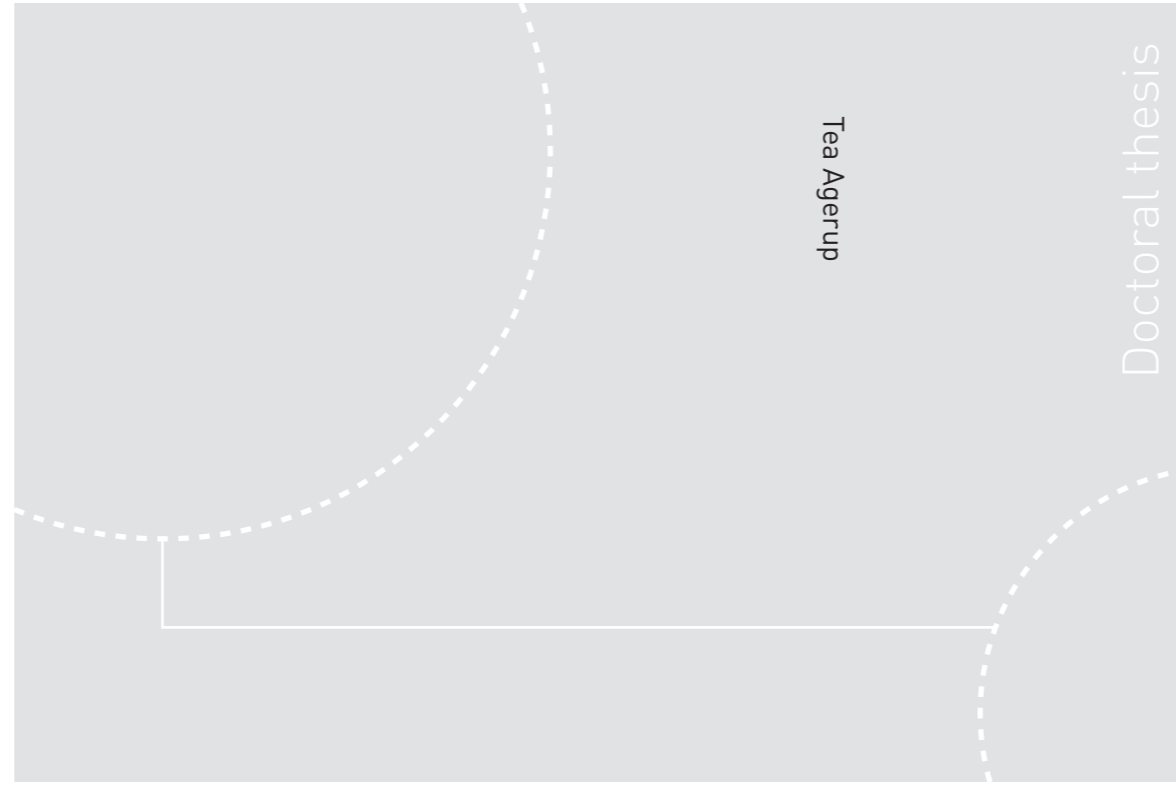


ISBN 978-82-326-2034-0 (printed ver.)
ISBN 978-82-326-2035-7 (electronic ver.)
ISSN 1503-8181



Doctoral theses at NTNU, 2016:346

Tea Agerup

The Course of Adolescent Depression and Parental Risk Factors

A longitudinal study from adolescence to young adulthood

Doctoral theses at NTNU, 2016:346

NTNU
Norwegian University of
Science and Technology
Thesis for the degree of
Philosophiae Doctor
Faculty of Medicine
Regional Centre for Child and Youth Mental Health
and Child Welfare – Central Norway

 **NTNU**
Norwegian University of
Science and Technology

 **NTNU**

 **NTNU**
Norwegian University of
Science and Technology

Tea Agerup

The Course of Adolescent Depression and Parental Risk Factors

A longitudinal study from adolescence
to young adulthood

Thesis for the degree of Philosophiae Doctor

Trondheim, November 2016

Norwegian University of Science and Technology

Faculty of Medicine

Regional Centre for Child and Youth Mental Health

and Child Welfare – Central Norway



Norwegian University of
Science and Technology

NTNU

Norwegian University of Science and Technology

Thesis for the degree of Philosophiae Doctor

Faculty of Medicine

Regional Centre for Child and Youth Mental Health
and Child Welfare – Central Norway

© Tea Agerup

ISBN 978-82-326-2034-0 (printed ver.)

ISBN 978-82-326-2035-7 (electronic ver.)

ISSN 1503-8181

Doctoral theses at NTNU, 2016:346

Printed by NTNU Grafisk senter

Depresjonsforløpet for ungdom og foreldre-risiko faktorer

En longitudinell studie fra ungdom til ung-voksen alder

Bakgrunn: Forskning påpeker at foreldre-påvirkning er assosiert med utviklingen av klinisk depresjon til ungdom. I denne avhandling fokuserer vi på 5 risikofaktorer ved foreldre og depresjon til ungdom fra de er 15 til 20 år. Risikofaktorene er om foreldrene er skilt eller ikke bor sammen, misnøye med personlig økonomi, fysisk sykdom eller ufør, internaliserende problemer og eksternaliserende problemer. I tillegg undersøkes også mindre trygg tilknytning til mor, far og jevn gamle som risikofaktorer for utvikling av depresjon over fem år fra alderen 15 til 20 år. Ungdommen stammer fra en populasjonsstudie hvor et underutvalg med høy depresjonsskåre på et selv-rapport skjema ble diagnostisert for ulike depressive lidelser når de var 15 år og når de var 20 år. Depresjon ble fastsatt i et klinisk intervju og refereres til som klinisk depresjon etter intervju diagnosene. Depressive lidelser ble delt opp i alvorlig (major) depresjon og lett (minor) depresjon. Vi beskriver også longitudinell stabilitet og utvikling av depresjon i kategoriene; blir deprimeret, blir frisk, forblir deprimeret og viser ingen depresjon. **Metode:** I Ungdom og Psykisk Helse studien, ble 345 ungdommer utredet med spørreskjema inkludert depresjonsmål og tilknytnings mål og det kliniske intervju Kiddie-SADS-Present and Lifetime (K-SADS-PL) når de er 15 år. Av disse ble 242 igjen utredet med de samme instrumenter 5 år senere, når de var 20 år. Risikofaktorer ble fastsatt gjennom informasjon fra foreldre, blant annet Adult Self Report (ASR), når ungdommen var 15 år. Tilknytning ble målt ved hjelp av Inventory of Parent and Peer Attachment (IPPA), fylt ut av ungdommene. Ordinal og multinomial logistisk regresjon ble brukt i statistiske analyser. **Resultatene** viser at mødres misnøye med økonomien, fysisk sykdom/uførhet, internaliserende problemer og eksternaliserende problemer var assosiert med alvorlighetsgrad av depresjon i ungdommen når de var 15 år. Men når vi kontrollerer for alle faktorer var det bare mors internaliserende problemer som forble signifikante. Undersøkelse av forløpet av depresjon viste at størstedelen blir aldri deprimeret, noen blir friske i løpet av 5 år, men de som får alvorlig depresjon når de er 15 år forblir med diagnosen alvorlig depresjon når de er 20 år. Når vi undersøker risikofaktorer assosiert med utviklingsforløpet av depresjon (både alvorlig og lett depresjon) fra alderen 15 til 20 år, finner vi at mindre trygg tilknytning til mødre var assosiert med å bli deprimeret. Og mindre trygg tilknytning til begge foreldre var assosiert med både å bli frisk og forbli deprimeret. Begge grupper som forble deprimerede og ble frisk hadde større sannsynlighet for å ha mødre med internaliserende problemer. Fars internaliserende problemer var også signifikant assosiert med de som forble deprimerede og fedres depresjons symptomer har en sammenheng med at ungdommen utvikler alvorlig depresjon fra 15 til 20 år. Også mindre sikker tilknytning til begge foreldre har en sammenheng med depresjon fra 15 til 20 år. Angående kjønnsforskjell utgjorde jenter en større andel av hele samplet. I tillegg hadde jentene med depresjonsdiagnoser et alvorligere forløp enn gutter med depresjon. Imidlertid når det gjaldt risikofaktorer fant vi ingen kjønnsforskjeller. **Bidrag:** Dette arbeid bidrar til forskning så langt med å undersøke mødre og fedre hver for seg i forhold til de gitte risikofaktorer og tilknytning. I tillegg bidrar denne forskning også originalt med kombinasjonen av et populasjons utvalg av ungdom som blir utredet longitudinelt med et klinisk intervju i forhold til depresjon. **Konkludert** fant de tre studiene at foreldre-risikofaktorer kan assosieres med depresjons utvikling i ungdommer og unge voksne. Mødre men ikke fedres internaliserende problemer kunne assosieres med depresjon i alderen 15 år. Begge foreldres internaliserende problemer kunne assosieres med depresjons forløpet de neste fem år. Dette kan bety at ungdommer er sensitive overfor mors emosjonelle problemer i ungdomsårene og at fars affektive problemer kan ha innflytelse i forhold til utvikling av depresjon senere i ungdoms forløpet. Likeledes er mindre trygg tilknytning i forhold til enten mor eller far eller begge assosiert med alvorlig depresjon igjennom hele ungdomstiden. Derfor er det tilrådelig å være oppmerksom på foreldres psykiske helse i forbindelse med ungdommers depresjon og eventuelt inkludere foreldre i tiltak for ungdommen.

Tre artikler er publisert basert på denne forskning. Den første undersøker fem foreldre-risikofaktorer for depresjon ved ungdommen når de er 15 år. Den andre undersøker de samme fem risikofaktorer i forhold til depresjons forløpet fra ungdom til ung voksen alder, 15 til 20 år. Den tredje undersøker mindre trygg tilknytning til foreldre og venner som risikofaktor assosiert med depresjons forløpet fra ungdom til ung voksen alder.

Navn kandidat: Tea Agerup

Institutt: Regionalt kunnskapscenter for barn og unge -Psykiske Helse og Barnevern (RKBU)

Veiledere: Jan Wallander, Stian Lydersen, Anne Mari Sund

Finansieringskilde: Samarbeidsorganet Helse Midt og NTNU, og St.Olavs Universitets Sykehus

Ovennevnte avhandling er funnet verdig til å forsvares offentlig

for graden Philosophiae Doctor i klinisk medisin

Disputas finner sted i Auditoriet, medisinsk tekniske forskningscenter (MTFS)

onsdag 30.nov 2016, kl. 12:15.

