SUMMARY

Chapter 1: General Introduction

Affect is regarded as serving a regulatory function in organizing people’s behavior. Further, affect is regarded as inherently (to be) regulated. Humans are generally able to regulate their internal affective states and associated behavioral reactions in the service of long-term goals. The term ‘affect dysregulation’ refers to maladaptive patterns of affect regulation, that is, to patterns of affect regulation that are costly in the pursuit of long-term goals, for instance because they undermine the maintenance of positive social relationships and well-being. Affect dysregulation is considered a central facet of most forms of psychopathology, including internalizing problems, such as anxiety and depression, as well as externalizing problems, such as aggressive and delinquent behavior. Apart from being reflections of neurological activity, affective experiences are highly social phenomena, and constitute both sources and consequences of social interactions. In addition to social interactions as inducers of affective experiences, many agree that humans learn how to regulate affect in interactions in close social relationships, particularly in the parent-child relationship. Style and effectiveness of affect regulation in turn, also shape the nature of social relationships. Adolescence constitutes an important developmental period for the study of associations between affective dysregulation and psychopathology, and the role of the parent-adolescent relationship for several reasons: Adolescents show heightened negative emotions and heightened variability of emotions compared to younger children and adults, and prevalence rates of internalizing and externalizing problems increase. In addition, at least temporal decreases in the parent-adolescent relationship have been shown for adolescence.

Despite the fact that adolescence presents a time of important changes in affective experience and regulation, of increasing psychopathology, and changes in social relationships, compared to research on affect in children and adults, research on affective development, and its sources and consequences during adolescence is relatively scarce. The current thesis aims to address affective dysregulation, and its role in the development of psychopathology in early-mid adolescence in the context of the parent-adolescent relationship. Specific goals are:

1. to study links between adolescent affect dysregulation as an underlying personal risk factor for the development of psychopathology from early to mid adolescence. Because affect dysregulation is a multidimensional construct, several forms of affect dysregulation are considered (emotion dynamics, i.e., the level and variability of experienced emotions; perceived emotion regulation difficulties, and difficulties with impulse control).

2. to study the potential role of parents for adolescent affect dysregulation and adolescent psychopathology: Specific questions will be:
   a. Is adolescent affective dysregulation related to the quality of the parent-adolescent relationship?
   b. Does parent-adolescent relationship quality affect the development of internalizing and externalizing problems directly or indirectly through its effects on adolescent affect regulation?

3. to study the role of the broader social context in links between affective dysregulation, the parent-adolescent relationship and the development of psychopathology. Attention will be paid to family (e.g., single parent) as well as neighborhood (e.g., economic disadvantage) adversity.

The studies in the current thesis are based on four different samples of adolescents (and their parents) from three different countries (The Netherlands, Germany, and Scotland). The studies in chapters 2 and 3 describe associations between affect dysregulation and psychopathology. In chapter 4, the focus is on associations between mother-adolescent interactions and adolescent affect regulation difficulties. Chapter 5 addresses the potential indirect role of affect dysregulation in hypothesized links between the parent-
adolescent relationship and adolescent psychopathology. Chapter 6 aims at illustrating the complex interplay of personal and family risk and the broader social context in the development of adolescent antisocial behavior.

Chapter 2: Psychometric properties of the Difficulties in Emotion Regulation Scale and its associations with psychopathology in an adolescent sample

Chapter 2 depicts cross-sectional associations between perceived emotion regulation difficulties and internalizing (anxiety and depression) and externalizing (aggressive and delinquent behavior) psychopathology in a sample of more than 700 Dutch high school students, and shows psychometric properties of the Difficulties in Emotion Regulation Scale (DERS), which was developed for use with adults, in adolescents. Results of a confirmatory factor analysis demonstrate that dimensions of emotion regulation difficulties, which the DERS assesses in adult populations, can also be differentiated in youth. The differentiation of multiple dimensions of emotions regulation difficulties in adolescents in further supported by the fact that the subscales of the DERS differentially predict diverse forms of psychopathology. For instance, a lack of emotional clarity, the non-acceptance of emotional responses, and limited access to emotion regulation strategies, are associated with symptoms of anxiety and depression. Aggressive behavior is linked with impulse control difficulties and difficulties engaging in goal-directed behavior when distressed. Delinquent behavior shows significant associations only with a lack of emotional awareness. Additionally, the study shows that female adolescents report more emotion regulation difficulties than their male peers. However, analyses testing for gender invariance of the DERS subscales show that gender differences in mean level scores on some subscales of the DERS must be interpreted with caution, as they may reflect differences in interpretations of some of the items by female versus male adolescents in addition to true gender differences in levels of emotion regulation difficulties.

