child Study. *Social Psychiatry and Psychiatric Epidemiology*, 47, 1557–1566. <http://doi.org/10.1007/s00127-011-0462-9>
- Boeldt, D. L., Rhee, S. H., Dilalla, L. F., Mullineaux, P. Y., Schulz-Heik, R. J., Corley, R. P., ... Hewitt, J. K. (2012). The association between positive parenting and externalizing behavior. *Infant and Child Development*, 21(1), 85–106. <http://doi.org/10.1002/icd.764>
- Bornstein, M. H., Hahn, C. S., & Haynes, O. M. (2010). Social competence, externalizing, and internalizing behavioral adjustment from early childhood through early adolescence: Developmental cascades. *Development and Psychopathology*, 22, 717–735. <http://doi.org/10.1017/S0954579410000416>
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner (Ed.), *Handbook of child psychology* (Vol. 1, pp. 793–828). Hoboken, NJ: Wiley.
- Burt, K. B., Obradovic, J., Long, J. D., & Masten, A. S. (2008). The interplay of social competence and psychopathology over 20 years: Testing transactional and cascade models. *Child Development*, 79, 359–374. <http://doi.org/10.1111/j.1467-8624.2007.01130.x>
- Campbell, S. B. (1995). Behavioral problems in preschool children: A review of recent research. *Journal of Child Psychology and Psychiatry*, 36(1), 113–149. <http://doi.org/10.1111/j.1469-7610.1995.tb01657.x>
- Campbell, S. B., Pierce, E. W., Moore, G., Marakovitz, S., & Newby, K. (2009). Boys' externalizing problems at elementary school age: Pathways from early behavior problems, maternal control, and family stress. *Development and Psychopathology*, 8, 701–719. <http://doi.org/10.1017/S0954579400007379>
- Campbell, S. B., Spieker, S., Vandergrift, N., Belsky, J., & Burchinal, M. (2010). Predictors and sequelae of trajectories of physical aggression in school-age boys and girls. *Development and Psychopathology*, 22, 133–150. <http://doi.org/10.1017/S0954579409990319>
- Cote, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Development and Psychopathology*, 19(1), 37–55.
- Cote, S. M., Vaillancourt, T., LeBlanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: A nation-wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology*, 34(1), 71–85.
- Dishion, T. J., McCord, J., & Poulin, F. (1999). When interventions harm. Peer groups and problem behavior. *American Psychologist*, 54, 755–764. <http://doi.org/10.1037/0003-066X.54.9.755>
- Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg (Ed.), *Handbook of child psychology: Social, Emotional, and Personality Development* (Vol. 3, 6th ed., pp. 719–788). Hoboken, NJ: Wiley.
- Fanti, K. A., & Henrich, C. C. (2010). Trajectories of pure and co-occurring internalizing and externalizing problems from age 2 to age 12: Findings from the National Institute of Child Health and Human Development Study of Early Child Care. *Developmental Psychology*, 46, 1159–1175. <http://doi.org/10.1037/a0020659>

- Farrington, D.P. (1995). The twelfth Jack Tizard memorial lecture. The development of offending and antisocial behaviour from childhood: Key findings from the Cambridge Study in Delinquent Development. *Journal of Child Psychology and Psychiatry*, *36*, 929–964.