Contents

<u>Acknowledgements</u>	1
List of papers and presentations/posters	3
Acronyms and abbreviations	4
Definitions/ Key concepts	5
Summary	11
1. Introduction	14
1.1 Topic	14
1.2 Rationale	14
1.2.1 Prevalence and impact of depression in adolescents	15
1.2.2 Prevalence of depression in young people in Norway	17
1.3 An overview of etiology of depression	18
1.4 Parental risk factors	20
1.4.1 Parents not living together	21
1.4.2 Dissatisfaction with economy	21
1.4.3 Physical illness or disability	22
1.4.4 Internalizing and externalizing problems	23
1.4.5 Insecure attachment	23
1.5 Previous research	25
1.6 Contributions from this study	27
2. Aims of studies and hypotheses.....	29
3. Method	31
3.1 Design	31
3.1.1 Sampling and participants	31
3.1.2 Attrition of participants	33
3.1.3 Ethics for the Youth and Health Study	33
3.1.4 Flow chart	34
3.1.5 Socio-demographics	35
3.1.6 Table of socio-demographics	36
3.2 Instruments	37
3.2.1 Adolescent/young adult questionnaire	37
3.2.2 Depressive symptoms level	37
3.2.3 Attachment	37
3.2.4 Diagnostic interview	38
3.2.5 Parental questionnaire	39
3.2.6 Parental interview	40
3.3 Ethics	41
3.4 Statistical analyses	41
3.4.1 Definitions of central terms in statistical analysis	41
3.4.2 Statistical applications in this thesis	43
4. Summary of results, overview of the studies	47
4.1 Main results for study I	47
4.2 Main results for study II	47
4.3 Main results for study III	49
5. Discussion	51
5.1 Overview of findings	51
5.2 Methodological considerations, strengths and limitations	52

5.2.1 Causality versus association	54
5.2.2 Random errors	54
5.2.3 Self-report and interview	55
5.2.4 Measuring variables as single items and sum scores	55
5.2.5 Selection bias	56
5.2.6 Statistical analyses	56
5.2.7 Sample size	57
5.3 Power testing	58
5.3.1 Assessment of parental psychiatric symptoms	59
5.3.2 Diagnosis of depression using DSM-IV vs. DSM 5	60
5.3.3 Generalizability of results	61
5.4 Interpretation of main findings	61
5.4.1 Course of depression	62
5.4.2 Sex and course of depression	63
5.4.3 Mothers	63
5.4.4 Fathers	66
5.5 Attachment	67
6. Clinical implications	69
6.1 Prevention and treatment of adolescent depression	69
7. Suggestions for future research	73
8. Conclusions	75
9. References	77
Papers 1-3.....	89

Acknowledgements

This study was carried out at the Regional Centre for Child and Youth Mental Health and Child Welfare (RKBU), Faculty of Medicine, the Norwegian University of Science and Technology (NTNU), Trondheim, Norway. The study received financial support from the liaison committee between the Central Norway Health Authority and the NTNU (Samarbeidsorganet) and the University Hospital of St.Olav.

The Youth and Mental Health Study is a project run by the Regional Centre for Child and Youth Mental Health and Child Welfare and the project leader is Professor Anne Mari Sund. I am very grateful to professor Sund for recognizing my potential and including me in the staff of research candidates in this project. That includes exploring the data and analyzing, as well as support in writing and publishing the findings in research journals.

Above all others I thank my primary supervisor Professor Jan Wallander, for helping me through the process of studying and writing. His warm, patient and clever style of supervising has made it possible for me to complete this journey.

Professor Stian Lydersen has also been invaluable in the process of analyzing the data, the very base for writing and in dealing with reviewers while submitting the articles.

Special acknowledgement to Kyrre Svarva at the Faculty of Social Sciences, for helping sorting the huge amounts of data from the three waves of the Youth and Mental Health study, Turid Suzanne Berg Nielsen who was the leader of RBUP and later RKBU and gave me moral support in rough times. Lars Jakob Stovner (professor and leader of the Institute of Neural Medicine) as well as Torill Naavik and the administration for facilitating office space.

I want to thank my current employer the Institute of Applied Social Sciences, NTNU, for hiring me for the psychology subject for the Child Welfare Services and Pedagogics and giving me time to finish the PhD work.

Special thanks to my family, John Arne who held the family and house upright and who made sure I had enough time for work and the least intrusions. Also helping out with difficult problems and solving them (tax reports, removing spiders, walking the dog), thanks for always being there. Also thanks to my beautiful and clever girls Vilde and Alba who have provided love and diversions throughout this process. To think that this work has taken more than half of their lives. Thanks to my mom who has sent me a lot of thoughts but not spoken them out, and my sister Gry who has been inspiring with her supportive messages and creative ideas. I also want to thank my close friends, colleagues, teachers, clients, patients, mentors.

List of papers

- I: Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. (2015). Maternal and paternal psychosocial risk factors for clinical depression in a Norwegian community sample of adolescents. *Nord J Psychiatry*, Jan;69(1):35-41. Doi: 10.3109/08039488.2014.919021
- II: Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. (2014). Longitudinal Course of Diagnosed Depression from Ages 15 to 20 in a Community Sample: Patterns and Parental Risk Factors. *Child Psychiatry and Human Development*. Dec;45(6):753-64. Doi: 10.1007/s10578-014-0444-8
- III: Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. (2015). Associations Between Parental Attachment and Course of Depression Between Adolescence and Young Adulthood. *Child Psychiatry and Human Development*. Aug;46(4):632-42. Doi: 10.1007/s10578-014-0506-y

Acronyms and abbreviations

C-Gas	Childhood – Global Assessment of Symptoms
CI	Confidence Interval
Depression NOS	Depression Not Otherwise Specified
DSM	Diagnostic Statistical Manual
ICD-10	International Classification of Diseases, 10 th Revision
K-SADS-PL	Kiddie – Schedule for Affective Disorders and Schizophrenia – Present and Lifetime
MDD	Major Depressive Disorder
MFQ	Mood and Feelings Questionnaire
SPSS	Statistical Package for Social Sciences
OR	Odds Ratio
T1	Time, Assessment 1 (1998-1999)
T2	Time, Assessment 2 (1999-2000)
T3	Time, Assessment 3 (2004-2005)

Definitions/ Key concepts

Adolescence

The adolescent grows up to become the adult. The words *adolescent* and *adult* ultimately come from forms of the same Latin word, *adolēscere*, meaning "to grow up." The present participle of *adolēscere*, *adolēscēns*, from which *adolescent* derives, means "growing up," while the past participle *adultus*, the source of *adult*, means "grown up."

Various definitions for the time of adolescence are used in the literature, but according to the World Health Organization (WHO) the starting age is around 10, ending at 19 years, including early-middle and late adolescence (WHO, 2014). The transition from adolescence to adulthood is a critical period. Adolescence is a period during which preparations are made to meet the expectations directed at adults in our society, including completing education, getting started in work, becoming financially independent, developing romantic relationships, getting married, parenthood, developing an adult social support system, and maintaining good physical health (Rohde et al., 2007).

Young adulthood

Young adulthood, a developmental bridge or transition between adolescence and early adulthood (Levinson "conception" p.297). Young adulthood may not be a stage general to all societies but it is generally defined as 18 to 25 years (Simpson, 2008; Zastrow & Kirst-Ashman, 2009). In this period the individual is still going through physical and mental development, though not so rapidly as in adolescence. Most importantly is that young adulthood is a time of dramatic change in basic cognitive structures. Cognitive development includes greater capacity for abstract thinking, appreciation of diverse views, mutuality in relationships, instrumental thinking (Kegan, 1982, 1994), high intensity of emotions

(hormonally charged) and regulation, risk taking/sensation seeking and decision making (Dahl & Spear, 2004). Also new external challenges emerge in this life phase as young people finish school and begin to hold full-time jobs and take on other responsibilities of adulthood (Birch, 1997).

Depression

Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behavior, feelings and sense of well-being. Depressed people can feel sad, anxious, empty, hopeless, worried, helpless, worthless, guilty, irritable, hurt, restless, lonely, despair, with low self-esteem, and/or self-reproach (Sadock & Sadock, 2004; World Health Organization, 2010). They may lose interest in activities that once were pleasurable, experience loss of appetite/anorexia or overeating, have problems concentrating, remembering details, or making decisions, and may contemplate, attempt, or commit suicide.

Accompanying signs include psychomotor retardation, agitation at times, and withdrawal from interpersonal contact, as well as vegetative symptoms like insomnia, excessive sleeping, fatigue, loss of energy, or aches, pains, or digestive problems (Sadock & Sadock, 2004; World Health Organization, 2010). The DSM IV was the diagnostic system in place at the time (1998-2004) when the data for this thesis research were collected. This manual identifies the depression disorders used in this thesis as Major Depressive Disorder, Dysthymic Disorder and Depression NOS (Not otherwise specified)(American Psychiatric Association, 1994).

Major Depressive Disorder criteria include a period of at least two weeks during which there is either depressed mood or the loss of interest or pleasure in nearly all activities. At least 5 of 9 listed symptoms are experienced. There could be single episode or recurrent episodes, lasting 6 to 9 months (Sund, Larsson, & Wichstrom, 2011). Dysthymic Disorder is mild but prolonged depression lasting for two years without a break in adults and at least one year in children and adolescents. While depressed the person experiences at least 2 of 6 symptoms

listed. MDD and Dysthymia also included the symptom of reduced functioning. Depressive Disorder NOS category includes disorders with depressive features that do not meet criteria for Major Depressive Disorder or Dysthymic Disorder, including for example premenstrual dysphoric disorder, minor depressive disorder but with fewer than five items required for MDD, recurrent brief depressive disorders, and post psychotic depressive disorders. For this study reduced functioning was not a requirement for Depressive Disorder NOS.

When referring to the word depression throughout the text it is with the intention of describing depression in general. This includes the subjective feeling of depression, sub-clinical depression and diagnosed depression. When referring to clinical depression this designates diagnosed conditions of depression such as MDD, Dysthymia and Depressive Disorder NOS as diagnosed in the clinical interview K-SADS-PL. For purposes of analyzing data MDD and Dysthymia were pooled and defined as Major Depression. Depressive Disorder NOS was defined as Minor Depression.

Parental risk factors

In epidemiology, a risk factor is a variable associated with an increased risk of disease or negative health state. Risk factors or determinants are correlational and not necessarily causal variables, because correlation does not prove causation (Rothman, 2012). Methods are frequently used to assess the strength of an association and on that basis support discussion of causal possibilities. Statistical analysis in the biological sciences can be used to establish that a risk factor is causal. For proven links the term risk factors means determinants of increased rates of disease, and for unproven links the terms "possible risks" or "associations" are used. In this thesis we have unproven possible risk factors and use associations to describe the link between parental risk factors and adolescent depression.

The probability of an outcome usually depends on the interplay between multiple associated variables. When performing epidemiological studies to evaluate one or more determinants for a specific outcome, the other determinants may act as confounding factors, that need to be controlled for, for example through stratification or co-variation (Rothman, 2012). The potentially confounding determinants vary with what outcome is studied, but age, sex or gender, and social status are general confounders common to most epidemiological associations, and are commonly controlled for in epidemiological studies (Rothman, 2012).