Chapter 3: Emotion dynamics and adolescent psychopathology

Like chapter 2, chapter 3 focuses on associations between affect dysregulation and adolescent psychopathology. Chapter 3 focuses on the dynamics (level and variability) of four discrete emotions (happiness, anger, anxiety, and sadness), and their longitudinal associations with anxiety disorder and depressive symptoms, and aggressive behavior in 452 Dutch adolescents followed from age 13 to age 14. Results of path models show that the level and variability of all four emotions were predictive of changes in internalizing problems, while anger appeared to play the most prominent role in the development of aggressive behavior. When level and variability were included in the same model, variability of emotions contributed to changes in anxiety disorder symptoms, while heightened levels of negative emotions and diminished happiness contributed to changes in depression. Few gender differences in associations were found.

Taken together, chapters 2 and 3 demonstrate that different dimensions of affect dysregulation are associated with adolescent internalizing and externalizing problems. The studies hint at different forms of dysregulation as underlying different forms of psychopathology. For instance, anxiety disorder and depressive symptoms are associated with a lack of emotional clarity, the non-acceptance of emotional responses, and limited access to emotion regulation strategies – however, anxiety disorder symptoms are additionally related to high emotional variability, whereas depressive symptoms are especially associated
with high levels of negative and low levels of positive emotions. Little support was found for the hypothesis that discrete emotions are specifically related to different forms of psychopathology.

Though only few gender differences were found in emotion dynamics, female adolescents reported significantly higher emotion regulation difficulties on four of the six DERS subscales. Some gender differences were also found for the strength of associations between affect dysregulation and psychopathology, so that gender should clearly be considered in future studies of affect dysregulation and its mental health correlates in adolescence.

Chapter 4: Emotion regulation difficulties and mother-adolescent interactions

Chapter 4 describes cross-sectional associations between adolescent-mother interactions and perceived emotion regulation difficulties, as assessed with the DERS, in two samples of German high school students. The first study of the chapter examines links between maternal parenting and emotion regulation difficulties, and the second study focuses on associations between negative interactions and support in the mother-adolescent relationship and adolescent emotion regulation difficulties. Results of study 1 show that high adolescent perceived maternal control is positively linked with adolescent emotion regulation difficulties. This is especially true for psychological control, and applies to a lesser degree to behavioral control. Results of study 2 show that negative interactions between adolescent and their mothers associate positively with emotion regulation difficulties, while support in the relationship is associated with less emotion regulation difficulties. Associations between behavioral control, negative interactions, and support in the mother-adolescent relationship differed for male and female adolescents, with stronger associations found for female adolescents than for their male peers. The two studies suggest that interactions with mothers remain an important context for affect (dys)regulation in youths aged 12 to 19 years. Gender differences in strength of associations might reflect gender differences in emotion socialization, where young girls are taught more relationship-oriented strategies, and boys more instrumental strategies.

Chapter 5: Developmental associations between the parent-adolescent relationship, and adolescent negative affect and psychopathology

The study described in chapter 5 of the present thesis examined (1) in how far the development of negative interactions and support in the relationship between adolescents and their mothers and fathers are associated with the development of adolescent internalizing and externalizing problems, and (2) whether the development of relationship quality is directly associated with the development of psychopathology, or indirectly, via developments of adolescent negative affect. To answer these questions, data of 452 Dutch adolescents and their mothers and fathers, followed from age 13 to age 15 were analyzed using latent growth curve models. The development of support was not associated with the development of adolescent psychopathology. However, significant associations were found between the development of mother-adolescent and father-adolescent negative interactions and the development of adolescent physical aggression. The development of father-adolescent conflict was associated with the development of adolescent physical aggression directly, whereas the development of mother-adolescent conflict and adolescent physical aggression were mediated by the development of adolescent negative affect. Associations were similar for males and females. The study emphasizes the importance of studying the roles of mothers and fathers for adolescent development, and the potentially different pathways, through which parent-adolescent interactions may be related to the development of adolescent psychopathology.
Taken together, studies in chapters 4 and 5 show that parent-adolescent interactions remain an important context for affect regulation and dysregulation in adolescence, and that affect dysregulation is one way in which the parent-adolescent relationship is associated with adolescent mental health. Studies additionally highlight the importance of talking adolescent- as well as parent gender into account.