- Hanish, L.D., Martin, C.L., Fabes, R.A., Leonard, S., & Herzog, M. (2005). Exposure to externalizing peers in early childhood: Homophily and peer contagion processes. *Journal of Abnormal Child Psychology*, *33*, 267–281. <http://doi.org/10.1007/s10802-005-3564-6>
- Heiervang, E., Stormark, K.M., Lundervold, A.J., Heimann, M., Goodman, R., Posserud, M.-B., ... Gillberg, C. (2007). Psychiatric disorders in Norwegian 8- to 10-year-olds: An epidemiological survey of prevalence, risk factors, and service use. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*, 438–447. <http://doi.org/10.1097/chi.0b013e31803062bf>
- Janson, H., & Mathiesen, K.S. (2008). Temperament profiles from infancy to middle childhood: Development and associations with behavior problems. *Developmental Psychology*, *44*, 1314–1328. <http://doi.org/10.1037/a0012713>
- Katz, L.F., & Gottman, J.M. (1993). Patterns of marital conflict predict child's internalizing and externalizing behaviors. *Developmental Psychology*, *29*, 940–950. <http://doi.org/10.1037/0012-1649.29.6.940>
- Kendler, K.S., & Baker, J.H. (2007). Genetic influences on measures of the environment: A systematic review. *Psychological Medicine*, *37*, 615–626. <http://doi.org/10.1017/S0033291706009524>
- Kessler, R.C., Avenevoli, S., Costello, E.J., Georgiades, K., Green, J.G., Gruber, M.J., ... Merikangas, K.R. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry*, *69*, 372–380. <http://doi.org/10.1001/archgenpsychiatry.2011.160>
- Kjeldsen, A., Janson, H., Stoolmiller, M., Torgersen, L., & Mathiesen, K.S. (2014). Externalising behaviour from infancy to mid-adolescence: Latent profiles and early predictors. *Journal of Applied Developmental Psychology*, *35*(1), 25–34. <http://doi.org/10.1016/j.appdev.2013.11.003>
- Kjeldsen, A., Nes, R.B., Sanson, A., Ystrom, E., & Karevold, E.B. (2017). *Trajectories of internalizing and externalizing symptoms and stability of risk factors across childhood and adolescence*. Manuscript submitted for publication. **please add volume title** **please add volume number** **correct** **base check and update**
- Masten, P., Roisman, G.I., Long, J.D., Burt, K.B., Obradovic, J., Riley, J.R., ... Tellegen, A. (2005). Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology*, *41*, 733–746. <http://doi.org/10.1037/0012-1649.41.5.733>
- Mathiesen, K.S., Kjeldsen, A., Skipstein, A., Karevold, E., Torgersen, L., & Helgeland, H. (2007). *Trivsel og opvekst – barndom og ungdomstid* [Thriving and growing up – Childhood and adolescence]. Nydalen, Norway: NIPH. Retrieved from <http://www.fhi.no/globalassets/migrering/dokumenter/pdf/rapport-20075-trivsel-og-opvekst--barndom-og-ungdomstid-pdf.pdf>
- Mathiesen, K.S., Sanson, A., Stoolmiller, M., & Karevold, E. (2009). The nature and predictors of undercontrolled and internalizing problem trajectories across early childhood. *Journal of Abnormal Child Psychology*, *37*, 209–222. <http://doi.org/10.1007/s10802-008-9268-y>
- Moffitt, T.E. (1993). Adolescent-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, *100*, 674–701. <http://doi.org/10.1037/0033-295X.100.4.674>
- Moffitt, T.E. (2006). Life-course-persistent versus adolescent-limited antisocial behavior. In D. Cicchetti & D.J. Cohen (Eds.), *Developmental psychopathology*: **please add volume title** **please add volume number** **correct**, 2nd ed. **correct**, pp. 570–598). Hoboken, NJ: Wiley.
- Moffitt, T.E., Caspi, A., Rutter, M., & Silva, P.A. (2001). *Sex differences in antisocial behaviour, conduct disorder, delinquency, and violence in the Dunedin longitudinal study*. Cambridge, UK: Cambridge University Press. <http://doi.org/10.1017/CBO9780511490057>
- Nærde, A., Ogden, T., Janson, H., & Zachrisson, H.D. (2014). Normative development of physical aggression from 8 to 26 months. *Developmental Psychology*, *50*, 1710–1720. <http://doi.org/10.1037/a0036324>
- Nagin, D.S., & Tremblay, R.E. (2001). Parental and early childhood predictors of persistent physical aggression in boys from kindergarten to high school. *Archives of General Psychiatry*, *58*, 389–394. <http://doi.org/10.1001/archpsyc.58.4.389>
- NICHD Early Child Care Research Network. **authentic** **it okay?** (2004). Trajectories of physical aggression from toddlerhood to middle childhood: Predictors, correlates and outcomes. *Monographs for the Society for Research in Child Development*, *69*(4), 1–144.