Parental risk factors are characteristics of parents that are hypothesized to be associated with their children's health problems. Five factors examined in the present research are examples of risk factors that concerns many families and may increase risk of depression in adolescent offspring: Parents not living together, economic dissatisfaction, parental physical illness or disability, parental mental health (internalizing and externalizing) problems and insecure attachment to parents.

Parents not living together

When biological parents do not live together they may be divorced or separated partners or never have had sustained time living together as a couple.

Economic dissatisfaction

This is the subjective experience parents report about their personal economic circumstances. This provides a different perspective on actual economic situation in contrast to measures of socio-economic status.

Physical illness or disability

Indication of compromised parental long term health status.

Internalizing problems

Feelings of anxiety and depression, withdrawn behavior, or somatic complaints.

Externalizing problems

Behavior that is rule-breaking, aggressive, or disruptive to others.

Attachment

In this thesis we also consider attachment to parents as well as peers as risk factors for adolescent depression. Attachment is considered as a deep and enduring emotional bond that connects one person to another across time and space (Ainsworth, 1973; Bowlby, 1969), which is vital for the child's normal emotional and social development. Bowlby defined attachment as a "lasting psychological connectedness between human beings" (Bowlby, 1969) (p.194). Attachment is characterized by specific behaviors in children, such as seeking proximity with the attachment figure when upset or threatened (Bowlby, 1969). Attachment behavior in adults towards the child includes responding sensitively and appropriately to the child's needs. Such behavior appears universal across cultures. The original application was to the relationship between an infant and his/her parent, but attachment has since then been extended to reflect other relationships including enduring emotional bonds that develops between peers in adolescence.

Sex differences

In this thesis we mainly use the expression sex to distinguish between girls and boys. In English academic usage a distinction is often drawn between sex and gender. Sex denotes biological and bio-psycho-social characteristics of females and males. Gender denotes the social and cultural characteristics of females and males without reference to their biology. In this thesis gender is only occasionally used since the psycho-social characteristics of males

and females, whether children or parents are most often in focus. This accords with usage in most of the literature in the research area that has been cited in the text.

Summary

Background: Parental characteristics can be associated with increased risk of diagnosed depression in adolescents. In this thesis we focus on the following parental risk factors; parents not living together, dissatisfaction with personal economy, physical illness or disability, internalizing problems and externalizing problems, and insecure attachment. In addition to attachment to mother and father, attachment to peers is examined as a risk factor for depression. These risk factors were examined in association with depression diagnoses in a community sample first at age 15 and then by following the course of depression from age of 15 to 20. We also described longitudinal stability and change in depression diagnoses over this period in terms of becoming depressed, becoming well, remaining depressed, and displaying no depression.

Methods: In the Youth and Mental Health study 345 adolescents first completed questionnaires and the Kiddie-SADS-Present and Lifetime (K-SADS-PL) interview assessment at age 15 (Kaufman et al., 1997). Of these, 242 repeated the same questionnaires and K-SADS-PL five years later at age 20. Depressive disorders were defined as Major Depression (MDD and Dysthymia) and Minor Depression (Depression NOS). Risk factors were measured at age 15 by parent interview and self-report, including the Adult Self Report (Achenbach & Rescorla, 2003). Attachment was measured with adolescent self-report at age 15 using the Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987). Ordinal and multinomial logistic regression were used for statistical analyses.

Results: Mother's economic dissatisfaction, physical illness/disability, internalizing problems and externalizing problems were associated with severity of adolescent depression diagnosis at age 15. However, adjusting for all other factors, only mothers' internalizing

problems remained significantly associated with the severity of adolescent depression. Father's risk factors were not associated with adolescent depression at age 15. In this sample, constituted in part by those who reported symptoms of depression in a screening assessment and a matched control group without reported depression, 44% of the examined young people either were or became depressed from ages 15 to 20, and of those who were depressed at 15, 17% became well over the subsequent 5 years. Girls were strongly represented in the sample and of those who were depressed girls were in the majority and had a more severe course of depression than boys. However, regarding risk factors and course of depression we did not find sex differences in this study.

Then examining risk factors associated with course of depression from ages 15 to 20, findings were that less secure attachment to mothers was associated with becoming clinically depressed and less secure attachment to either parent was associated with both becoming well and remaining clinically depressed. Moreover, both groups who remained clinically depressed and who recovered were more likely to have mothers with internalizing problems. Internalizing problems in fathers were also significantly associated with the group who remained clinically depressed from the age of 15 to 20 years. In summary mothers' and fathers' internalizing symptoms can be associated with development of clinical depression in their offspring from ages 15-20 years. Also insecure attachment to the parents can be associated with depression in this period.

Contribution: This work is an advance over previous research in examining both mothers and fathers separately in relationship to risk factors and attachment to their adolescent offspring. This study additionally makes a methodological contribution by studying adolescents sampled from a community population who were assessed longitudinally with clinical interview through the transition into young adulthood.

Conclusion: The three studies found that parental risk factors can be associated with the course of depression in adolescents and young adults. Maternal but not paternal internalizing problems could be associated with depression at 15 years. Both parent's internalizing problems could be associated with the course of depression during the subsequent five years. This could indicate that adolescents are sensitive to maternal emotional distress and that paternal emotional distress becomes influential in the course of adolescence. Also less secure attachment to either parent is associated with Major Depression throughout adolescence. Assessing parental mental health and life situation when adolescents are struggling with depression, as well as involving parents in therapy may be useful approaches in mental health and community mental health services.

Publications: Three articles have been published based on this research. The first examines five parental risk factors for depression in adolescence at 15 years of age. The second examines the same risk factors in relation to the course of depression from adolescence to young adulthood, from 15 to 20 years of age. The third examines less secure attachment to the parents as a risk factor for the course of depression over the same period.

Introduction

“The day the child realizes that all adults are imperfect, he becomes an adolescent; the day he forgives them, he becomes an adult; the day he forgives himself, he becomes wise.”

Alden Nowlan

1.1 Topic

This dissertation concerns depression in adolescence, which often persevere into adulthood. We describe the course of clinically diagnosed depression in adolescents through young adulthood and examine observed risk factors for different courses of depression in this period, with a focus on a selection of parental risk factors as well as parent and peer attachment. Mothers and fathers are examined separately and the adolescent sample is drawn from a community population of Norwegian junior high school students who participated in the Youth and Mental Health study (Sund et al., 2011). They were assessed at the age of 15 (1999) and again at 20 (2004) years.

This introduction will first focus on the rationale for the dissertation, then on prevalence of depression in adolescence, and the etiology of depression seen from biological and psychosocial perspectives. Specific parental risk factors of interest in this research will be introduced and finally findings and limitations in previous research for the specific topics of this dissertation will be addressed.

1.2 Rationale

Depression is experienced as a series of different low mood symptoms. When enough symptoms are present at high enough intensity it can be termed a clinical disorder (American Psychiatric Association, 2013). Depression in adolescence as observed worldwide has not

been fully explained yet, in particular with regard to the contribution of parental factors. We follow a community sample of adolescents over a five year period into young adulthood to observe changes in clinical depression during this transition. We observe risk factors among mothers and fathers separately, something which has rarely been accomplished before in this research area, as well as attachment to mother, father, and peers separately, to examine associations with depression and its course in this developmental period.

1.2.1 Prevalence and impact of depression in adolescence

Depression is among the most common mental health concerns in both adolescence and young adulthood (Merikangas & Knight, 2009), yet longitudinal research on trajectories and risk factors for the course of depression from adolescence to young adulthood has been limited. Depression is a significant concern in this period because prevalence rises sharply after puberty (Thapar, Collishaw, Pine, & Thapar, 2012) to peak in early adulthood (Hankin et al., 1998). Estimates of prevalence for depressive disorders ranging from Major Depressive Disorder (MDD) and Dysthymia to less severe depression are inconsistent in international studies (Avenevoli, Knight, Kessler, & Merikangas, 2008). This can indicate use of different measures and methods as well as real differences in different populations in different cultures. However, the general indication is that the 12-month prevalence of MDD ranges from 1%-7% in adolescents and 8%-17% in young adults (Avenevoli et al., 2008). Life-time prevalence for any depressive disorder was 23% for Norwegian youth (Sund et al., 2011), which can be compared to 25% for older adolescents and young adults in the United States (R. C. Kessler & Walters, 1998). Previous research on stability of depression in individuals over time found that symptoms are often episodic (Prenoveau et al., 2011) and that stability of specific symptoms and episode severity is low (P. M. Lewinsohn, Pettit, Joiner, & Seeley, 2003). Whereas gender differences are not noticeable in early adolescence prior to puberty, depression becomes distinctly female dominant (2-3 times higher prevalence than males) in

mid-adolescence and remain so through adulthood (Hankin et al., 1998; Pettit, Lewinsohn, Seeley, Roberts, & Yaroslavsky, 2010; Twenge & Nolen-Hoeksema, 2002).

Depression leads to suffering and disability among adolescents and has considerable impact on development. The consequences of adolescent depression include academic failure, poor peer relations, behavioral problems, conflict with parents and authority figures, low self-esteem, substance abuse and interruption of development towards cognitive maturity (Lemstra et al., 2008).

Because longstanding depression in adolescence is a powerful predictor of continued mental health problems in adulthood (Jonsson et al., 2011; Kasen et al., 2001) as well as somatic health problems (Keenan-Miller, Hammen, & Brennan, 2007), there is a need to examine the course of, and influences upon depression across these developmental phases to inform treatment and prevention programs. The Youth and Mental Health study was designed to examine risk and protective factors for the development of depressive symptoms and disorders from adolescence into young adulthood (Sund, 2004). The main DSM-IV diagnostic categories for depression are Major Depressive Disorder, Dysthymia, and Depressive Disorder Not Otherwise Specified (NOS) (American Psychiatric Association, 1994). Most studies on adolescents with clinical depression have focused on Major Depressive Disorder (Barbe et al., 2005; Jaffee et al., 2002), whereas few have included less severe depression (N. B. Allen, Kuppens, & Sheeber, 2012; Sihvola et al., 2007; Sund et al., 2011; Vander Stoep et al., 2012). However, because individuals with depression can wander into and out of the different categories of depression over time (Prenoveau et al., 2011), there is a need to examine also the milder depression diagnoses when considering course and risk factors.