**Chapter 6: Impulsivity, parental knowledge, and adolescent antisocial behavior in the broader social context**

The study reported in chapter 6 illustrates the interplay of individual (high levels of impulsivity), and family and neighborhood risk in the development of adolescent antisocial behavior in a sample of over 4,000 adolescents from Edinburgh, followed from age 12 to age 15. Living with a single-parent, and high impulsivity at age 12 predicted levels of parental knowledge and adolescent antisocial behavior at age 14 for male and female adolescents. Neighborhood characteristics (economic deprivation and low informal social control) additionally predicted parental knowledge and adolescent antisocial behavior for male adolescents. For female adolescents, significant interactions were found between impulsivity and neighborhood economic deprivation and impulsivity and family type (single parent versus two-parent) in the prediction of parental knowledge. These interaction effects imply that levels of female adolescent impulsivity have a stronger impact on parenting in low risk contexts (two-parent families, no neighborhood economic deprivation) than in high risk contexts. Impulsivity and contextual risk factors in part increased adolescent antisocial behavior through decreasing parental knowledge. Female adolescents seem to profit more form high parental knowledge than male adolescents.

Taken together, studies in chapters 5 and 6 demonstrate that parent-adolescent interactions may either present a risk for adolescent affect dysregulation and subsequent psychopathology, or protect adolescents from the risks associated with high levels of behavioral dysregulation.

**Chapter 7: General Discussion**

Implications for theory, clinical work, and policy making are presented alongside suggestions for future research in chapter 7. Results of the current dissertation add to our understanding of affect dysregulation as a concept in adolescence, by showing intraindividual stability and normative developmental changes in emotion dynamics, and by identifying clinically relevant dimensions of perceived emotion regulation in adolescents. Additionally, the dissertation shows that the Difficulties in Emotion Regulation Scale and daily assessment of affective states are reliable ways of assessing affect dysregulation in adolescents, which associate with psychopathology and parent-adolescent interactions in predictable ways.

The present dissertation shows that affect dysregulation and psychopathology are associated longitudinally. Results point to strong interconnections between affect dysregulation and psychopathology, such that each constitutes both a source and a consequence of the other. Consequently, by improving affect regulation, symptoms of psychopathology may be reduced in adolescents. Further, the dissertation shows that, whereas discrete emotions and psychopathology are associated in rather general ways, specific forms of psychopathology may still show specific forms of underlying affect dysregulation. Future research may undertake efforts to combined diverse indices of affect dysregulation and study their unique and interactive effects on the development of psychopathology, thereby delineating the unique affect dysregulation profiles underlying different forms of psychopathology. These profiles might be used to tailor effective prevention and intervention efforts.
SUMMARY

The parent-child relationship has often been highlighted as an important context for the development of affect regulation and dysregulation in childhood. The present thesis shows that this remains true for early-mid adolescence and that (1) associations between the parent-adolescent relationship and affect dysregulation are best described as bidirectional, and (2) some of these associations are stronger for female as compared to male adolescents. Further, adolescent affect dysregulation was shown to mediate between parent-mother interactions and the development of psychopathology. It needs to be emphasized, that positive parent-adolescent interactions seem to play a protective role in associations between individual and contextual risk factors and the development of problem behavior. Findings of the present dissertation imply that clinicians need to evaluate adolescent behavior in the light of relationship- family, and neighborhood factors, and that potential benefits of including parents in the treatment should be considered. Policy makers need to be conscious of the fact that, while interventions at the individual level may be helpful, interventions may also usefully be aimed at the family and neighborhood level.

One limitation of the present dissertation concerns its samples, which mostly consisted of European middle class adolescents (and their parents) from the general population, thereby limiting the generalizability of our findings to adolescents from other ethnic background and clinical samples. Another main limitation of the studies presented in the present thesis is the heavy reliance on adolescent self-reports which may be influenced by an individuals’ willingness or ability to report accurately on their behaviors, and may have resulted in an overestimation of links between parent-adolescent interactions, adolescent affect dysregulation, and adolescent psychopathology due to shared-source variance. A third limitation is the fact that not every topic addressed in this thesis could be studied longitudinally. Though not a specific focus of the present thesis, it is also regrettable that not more of a differentiation between affect and its regulation could be made.

Future research may combine diverse indices of affect and its regulation to study unique, additive, and interactive effects between affect and affect regulation on the development of psychopathology in adolescence. Further, studies of normative developmental changes regarding affect and its regulation may prove of great use for the study of associations between affect dysregulation and psychopathology. Once we have a better picture of how affect regulation and dysregulation develops normally across adolescence, we can try to find early markers of affect dysregulation that indicate ‘when things turn to go wrong’. Regarding sources of affect dysregulation, an especially promising avenue for future research may be the study of combined genetic and environmental influences.