- Nilsen, W., Gustavson, K., Roysamb, E., Kjeldsen, A., & Karevold, E. (2013). Pathways from maternal distress and child problem behavior to adolescent depressive symptoms: A prospective examination from early childhood to adolescence. *Journal of Developmental & Behavioral Pediatrics*, *34*, 303–313. <http://doi.org/10.1097/DBP.0b013e318293ab05>

- Ogden, C. L., Moffitt, T. E., Broadbent, J. M., Dickson, N., Hancox, R. J., Harrington, H., ... Caspi, A. (2008). Female and male antisocial trajectories: From childhood origins to adult outcomes. *Development and Psychopathology*, *20*, 673–716. <http://doi.org/10.1017/S0954579408000333>
- Patterson, G. R., & Forgatch, M. S. (2010). Ny kunnskap om hvorfor det ofte er vanskelig å endre negative samhandlingsmønstre i familier [New knowledge about why negative interaction patterns in families may be hard to change]. In E. Befring, I. Frønes, & M.-A. Sørli (Eds.), *Sårbare unge. Nye perspektiver og tilnæringer* (pp. 168–179). Oslo, Norway: Gyldendal.
- Reid, J. B., Patterson, G. R., & Snyder, J. J. (2002). *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention*. Washington, DC: APA. <http://doi.org/10.1037/10468-000>
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In N. Eisenberg (Ed.), *Handbook of child psychology, Vol. 3: Social, emotional, and personality development* (6th ed., pp. 99–166). Hoboken, NJ: Wiley.
- Salvatore, J. E., Aliev, F., Bucholz, K., Agrawal, A., Hesselbrock, V., Hesselbrock, M., ... Dick, D. M. (2015). Polygenic risk for externalizing disorders: Gene-by-development and gene-by-environment effects in adolescents and young adults. *Clinical Psychological Science*, *3*, 189–201. <http://doi.org/10.1177/2167702614534211>
- Sampson, R. J., & Laub, J. H. (1994). Urban poverty and the family context of delinquency: A new look at structure and process in a classic study. *Child Development*, *65*, 523–540. <http://doi.org/10.2307/1131400>
- Sanson, A., Hemphill, S. A., & Smart, D. (2004). Connections between temperament and social development: A review. *Social Development*, *13*, 142–170. <http://doi.org/10.1046/j.1467-9507.2004.00261.x>
- Sanson, A., Hemphill, S. A., Yagmurlu, B., & McClowry, S. (2011). Temperament and social development. In P. K. Smith & C. H. Hart (Eds.), *The Wiley-Blackwell Handbook of Childhood Social Development* (2nd ed., pp. 227–245). Chichester, UK: Blackwell.