1.2.2 Prevalence of depression in young people in Norway

Prevalence of depression in adolescents and young adults has mainly been measured with self-report surveys in Norway rather than based on clinical diagnoses. Self-report studies can give a description about depression trends over the last 15 years in Norway. The Young HUNT I (1995-97) and II (2000-01) and III (2006-08) of the North-Trøndelag Health Study (<http://www.hunt.ntnu.no>) is the most extensive study in Norway. Based on Young HUNT, there were considerably more girls (14.7%-19%) than boys (5.8%-6%) reporting anxiety and depression (however not distinguished in this study), which increased rather steadily by age (Derdikman-Eiron et al., 2011; Skrove, Romundstad, & Indredavik, 2013). The Survey on Health and Living Conditions in 2008 is another population survey in Norway that describes mental health for adolescents and young adults, ages 16-22, randomly sampled from the whole country. Results indicate that self-reported affective problems (based on Hopkins Symptom Checklist -HSCL-25, 10 questions on anxiety and 15 on depression) in this age range had increased drastically in Norway over 10 years (Lunde, 2013), from 9% in 1998 to 16% in 2008. This is about twice that in the general adult population. Moreover, this survey indicated that 25% of young women report significant depression symptoms compared to only 5% of males, and the prevalence is higher at younger ages compared to older in this range (Lunde, 2013). Higher prevalence of mental health problems was associated with being unemployed or not attending school. In comparison, the Youth and Mental Health study based on a different self-report measure of depressive symptoms (Mood and Feeling Questionnaire) reported that an estimated 3.3% of girls and 2.6% of the total sample (both girls and boys) experienced major depression (Sund, Larsson, & Wichstrom, 2001). When the same subset of participants as in the present thesis, that is high MFQ scorers (n=220), middle MFQ scorers (n=74) and low MFQ scorers (n=50), were interviewed with Kiddie SADS-PL, the prevalence for MDD was 2.6%, Dysthymia 1.0%, and Depression NOS 6.3%, and 0.6% had both MDD

and Dysthymia. Girls had higher prevalence of MDD and Dysthymia than boys, but no sex difference was observed for Depression NOS (Sund et al., 2011).

1.3 An overview of etiology of depression

Etiology of depression has been argued to involve various mechanisms. In the broad biological domain there are genetic, neurological, and hormonal mechanisms. Among salient psychosocial mechanisms are personality, familial, and cultural mechanisms as well as environmental factors such as exposure to stressors and trauma. Whereas a range of factors can contribute to depression in children and adolescents, several are associated with the parents, either in terms of inherited biological determinants or the environment provided by the parents in which the children are raised.

Although not a focus in the present research, there are several biological processes implicated in the etiology of depression. Genetically, approximately one-third of the risk for development of depression is considered inherited (Sullivan, Neale, & Kendler, 2000). Neuroinflammation is a biological event that might increase the risk of developing depression (Borsini, Zunszain, Thuret, & Pariante, 2015; Dantzer, O'Connor, Freund, Johnson, & Kelley, 2008; Miller, Maletic, & Raison, 2009; Slavich, 2014; Young, Bruno, & Pomara, 2014). Hormonal changes, such as those occurring during pubertal development, may also contribute to the etiology of depression (Nantel-Vivier & Pihl, 2008). Cortisol measured in the blood indicates exposure to stress and is elevated in depressed patients. The modern stress-diathesis hypothesis of depression suggests that excess secretion of cortisol and other hormones of the hypothalamic-pituitary-adrenal (HPA) axis play a significant role in the etiology of depression (Hyman & Cohen, 2013; Saveanu & Nemeroff, 2012). Also neurobiological research finds evidence that several neurotransmitter systems are pathologically involved in depression.

Brain imaging research show a reduction in hippocampal and caudate nucleus size as well as increase in adrenal and pituitary volume during depression (Saveanu & Nemeroff, 2012).

Likewise, there is a large body of research focusing on environmental etiology of depression. Several studies show that adverse life events including childhood maltreatment increase the risk of developing depression (Sullivan et al., 2000). “Childhood physical abuse is the strongest predictor of adult depression in all ethnic groups”(p.12) (Nolen-Hoeksema, 2006). Bowlby “pointed out that children’s psychological development takes place in a dynamic interaction between genetic predispositions and the environment, which shape each other in a mutual process that begins at conception”(foreword xii) (Hart, 2008). When discussing the salience of the biology and environment, newer research points to parenting factors as among the most important contributors. The quality of care and attachment especially in the early relationship influences the development of the brain and behavior patterns through epigenetic processes that can change the DNA (Fosse, 2009).

Newer research is less consistent concerning the processes by which parental depression can influence the development of depression in offspring and to what extent this marks environmental or genetic influences (Natsuaki et al., 2014; Silberg, Maes, & Eaves, 2010). Presumably the individual’s vulnerability to and development of depression are a consequence of the interaction of biology and environment where the environment has a considerable influence. This interaction between biology and environment continues its development in childhood and through adolescence and young adulthood. Indeed, the combination of biological and environmental pathways very likely contributes to the development of the distinct cognitive processes that have been identified as a major vulnerability for depression (S.H. Goodman & Tully, 2008).

Although numerous factors are implicated as influencing the development of depression in young people, as discussed above, social relationships are important for all development (Hartrup & Laursen, 1999), including mental health for the adolescent and young adult (Copeland et al., 2013). Because the parental relationship is still of primary influence even in adolescence, it likely contributes towards the development of problems such as depression (Abela, Skitch, Auerbach, & Adams, 2005; Gilman, Kawachi, Fitzmaurice, & Buka, 2003; Grant & Compas, 1995; Langton, Collishaw, Goodman, Pickles, & Maughan, 2011). However, it is not sufficiently understood whether mothers and fathers contribute the same risk factors, and whether the risk associated with maternal and paternal factors might vary depending on the sex of the adolescent. Motivating the present research, improved knowledge consequently is desired about potentially differential risk factors due to parental health situation, economic-wellbeing, relationship status, and the attachment quality to the adolescent, which can inform more targeted intervention for clinical depression in young people.

1.4 Parental Risk factors

Parents are believed to be the strongest social-environmental influences for any child (Bronfenbrenner, 1986), including negative ones, thus posing as possible risk factors to children's mental health. However, little research has included both mothers and fathers in the identification of risk factors for adolescent depression, in particular considering the full range of depression. Both parents are important influences on both normative and atypical development (Bronfenbrenner, 1986), even though research has focused much less on fathers.

Numerous parental factors can be contemplated. In the present research, however, we have the opportunity to examine the following as risk factors for depression in the period from

adolescence to young adulthood; parents not living together, economic dissatisfaction, physical illness/disability, internalizing problems, and externalizing problems in both mothers and fathers. Also the adolescent reported attachment to mother, father, and peers will be examined in relationship to the course of depression. As elaborated below, these risk factors have been associated with mental health problems, most likely because they represent prominent psychosocial challenges adolescents face in this phase of life as they develop into young adults. Given the paucity of research that has focused on both parents, we will examine whether these risk factors differ among mothers and fathers in relation to the adolescent.

1.4.1 Parents not living together

Parents not living together is a risk factor for adolescent depression (Gilman et al., 2003; Huurre, Junkkari, & Aro, 2006) because divorce, as well as other reasons for biological parents not living together, constitute considerable stress related to family instability and drastic changes in its structure (Wells, Deykin, & Klerman, 1985). Numerous studies have linked parental divorce and relationship problems to childhood depression (Greszta, 2006; Purper-Ouakil, Michel, & Mouren-Simeoni, 2002; Tyrka, Wier, Price, Ross, & Carpenter, 2008), but these associations have been largely based on adolescent self-report of depression (Crawford, Cohen, Midlarsky, & Brook, 2001; Pelkonen, Marttunen, & Aro, 2003). The few studies on clinically diagnosed depression find parental divorce as a risk factor specifically for Major Depressive Disorder (Jaffee et al., 2002; Nomura, Wickramaratne, Warner, Mufson, & Weissman, 2002), but the less severe diagnosis of depression was not examined.

1.4.2 Dissatisfaction with economy

Most research regarding the association between socioeconomic status (SES) and depression in adolescence as well as young adulthood points towards a higher prevalence

among lower income families (Elovainio et al., 2012; Lahelma, Laaksonen, Martikainen, Rahkonen, & Sarlio-Lahteenkorva, 2006; Wight, Botticello, & Aneshensel, 2006). The current sample was drawn from the Norwegian population, where income varies less and few are at grossly disparate incomes compared with countries where most extant research has been conducted. Therefore we focus on subjective experience of the family economy instead, which can provide a more nuanced perspective on the family socioeconomic environment as a risk factor for depression in adolescence and young adulthood. Perceived economic circumstances reflect economic satisfaction regardless of income, educational level, and level of employment. Economic problems in families can occur at all SES levels, regardless of actual income, and can be a source of family conflict, marital discord, abuse, anger, hopelessness and depression (Elder, Conger, Foster, & Ardel, 1992). Research on perceived economic dissatisfaction in couples for example has found that women experience more economic strain than men (Falconier & Epstein, 2011).

1.4.3 Physical illness or disability

Parental physical illness or disability has to our knowledge not been directly examined as a risk factor for depression diagnosis in adolescence and young adulthood. However studies have shown that children of parents with multiple sclerosis (Diareme et al., 2006), cancer (Grant & Compas, 1995), brain injury (Oppenheim-Gluckman, Marioni, Chambry, Aeschbacher, & Graindorge, 2005), and chronic pain (Kaasboll, Lydersen, & Indredavik, 2012) report more emotional problems, including depressive symptoms. Chronic illness in parents has been found to be a source of stress and linked to adjustment problems as well as depressive symptoms in children (Compas et al., 1994; Korneluk & Lee, 1998; Romer, Schulte-Markwort, & Riedesser, 2002; Welch, Wadsworth, & Compas, 1996). These studies

suggest a need to examine whether parents' physical health or disability is a risk factor for depression in adolescents and young adults.

1.4.4 Internalizing and externalizing problems

Parental depression is considered to be one of the most influential risk factors for depression in offspring (Thapar et al., 2012). Children of depressed parents are approximately four times more likely to have an episode of major depression than children of healthy parents and two times more likely to have depression than children of parents with other psychiatric disorders or medical conditions (Avenevoli et al., 2008; Rice, Harold, & Thapar, 2002). When both parents report poor mental health the relationship with depression in the child is even stronger (Gere et al., 2013; Kahn, Brandt, & Whitaker, 2004; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997). However, the risk is not unique to parental depression. Parental psychopathology in general is associated with development of psychiatric disorders in children (Bahali, Tahiroglu, Avci, & Seydaoglu, 2011; Goldstein et al., 1994; Williamson et al., 1995). As a whole, this research points to the need to consider parental mental health broadly when examining risk factors for depression in adolescence and young adulthood. Whereas parental internalizing problems, including anxious, depressed, withdrawn and somatic complaints, are clearly implicated, the role of externalizing problems, such as rule-breaking, aggressive, and intrusive behavior, have not been explored much. Both need to be examined as broad indicators of the psychiatric status of the parents.

1.4.5 Insecure attachment

Attachment is an important aspect of the relationship between a child and a parent, with its purpose being to make a child feel safe, secure and protected. Also, secure attachment is argued to be a foundation for mental well-being (Bowlby, 1988). Depending on the quality

of the attachment that develops, the parent serves as a secure base from which the child can explore the environment and, when necessary, return to find comfort (Bowlby, 1969; Waters & Cummings, 2000). From attachment follows the capacity to form close, satisfying relationships and a constructive, insightful understanding of other people (Thompson, 2008), which in turn contributes to mental well-being and health. The attachment relationship is not considered to be fixed from infancy, as further experiences and conceptual growth can influence change. However, when positive attachment is maintained the sense of security will remain (Thompson, 2008).

The transition from primary attachment (from parents to peers), is seen as starting from ages 6-7, proceeding into adolescence, and later continuing into adulthood (Ainsworth, 1978; Bowlby, 1997). This transition takes place when children seek other attachment objects than parents. When the parent-child relationship is insecure the transition takes place more often at an earlier age (Kerns, Tomich, & Kim, 2006). In adolescence interactions with peers take on an increasingly higher priority and attachment behavior is often directed toward non-parental figures (Kerns et al., 2006). Close friends become primary sources of support, intimacy, mutuality and self-disclosure in adolescence (Berndt, 2002). In this developmental phase the adolescent evolves from being cared for by both parents to potentially care for significant others (J. P. Allen & Land, 1999). The sense of self is reflected in the relationships to both parents and peers. Therefore it is important not only to examine attachment to parents in adolescents, but also to peers to more fully illuminate the role of attachment on psychosocial development.

1.5 Previous research

Previous research on adolescent clinical depression has used a longitudinal perspective to examine the role of parental risk factors as well as attachment, but this research has had some limitations. First, most studies of adolescents with depression have focused on Major Depressive Disorder (Barbe et al., 2005; Jaffee et al., 2002), and very few have included less severe depression (N. B. Allen et al., 2012; Sihvola et al., 2007; Sund et al., 2011; Vander Stoep et al.). Therefore there is a need to examine diagnosed depression in samples drawn from the community to increase the generalizability of results and not rely on clinical samples where more severe forms are typically present (Dinya, Csorba, & Grosz, 2012). Likewise, because individuals with depression can fluctuate in and out of the different categories representing severity of depression over time, there is a need to include also the milder depression diagnoses when examining the course of depression and risk factors.

Second, although parents are believed to be the strongest social-environmental influence for any child (Bronfenbrenner, 1986), little research has included both mothers and fathers in the identification of risk factors for adolescent depression (Beardslee, Gladstone, & O'Connor, 2011; Kane & Garber, 2004). In late adolescence young people experiencing more secure mother and father attachment, report less conflict with their parents and less loneliness than others (Armsden 1986 thesis). Insecure parent attachment on the other hand predicts later development of symptoms of depression and anxiety (Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Cooper, Shaver, & Collins, 1998; Lee & Hankin, 2009; Overbeek, Vollebergh, Engels, & Meeus, 2003; Sund & Wichstrom, 2002) and make young adults more vulnerable to depressive symptoms (Jinyao et al., 2012). Growing up with insecure attachment can lead to development of significant psychopathology, including a higher risk of substance abuse and conduct disorders (Rosenstein & Horowitz, 1996). Similarly, insecure peer attachment, including romantic partners, has predicted the development of symptoms of

depression (Armsden et al., 1990; Kullik & Petermann, 2013; Laible, Carlo, & Raffaelli, 2000; Raja, Mcgee, & Stanton, 1992; Rosenfarb, Becker, & Khan, 1994; Wilkinson, 2004) .

Furthermore, some findings suggest a differential role of maternal and paternal factors in the development of male and female children, , including the development of psychological disorders (Cooper et al., 1998; Reeb, Conger, & Wu, 2010; Wei, Heppner, & Mallinckrodt, 2003; Weitzman, Rosenthal, & Liu, 2011). Other research suggests no sexual differences (Ranøyen, Klöckner, Wallander, & Jozefiak, 2014). This can suggest a need for examining interactions between sex of parent and offspring pertaining to depression in the latter. To our knowledge this has not been done yet for diagnosed depression. However, studies examining psychiatric symptoms more broadly have found that living with fathers with depressive and other mental health problems is associated with increased rates of emotional and behavioral problems among adolescents (Weitzman et al., 2011). Although numerous parental risk factors can be envisaged, in this research we have the opportunity to examine parents not living together, economical dissatisfaction, physical illness/disability, internalizing problems and externalizing problems, and attachment to both mothers and fathers. We also examine whether these risk factors differ among mothers and fathers in relation to the sex of the adolescent.

Third, we are not aware of any other studies that have examined associations between maternal, paternal, and/or peer attachment and clinical depression in the general population using a longitudinal perspective on development from age 15 to 20. Most often attachment has been examined as a concept not differentiating between maternal and paternal attachment (Cooper et al., 1998; Muris, Meesters, van Melick, & Zwambag, 2001) or with both parents combined as parental attachment (Lee & Hankin, 2009; Sund & Wichstrom, 2002). Other longitudinal studies have also found that insecure attachment is associated with depression in

adolescents (J. P. Allen, Porter, McFarland, McElhaney, & Marsh, 2007; Jinyao et al., 2012; Lee & Hankin, 2009; Sund & Wichstrom, 2002).

In contrast, most research on parental attachment and adolescent depression has been based on cross-sectional data. For example, and similar to our findings, clinically depressed adolescents receiving psychiatric care reported less secure parental attachment, but no differentiation was made between attachment to mothers and fathers (Armsden et al., 1990). Similar results have been reported in other cross sectional studies, both focused on pre- to early adolescents (Liu, 2006; Muris, Mayer, & Meesters, 2000; Muris et al., 2001; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006) and older adolescents to young adults (Cooper et al., 1998; Muris, Meesters, & van Den Berg, 2003). Yet again, these groups of studies have relied on self-reported depression symptoms rather than clinically diagnosed depression.

Fourth, research into peer attachment related to depression has both been relatively sparse and has produced inconsistent results. Two studies with similar findings to the present study, although using self-report for measuring depression, showed no significant association between depression and insecure peer attachment (Kullik & Petermann, 2013; Millings, Buck, Montgomery, Spears, & Stallard, 2012). However, other studies of insecure peer attachment reported links to stable patterns of depressive symptoms in adolescence (J. P. Allen et al., 2007; Armsden et al., 1990). None of these studies examined both peer and parental attachment to allow comparisons or illuminate possible shifts in their relative importance in adolescent and young adult development.

1.6 Contributions expected from this study

The use of two waves from a longitudinal cohort study enabled prediction of changes in depression diagnoses over a five year interval. Depression is measured for adolescents in the

range from mild to severe depression. This study examined the novel combination of depression and parental risk factors and attachment first at age 15 and then prospective associations with the course of clinical depression in a population sample from adolescence to young adulthood. Some of the parental risk factors are novel in the context of studying the course of depression and together represent a novel combination of risk factors. Attachment was studied in mothers and fathers and peers separately, which is another novel contribution of this research. This is one of a few studies that have studied paternal risk factors separately from maternal ones. We also examine whether these risk factors differ among mothers and fathers in relation to the sex of the adolescent. We expect that this research will contribute to our understanding of depression in adolescence to adulthood and especially the role that parents have in this. Findings may inform clinical work by throwing light on parental factors when an adolescent has depression. Also from a community perspective, this research may stress the importance of family risk factors to inform prevention of depression among adolescents.

2. Aims of studies and hypotheses

The overall aim of this study is to examine the association of parental risk factors and insecure attachment with the course of depression from adolescence to young adulthood.

Study I: The specific aim is to examine the association of hypothesized parental risk factors with the range of diagnosed depression in a community sample of adolescents. We hypothesize that the following parental risk factors are positively associated with severity of depression in adolescents: Parents not living together, economic dissatisfaction, physical illness/disability, and internalizing as well as externalizing mental health problems. In addition, because there is an insufficient basis to advance additional hypotheses, we explore (a) whether the associations of these risk factors differ among mothers and fathers and (b) whether this is dependent on the sex of the adolescent.

Study II: This study extends the work of Study I with the primary aim being to examine the associations of hypothesized parental risk factors with course of depression diagnosis in a community sample from mid-adolescence into early adulthood, ages 15 through 20. We focus on the same five selected parental risk factors as in Study I: Parents not living together, economic dissatisfaction, physical illness/disability, internalizing problems, and externalizing problems. We also explore whether these risk factors differ among mothers and fathers as well as sex of the adolescent. A secondary aim is to describe longitudinal stability and change in depression diagnoses during this period.

Study III: The specific aim is to examine associations of attachment to mothers, fathers, and peers with the observed course of clinical depression in a community sample from mid-adolescence into early adulthood, ages 15 through 20. Based on prior research we hypothesize that insecure attachment with mother only is associated with the maintenance of clinical depression over this period. Because there is an insufficient basis to pose hypotheses,

we explore associations of paternal and peer attachment with course of depression in this period.

3. Method

3.1 Design

Data was taken from the Youth and Mental Health Study, which is a longitudinal, prospective, epidemiological research project. The study was designed to investigate depression among the adolescent population. The Youth and Mental Health Study (Sund et al., 2011) is a longitudinal study carried out to examine risk and protective factors for the development of depression in adolescence in Central Norway (Sund, 2004). This region had a population at the time (1998) of 390 000, including Trondheim, the third largest city in Norway (146 000). In comparison Central Norway has in 2016 a population of 441 339 (8.6% of the Norwegian population) and Trondheim has 187 353 inhabitants.

3.1.1 Sampling and participants

There were four data collection waves in the Youth and Mental Health Study of which T2 and T3 were used for this study. The first wave (T1), the base for the subsequent waves, was conducted in 1998. A representative sample of 2792 8th and 9th graders from 22 schools was selected from a total population of 9292 according to urbanity and geographic location with a clustered sample method using the schools as sampling units. The schools were drawn according to size within four strata (1) City of Trondheim (n=484, 19.5%), (2) Suburbs of Trondheim (n= 432, 17.5%), (3) Coastal region (n= 405, 16.4%), and (4) Inland region (n=1143, 46.4%) (Sund et al., 2001). At T1, 2464 (88.3%, mean age 13.7 years) completed a questionnaire and were reassessed at T2 one year later in 1999 with the same questionnaire (mean age 14.9 years). At T2, 4.3% of the adolescents from T1 did not participate and were replaced by 72 (3%) new participants from a group of non-responders at T1, who had changed their minds about participating, resulting in n=2432 at T2. The questionnaire assessments for T1 and T2 were administered during regular school hours by teachers who had received detailed instructions.