- Saudino, K. J., & Micalizzi, L. (2015). Emerging trends in behavioral genetic studies of child temperament. *Child Development Perspectives*, *9*, 144–148. <http://doi.org/10.1111/cdep.12123>
- Shaw, D. S., Gilliom, M., Ingoldsby, E. M., & Nagin, D. S. (2003). Trajectories leading to school-age conduct problems. *Developmental Psychology*, *39*, 189–200. <http://doi.org/10.1037/0012-1649.39.2.189>
- Shaw, D. S., Lacourse, E., & Nagin, D. S. (2005). Developmental trajectories of conduct problems and hyperactivity from ages 2 to 10. *Journal of Child Psychology and Psychiatry*, *46*, 931–942. <http://doi.org/10.1111/j.1469-7610.2004.00390.x>
- Shaw, D. S., Owens, E. B., Giovannelli, J., & Winslow, E. B. (2001). Infant and toddler pathways leading to early externalizing disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*(1), 36–43. <http://doi.org/10.1097/00004583-200101000-00014>
- Shaw, D. S., & Shelleby, E. C. (2014). Early-onset conduct problems: Intersection of conduct problems and poverty. *Annual Review of Clinical Psychology*, *10*, 503–528. <http://doi.org/10.1146/annurev-clinpsy-032813-153650>
- Smith, J. D., Dishion, T. J., Shaw, D. S., Wilson, M. N., Winter, C. C., & Patterson, G. R. (2014). Coercive family process and early-onset conduct problems from age 2 to school entry. *Development and Psychopathology*, *26*, 917–932. <http://doi.org/10.1017/S0954579414000169>
- Snyder, J., Schrepferman, L., McEachern, A., Barner, S., Johnson, K., & Provines, J. (2008). Peer deviancy training and peer coercion: Dual processes associated with early-onset conduct problems. *Child Development*, *79*, 252–268. <http://doi.org/10.1111/j.1467-8624.2007.01124.x>
- Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development*, *71*, 1072–1085. <http://doi.org/10.1111/1467-8624.00210>
- Sulik, M. J., Blair, C., Mills-Koonce, R., Berry, D., & Greenberg, M. (2015). Early parenting and the development of externalizing behavior problems: Longitudinal mediation through children's executive function. *Child Development*, *86*, 1588–1603. <http://doi.org/10.1111/cdev.12386>
- Thompson, A., Hollis, C., & Dagher, D. R. (2003). Authoritarian parenting attitudes as a risk for conduct problems. Results from a British national cohort study. *European Child & Adolescent Psychiatry*, *12*(2), 84–91. <http://doi.org/10.1007/s00787-003-0324-4>
- Viding, E., Fontaine, N. M. G., & McCrory, E. J. (2012). Antisocial behaviour in children with and without callous-unemotional traits. *Journal of the Royal Society of Medicine*, *105*, 195–200. <http://doi.org/10.1258/jrsm.2011.110223>
- Wakschlag, L. S., Tolan, P. H., & Leventhal, B. L. (2010). Research review: “Ain’t misbehavin’”: Towards a developmentally-specified nosology for preschool disruptive behavior. *Journal of Child Psychology and Psychiatry*, *51*(1), 3–22. <http://doi.org/10.1111/j.1469-7610.2009.02184.x>
- World Health Organization. (2001). *World Health Report 2001 – mental health: New understanding, new hope*. Retrieved from <http://www.who.int/whr/2001/chapter2/en/index3.html>

- Wichstrom, L., Berg-Nielsen, T. S., Angold, A., Egger, H. L., Solheim, E., & Sveen, T. H. (2012). Prevalence of psychiatric disorders in preschoolers. *Journal of Child Psychology and Psychiatry*, *53*, 695–705. <http://doi.org/10.1111/j.1469-7610.2011.02514.x>
- Wiggins, J. L., Mitchell, C., Hyde, L. W., & Monk, C. S. (2015). Identifying early pathways of risk and resilience: The codevelopment of internalizing and externalizing symptoms and the role of harsh parenting. *Development and Psychopathology*, *27*, 1295–1312. <http://doi.org/10.1017/S0954579414001412>
- Williams, L. R., Degnan, K. A., Perez-Edgar, K. E., Henderson, H. A., Rubin, K. H., Pine, D. S., ... Fox, N. A. (2009). Impact of behavioral inhibition and parenting style on internalizing and externalizing problems from early childhood through adolescence. *Journal of Abnormal Child Psychology*, *37*, 1063–1075. <http://doi.org/10.1007/s10802-009-9331-3>
- Windhorst, D. A., Mileva-Seitz, V. R., Linting, M., Hofman, A., Jaddoe, V. W., Verhulst, F. C., ... Bakermans-Kranenburg, M. J. (2015). Differential susceptibility in a developmental perspective: DRD4 and maternal sensitivity predicting externalizing behavior. *Developmental Psychobiology*, *57*(1), 35–49. <http://doi.org/10.1002/dev.21257>
- Washington State Institute for Public Policy. (2016). *Benefit–cost model technical documentation*. Retrieved from <http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf>

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