A subset (n= 364, 14.8%) at T2 was invited for a clinical interview using the Kiddie-SADS- PL (Kaufman et al., 1997) based on scores on the Mood and Feelings Questionnaire (MFQ, see below) (Angold, Weissman, et al., 1987) falling into two levels: low/middle (MFQ = 0-6 /7-25) and high (≥ 26) scorers. All high scorers (n = 228, 62.6%) and a sample of low and medium scorers (n= 136, 37.4%) were invited for the clinical interview phase. The sample of low and medium scorers was selected by matching at random one low/middle scorer on age-and-gender for approximately every two high scorers. Of the 364 selected for the interview, 345 (94.8%, 72.5% females, mean age = 14.9 years, range 13.7-17.0, SD 0.59) completed the face-to-face interview, including 220 (63.8%) with high and 124 (36.2%) with low/middle MFQ scores, and one with missing scores. The parents of the adolescents invited for the interview phase were also invited to complete a questionnaire and face- to- face interview, which 156 (56.9%) mothers and 31 (11.3%) fathers did, and 74 (27.0%) both parents participated, so that for 274 adolescents (79%) at least one parent participated. Mothers mean age at the time of T2 was 40.7 years (range 31.0-60.0, SD 4.9), and fathers mean age was 43.8 years (range 31.0-70.0, SD 5.7). The adolescents and parents were separately interviewed at T2. If both parents were present, they were interviewed together. In cases with only one parent present it was up to the family to choose which parents would participate in the interview. In some cases one parent was a step-parent and then an additional interview with a non-present parent was not performed.

At T3, in 2004, five years after T2 (mean age = 20.1 years, range 18.9-21.5, SD 0.61), those in the interview-subset were invited to complete the same questionnaire by post and the same interview by telephone, which 242 did (70.1% of T2, 76.9% females, attrition n=103). However, because the index participants were now legal adults, parental interviews were not conducted. An additional assessment was conducted at T4 in 2012, 7 years after T3, when all

participants from the T1 and T2 wave were tracked and invited to participate in an electronic survey. However, data from this T4 follow-up is not part of the present study.

3.1.2 Attrition of participants

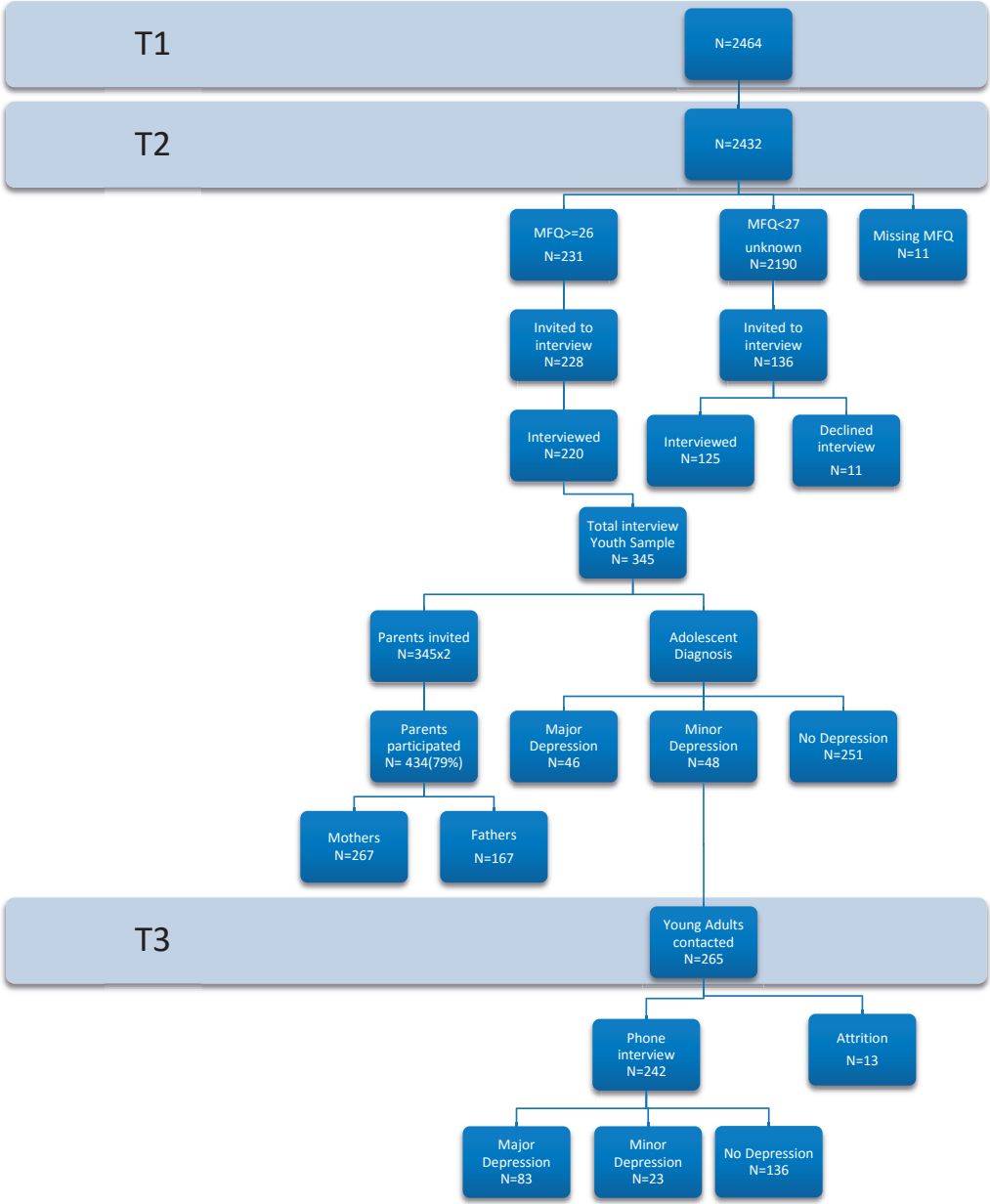
Attrition from T2 to T3: Of the 345 participants at age 15, 103 (29.9%) did not participate at age 20. The demographic constitution of the sample collected at age 15 compared to that obtained at age 20 are shown in Table 1. Comparisons between those who completed the assessment at age 20 and those who did not indicated there were no significant differences on demographic variables except for sex. The proportion of males participating at age 20 was 23% compared to 38% at age 15 ($\chi^2= 7.849$, $p= 0.005$). Moreover, participants and nonparticipants at age 20 had approximately the same distribution of depression diagnoses as at age 15.

3.1.3 Ethics for the Youth and Health study

All assessments were approved by the Regional Committee for Medical Research Ethics, Central Norway, and the local school authorities of the two counties as well as the school boards. Based on The Norwegian Data Inspectorate standards, written informed consent was obtained from parents and students prior to the T1 assessment. Prior to T2 another informed consent was completed by all participants, which also included voluntary participation in a follow-up five years later. The incentive for the adolescent was a lottery draw for an iPod music player.

3.1.4 Flow chart

Figure 1. Flow chart of The Youth and Mental Health Study



3.1.5 Socio-demographics

Demographics were measured both by child and parental self-report. The child questionnaire asked about ethnic origins of the parents and the number of years they had lived in Norway. Socioeconomic information (SES) was requested separately for mothers and fathers using the classification of occupation according to the ISCO 88 (International Standard Classification of Occupation)(ISCO-1988, 1990). The children were asked “Which occupation does your father/mother have?” and “What does he/she do at work?” This was coded to a 5-point scale ranging from professional leader to manual worker. Paternal SES was used in coding family SES, unless the adolescent lived with only mother or no information on father was available.

The parental questionnaire had questions about sex, age, nationality, employment also coded with ISCO 88, completed education on a scale from 1-8 (1= within 1st-6th grade of elementary school to 7= completed university or other higher education. 8= other), and marital status measured on a scale from 1-6 (1=never been married/partner, 2 = married/partner, 3= widow/widower, 4= separated, 5= divorced, 6= other). The parent who filled out the self-report was mother, father, stepmother, stepfather, or others. Others could be foster parents or grandparents functioning as parents. These were aggregated into categories of mothers and fathers for the statistical analyses.

3.1.6 **Table 1. Socio-demographic characteristics of the sample at ages 15 and 20.**

	Age 15 Participants N=345 N (%)	Age 20 Non- participants N=103 N (%)	Age 20 Participants N=242 N (%)
Gender			
Females	250 (72.5)	64 (62.1)	186 (76.9)
Males	95 (27.5)	39 (37.9)	56 (23.1)
Parental SES			
Professional/executive (upper class)	33 (9.6)	11 (10.7)	22 (9.1)
Upper middle class	85 (24.6)	19 (18.4)	66 (27.3)
Lower middle class	80 (23.2)	21 (20.4)	59 (24.4)
Manual worker	142 (41.2)	52 (50.5)	90 (37.2)
No information	5 (1.4)	0 (0,0)	5 (2.1)
Ethnicity			
Both parents Norwegian	316 (91.6)	92 (89.3)	223 (92.1)
One parent Norwegian	9 (2.6)	1 (1.0)	8 (3.3)
Both parents non Norwegian	20 (5.8)	10(9.7)	11 (4.6)
Living arrangement			
Living with both parents	221 (64.1)	65 (63.1)	156 (64.5)
Living with either parent alone	62 (17.9)	20 (19.5)	42 (17.3)
With one parent and step parent	47 (13.6)	14 (13.6)	33 (13.6)
Sharing time between parents	11 (3.2)	3 (2.9)	8 (3.3)
Other	4 (1.2)	1 (1.0)	3 (1.2)

3.2 Instruments

3.2.1 Adolescent/young adult questionnaire.

A self-report questionnaire primarily probed for psychosocial and somatic information with a battery of various measures, including a screening for depression. The questionnaire was identical at T1, T2, and T3, except for the addition of age-appropriate items and sections at T3.

3.2.2 Depressive symptom level

The Mood and Feelings Questionnaire (MFQ) (Angold, Costello, & Winder, 1987) is a 34-item screening instrument for depression based on the DSM-III-R criteria for major depression for the age group of 8-18 years. The total score ranges 0 - 68, with higher scores reflecting a higher symptom level. Studies of psychometric properties of the MFQ indicate an internal consistency of $\alpha = 0.90$ and test-retest stability (intra-class correlation) of 0.75 (Costello & Angold, 1988; Costello, Benjamin, Angold, & Silver, 1991). Moreover, in the original study sample internal consistency was $\alpha = 0.91$ and two-month test-retest reliability $r = 0.80$, and correlation $r = 0.91$ with the BDI (Beck Depression Inventory) (Beck, 1983; Sund et al., 2001). Validity is supported by the MFQ identifying mood disorders in young people with diverse demographic and clinical characteristics (Daviss et al., 2006; Wood, Kroll, Moore, & Harrington, 1995).

3.2.3 Attachment

Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987), a self-report questionnaire, was developed to assess adolescents' perceptions of the positive and negative affective and cognitive dimension of relationships with mother, father, and close friends, particularly as to how well these figures serve as sources of psychological security based on attachment theory (Bowlby, 1988). Three broad dimensions are assessed: Degree of

mutual trust and respect, quality and extent of spoken communication, and alienation taps into feelings of anger and interpersonal isolation. In the revised version used in the present study (Armsden & Greenberg, 1989), the IPPA consists of 25 items each dealing with mother, father, and close friends, for a total of 75 items, which are responded to on a five-point Likert scale (1='Almost always or always true' to 5='Almost never or never true'). A total score indicating the quality of attachment is obtained for mother, father, and close friend, respectively. The IPPA is a dimensional measure reflecting perceived attachment along a scale without any cut-off. Internal consistency is Cronbach alpha for mother attachment = .87, father attachment = .89, and peer attachment = .92. Validity is supported by the findings, for example, that among late adolescents, parental attachment is related to Family and Social Self subscale scores from the Tennessee Self Concept Scale and to most subscales on the Family Environmental Scale (Armsden & Greenberg, 1987). Studies have shown that the IPPA correlates to self and family dimensions in a way that is consistent with theoretical expectations (Armsden & Greenberg, 1987). Testing each subscale in recent studies they found that each subscale taps the original construct relevantly and supports the three factor structure (Guarnieri, Ponti, & Tani, 2010; Pace, San Martini, & Zavattini, 2011; Vignoli & Mallet, 2004).

3.2.4 Diagnostic interview

The Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Lifetime version (K-SADS-PL) (Kaufman et al., 1997) was used to assess clinically significant symptoms of psychopathology on Axis I of the DSM-IV. The interviews were conducted by experienced clinicians trained in psychopathology and the use of K-SADS-PL. Detailed description of the blind interviews and inter-rater reliability have been presented (Nrugham, Holen, & Sund, 2010). Inter-rater reliability for all K-SADS screening symptoms at the end of training was good (Cohen's $\kappa = 0.71$ for all and $\kappa = 0.75$ for affective symptoms, utilizing an

experienced child psychiatrist as the standard (co-author AMS)). Interview integrity was maintained at a high level (average $\kappa = 0.83$). Summary symptom scores and diagnostic assessment were based on information obtained from the adolescents and their parents. In this study, the DSM-IV criteria for Major Depressive Disorder (MDD) and Dysthymia, as well as the milder diagnosis of Depressive Disorder Not Otherwise Specified (NOS) (Sund et al., 2011) were applied. Functional impairment, defined with Children's Global Assessment Scale (Shaffer et al., 1983) score below 71, or reduced function in one of the areas of family, school or friendship, was a requirement for a diagnosis of MDD or Dysthymia. Based on previous research indicating that MDD and Dysthymia have similar characteristics (S. H. Goodman, Schwab-Stone, Lahey, Shaffer, & Jensen, 2000) and to provide an adequate size of the group with relatively more severe depression, MDD (T1 n=25) and Dysthymia (n= 9; both diagnoses n=12) were pooled for analysis. Thus, adolescents were classified into one of three categories: Major Depression consisting of MDD or Dysthymia (n=46), Minor Depression consisting of Depression NOS (n=48), or No Depression (n=251).

3.2.5 Parental questionnaire

The Adult Self-Report (ASR) (Achenbach & Rescorla, 2003) is a broad assessment of adults' emotional and behavioral problems based on 114 self-report items. Each problem is rated on a three-point scale (0 = Not true, 1 = Partly true or sometimes true, 2 = Very/often true). The Internalizing Problems scale combines anxious/depressed, withdrawn/depressed, and somatic complaints syndrome scores (range = 0-78) and the Externalizing Problems scale combines rule-breaking behaviors, aggressive behavior, and intrusive syndrome scores (range = 0-70). Analyses were conducted on the raw scale scores. Psychometric properties have been reported to be good for these two scales (Achenbach & Rescorla, 2003).

3.2.6 Parental interview

Three additional variables were measured based on independent items included in the parental interview. 1) Perceived economic satisfaction was reported by the parent on a five-point scale (1 = very satisfied, 5 = very dissatisfied). 2) Marital status of the biological parents, which was classified as living together (i.e., married, cohabitating) vs. not (i.e., never married, divorced). 3) Long-term physical illness or disability was determined as present vs. not based on one item asking about experiencing long term illness or disability during the last year. Parent socio-economic status (SES) was measured by classifying mothers' and fathers' occupations using the ISCO-88 (ISCO-1988, 1990) on a 5-point scale ranging from professional leader/upper class to manual worker.

Attrition of parents at T2: 21% of the parents did not participate in the clinical interview assessment. There was a significant difference ($p = .05$) in the prevalence of depression diagnosis in the present sample between adolescents whose parents participated in the clinical interview vs. parents who did not. Adolescents with participating parents were more likely to have Minor Depression (15% vs. 8.5%) and less likely to have Major Depression (11% vs. 21%). In addition, participating parents were more often in the higher SES categories than not participating parents ($p < .01$), who were more likely to be in the working class category.

3.3 Ethics

All assessments were approved by the Regional Committee for Medical Research Ethics, Central Norway, and the school authorities of the two counties as well as the school boards. Prior to T1 written informed consent, based on The Norwegian Data Inspectorate standards, was obtained from parents and students. At T3 the subjects were of legal age and could give their own written consent.

3.4 Statistical analyses

Data analyses in Article I were performed using Stata 12 and IBM SPSS 19 was used for Articles II and III.

3.4.1 Definitions of central terms in statistical analysis

Categorical variable: A categorical variable has a finite number of possible values or outcomes. If there are only two possible values, the variable is called binary. If there are more than two possible values, there is a difference between ordinal and nominal categorical variables.

Ordinal variable: In ordinal variables there is an ordering of the categories. The dependent variable clinical depression has three categories in this research, which are ordered in terms of increasing severity: No-depression, Minor depression, and Major depression. However, since the spacing between the categories may not be the same across the categories, so this should not be treated as an interval variable.

Odds ratio: An odds ratio (OR) is a measure of association between an independent variable, often construed as an exposure, and a dependent or outcome variable. The OR represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure. When a logistic regression is calculated, the regression coefficient is the estimate as the increase in the log odds of the

outcome per unit increase in the value of the exposure. The exponential function of the regression coefficient is equal to the odds ratio associated with a one-unit increase in the exposure. Odds ratios are used to compare the relative odds of the occurrence of the outcome of interest (e.g. disease or disorder), given exposure to the variable of interest (e.g. social characteristic, psychological dimension).

Logistic regression: Logistic regression measures the relationship between a categorical dependent variable (response) and one or more independent variables. Specifically, the natural logarithm of the odds of the outcome is usually linear and modelled as a function of the covariates.

Multinomial logistic regression: This is a classification method that generalizes logistic regression to multiclass problems, when there are more than two possible outcome categories that are unordered. This model is used to predict the probabilities of the different possible outcomes of a categorically distributed dependent variable, given a set of independent variables.

Standard (binary) logistic regression: In binary logistic regression, sometimes simply called logistic regression, the dependent variable is binary. If the dependent variable has more than two categories, appropriate generalizations are multinomial logistic regression for nominal variables, and ordinal logistic regression for ordinal variables.

Ordinal logistic regression: Also called proportional odds logistic regression, is a regression model for ordinal dependent variables. In this research the dependent variable is type of depression diagnosis, which can be ordered in terms of severity. For example, if the outcomes are “Major Depression,” “Minor Depression,” and “No Depression,” then the purpose of the analysis is to see how well the type of diagnosis can be predicted by the

responses to other variables, for example, maternal physical illness or disability or maternal internalizing symptoms, some of which may be quantitative.

Multiple imputations: (MI) Multiple imputation is a statistical technique for analyzing incomplete data sets, that is, data where some subjects have partially missing data. Application of the technique requires three steps: Imputation, analysis of imputed data sets, and pooling. Imputation, the practice of 'filling in' missing data with plausible values, is an attractive approach to analyzing incomplete data. MI is a Monte Carlo technique in which $m > 1$ complete data sets are created. Then, each of the simulated complete datasets are analyzed by standard methods, and the results are combined (pooled) to produce estimates and confidence intervals that incorporate missing-data uncertainty.

Marginal homogeneity test: McNemar's test is a statistical test used on paired nominal data. It is applied to 2×2 contingency tables with a dichotomous variable, with matched pairs of subjects, to determine whether the row and column marginal frequencies are equal. With ordinal instead of binary outcome categories, a marginal homogeneity test can be used. The null hypothesis of marginal homogeneity states that the marginal probabilities for each outcome are the same.

3.4.2 Statistical applications in this thesis

Statistics for article I: In this cross-sectional study, with three categories representing the outcome variable (No Depression, Minor Depression, and Major Depression), we used proportional odds, ordinal logistic regression to examine the association between level of depression diagnosis and parental risk factors. This treats the outcome as a three-level ordinal variable. The OR in proportional odds logistic regression has the same interpretation as the OR in standard (binary) logistic regression, if a cut off is made between any two categories of the dependent variable. All analyses were adjusted for the adolescent's age as well as sex. The

five parental risk factors were examined separately for mothers and fathers. The parental variables were analyzed one at a time as well as simultaneously as one set. We also examined interactions between adolescent sex and significant parental risk factors. Two-sided p-values <0.05 were considered significant, and 95% CI were reported where relevant. Missing values in the regression analyses were handled by MI using chained equations, imputing m=100 data sets (Carpenter & Kenward, 2013) including all variables and interactions to be studied in the analyses, as well as the MFQ score. Analyses were performed on the 267 cases with data on mothers and the 167 cases with data on fathers.

Statistics for article II: In the longitudinal study we used cross-tabulations to examine prevalence of the depression diagnoses at both time points as well as change in diagnosis over time. Depression prevalence at ages 15 and 20 years were compared using the marginal homogeneity test. We used multinomial logistic regression to study the association of parental risk factors present at age 15, separately for mothers and fathers, with course of depression diagnosis between ages 15 and 20. Parental factors were first examined independently and then jointly, for their association with course of adolescent depression. Analyses were adjusted for the adolescent's age and sex.

With three diagnostic categories of depression possible at both ages, nine patterns of change over time could be examined as the dependent variable, but most change patterns represented a small number of participants. To reduce the number of patterns for analysis and achieve a larger representation within a given pattern, we examined parental factors that could be associated with differences between those who remained with No Depression at both time points, labelled as *Remained Well*, as the reference category vs. those who: (1) had No Depression at age 15 but received a diagnosis of Any Depression (either Minor or Major) when measured at age 20, labelled as *Became Depressed*; (2) had Any Depression diagnosis at age 15 but received No Depression diagnosis when measured at age 20, labeled as *Became*

Well; and (3) remained with Any Depression diagnosis at both assessments at ages 15 and 20, labelled as *Remained Depressed*. Associations among parental risk factors were calculated with cross-tabulations.

Data in this study are complete on sex and age. For the other five covariates, the average proportion of missing values was 11% (range 5% to 21%) for mothers and 14% (range 0% to 50%) for fathers. Missing values in the regression analyses were handled by MI using chained equations, imputing $m=100$ data sets as recommended (Carpenter & Kenward, 2013). All variables including interactions to be studied in the analyses, as well as the MFQ score, were used in the imputation models. MI and subsequent analyses were performed separately for the 267 cases with data on mothers and the 167 cases with data on fathers. Two-sided p -values $<.05$ were taken to indicate statistical significance.

Statistics for article III: The statistics for article III were similar to article II. We used the three categories Major, Minor, and No Depression, representing the outcome variable of depression diagnosis at 15 and 20 years of age and cross-tabulations to examine prevalence of depression at both time points as well as change over time. As in article II, we used multinomial logistic regression. We examined the relationships of attachment to mother, father, and peers by the adolescents at age 15 with course of depression diagnosis between ages 15 and 20. Analyses were adjusted for adolescent age and sex. Also here, we merged “minor” and “major” depression into one category, giving four patterns of change from adolescence to young adulthood. Those with No Depression at both ages, classed as Remained Well ($n = 95$), served as the reference category and were compared to those who: (1) Had No Depression at age 15 but received a diagnosis of Any Depression (either Minor or Major) at age 20, labelled as Became Depressed ($n = 39$); (2) had Any Depression diagnosis at age 15 but received No Depression diagnosis at age 20, grouped as Became Well ($n = 41$); and (3) remained with Any Depression diagnosis at both ages 15 and 20, grouped as

Remained Depressed (n = 67). Ninety-five percent CI are reported where relevant. Two-sided p-values <0.05 were considered to indicate statistical significance.

4. Summary of results, overview of the studies

Study I was a cross-sectional study of the sample at age 15, focused on depression prevalence and association of depression and parental risk factors. The same risk factors were used in study II in examining their longitudinal relationships to the course of depression for the sample from ages 15 to 20 years old. Study III examined relationships between the same course of depression and attachment to parents and peers.

4.1 Main results for study I: Maternal and paternal psychosocial risk factors for clinical depression in a Norwegian community sample of adolescents.

The prevalence in this sample of MDD/Dysthymia for girls was 16.0% and boys 6.0% and 15.6% and 9.5% with Depression NOS, leaving 68.4% and 84.0% with no depression.

The main findings regarding the risk factors were that mothers' economic dissatisfaction, physical illness/disability, internalizing problems, and externalizing problems were separately associated with current depression diagnosis in adolescents. However, only mother's internalizing problem was uniquely associated with the severity of adolescent depression when all risk factors were taken into account. Although father's economic dissatisfaction and physical illness/disability had approximately the same effect-estimate as for mother's, these did not reach statistical significance. There were no differences in these associations between adolescent boys and girls.

4.2 Main results for study II: Longitudinal Course of Diagnosed Depression from Ages 15 to 20 in a Community Sample: Patterns and Parental Risk Factors.

Females had higher prevalence of any depression diagnosis than males at both 15 years ($p=0.007$) and 20 years ($p=0.009$). In terms of trajectories of depression over five years, of those with No Depression at age 15, 71% remained as such at age 20, whereas 10%

developed Minor Depression and 19% Major Depression. For those with Minor Depression at age 15, 53% improved to No Depression, 5% remained with Minor Depression, and 42% developed Major Depression at age 20. Finally for those with Major Depression at age 15, 27% improved to No Depression and 11% to Minor Depression at age 20, whereas 62% remained with Major Depression. Seen for the whole sample, as well as for each sex separately, the proportion without depression was practically unchanged from age 15 to age 20. Likewise, the prevalence of Major and Minor Depression did not change significantly from ages 15 to 20 in the whole sample ($p=0.24$), or for males ($p=0.67$) or females ($p=0.26$), using the marginal homogeneity test.

Parental risk factors associated with change of depression diagnosis were analyzed using multinomial logistic regression, by combining Major and Minor Depression into any Depression. Analysis was conducted separately for maternal and paternal risk factors. When adjusted for sex and age of the adolescent, only those who Remained Depressed at both 15 and 20 years of age could be differentiated from those who Remained Well at both ages based on three risk factors. Young people who were exposed to maternal economic dissatisfaction, maternal internalizing problems, or were female had greater odds of receiving a depression diagnosis at both ages 15 and 20 compared to those who had no diagnosis at both ages. Neither of the other two patterns of depression diagnosis (i.e., Became Depressed or Became Well) was associated with maternal risk factors or adolescent age or sex. Paternal internalizing problems were significantly associated with the group who Remained Depressed from age 15 to 20 compared to the group who Remained Well.

4.3 Main results for study III: Associations Between Parental Attachment and Course of Depression Between Adolescence and Young Adulthood.

In general, maternal and paternal attachment, but not peer-attachment, were associated with depression course from adolescence into young adulthood. Specifically, insecure maternal attachment was present in the group that was not depressed at 15 but developed clinical depression over the next five years as well as the group who were depressed at age 15 and remained so. Young people who remained depressed had insecure attachment to either parent. The similarity in the groups reporting insecurity in the maternal relationship is that they include adolescents who manifested depression some time during this developmental period, either already at age 15 or in the ensuing five years. Also adolescents reporting insecure paternal attachment were clinically depressed at age 15, and then either remained depressed or recovered.

5. Discussion

5.1 Overview of findings

This thesis examines longitudinal data from a population of adolescents and the course of clinical depression into young adulthood. It extends knowledge on the associations of parental risk factors and depression development over a five year period. As well as examining data on paternal and maternal risk factors separately we also have attachment quality reports for parents separately. When considering healthy adolescents in general we find that they tend to stay non-depressed throughout adolescence. Regardless of many different influences the course of major depression is also stable. In accordance with other studies girls are predominantly more often depressed than boys. Maternal and paternal mental health is also associated with the course of depression as is insecure attachment.

Concerning course of depression diagnosis in our community sample from adolescence to young adulthood we find considerable stability overall. Over two-thirds of the non-depressed remain without depression diagnosis and slightly less than two-thirds remain with a diagnosis of Major Depression (MDD and Dysthymia) at both ages. Whereas there is a higher prevalence of depression in females than in males, there are no sex differences in patterns of change in depression diagnosis across these ages.

We find that adolescents appear more vulnerable to maternal rather than paternal risk factors overall. However, this may be an artifact due to the larger sample of participating mothers compared to fathers. At age 15 adolescents appear sensitive to various maternal concerns such as economic dissatisfaction, physical illness/disability, internalizing problems and externalizing problems. When adjusted for all factors maternal internalizing problems show the strongest association to adolescent depression. Over time girls with mothers who have economic concerns and internalizing symptoms are at greater risk of remaining

depressed. However, half of the adolescents with mothers who have internalizing problems recover. Given that paternal participation in this study was limited, we find no associations at the age of 15 between paternal risk factors and adolescent depression. However, over the course of five years adolescents with fathers who have internalizing problems tend to remain depressed.

Adolescents reporting insecure attachment to either mother or father, all experience depression at some time from adolescence to young adulthood. This indicates the actual importance insecure attachment has on development of depression in general. Attachment to peers was also examined but had no significant association at age 15 and during the course of the ensuing five years. Young people who remained depressed had insecure attachment to either parent. Course of depression and associations with mother's insecure attachment differed from father's insecure attachment. The group who reported maternal insecure attachment either remained depressed or became depressed over the five years. Insecure paternal attachment was associated with depression at age 15 and then recovery from depression or remaining depressed in the course of five years.

5.2 Methodological considerations

Strengths and limitations

Among the main strengths of this research is the relatively large school based representative sample, which was drawn from both urban and suburban schools and was socioeconomically diverse by Norwegian standards, broadening the generalizability of these findings. A case control design was used with an over-inclusion of adolescents reporting depressive symptoms. Clinical assessments were completed by blind clinicians of excellent quality. Using the K-SADS-PL interview, a widely recognized standardized instrument for clinical diagnostics, based on both adolescent and parent report, provided most exact

diagnostics for the adolescents at both waves. The use of a multi-wave longitudinal design allowed for the prediction of changes of depression diagnosis over time. The time lapse was an appropriate five years covering transition from adolescence to young adulthood. A range of parental risk factors, including parent attachment, were examined for their prospective associations with the course of clinical depression in a population sample. Both parents were included for self-report and clinical interview at the first wave, enabling the study of mothers and fathers separately.

Although this study has the strength of application of a case control design within the study, which provides the obtaining of clinical diagnoses of depression in a sizeable subsample of youth drawn from a community cohort, it is also a secondary analysis with the restriction to a limited set of risk factors. Out of many relevant and interesting variables suited for possible risk factors we selected 5 parental factors that were found to have reasonable basis in prior research to be hypothesized as risk factors. Other limitations could be that challenges of missing data always is a problem in studies like the present one and there are different means for handling such challenges statistically.

Missing data

There proves to be challenges for the statistical analyses of the missing data and the weighted sample. The missing data is handled by MI (multiple imputations) which includes observations with partially missing values and gives unbiased results with an MAR (missing at random) assumption, which is less restrictive than the MCAR (missing completely at random) assumption. Methods for combining MI with probability weighted analyses are at this date not available. Our analyses concern associations between risk factors and the outcome, and not prevalence of the outcome. Using unweighted analyses are in the light of this not expected to introduce bias.

5.2.1 Causality versus association

Causality is the relationship between an event and a subsequent event where the first event is understood to be responsible for the second. Association describes situations where phenomena occur often together without necessarily denoting causality (Didelez & Sheehan, 2007). In correlational studies casual inference is limited due to the fact that numerous other factors can be the cause of an outcome. Although the factors chosen can have probable directional effect, we cannot ascertain that one factor is the actual cause of another factor. In this research our findings are based on cross sectional and longitudinal observational data. We focus on parental factors, which are due to both inherited biological and psychosocial/environmental influences. Thus, the chosen risk factors are termed as associations to depression, and in this research we study the associations of parental risk factors associated with adolescent depression at age 15 and the course of depression through age 20. However, observed associations can give rise to causal hypotheses, which could be tested in subsequent research.

5.2.2 Random error

In quantitative studies there is a risk of random error occurring. Random errors can be when sources that are not immediately obvious can influence the data. Random error are errors in measurement that lead to measurable values being inconsistent when repeated measures of a constant attribute or quantity are taken. Random errors in experimental measurements are caused by unknown and unpredictable changes (Weinbach & Grinnell, 2013). Variability is an inherent part of measuring and the process of measuring. The random error is a part that cannot be controlled. Statistical random errors are reduced through averaging over a large number of observations (McNabb, 2013).

5.2.3 Self-report and interview

This research is based on self-reports and interview with adolescents and their parents. The adolescent data were administered in-school self-reports. This proved to yield a high participation ratio (98%). The parents were also administered self-reports when the adolescents were 15. Adolescents were mailed self-reports when they were young adults, at age 20. Although self-report in general is easier to administer to large samples, it also has its disadvantages. First, it is associated with problems of random error. The response of the individual may be influenced by a variety of factors, including current mood, physical health, stress level, and level of comprehension and expressive ability, as well as honesty in the report (Fan et al., 2006). Interview was completed with the structured schedule K-SADS-PL, with both adolescents and their co-responding parents at age 15. It was repeated by phone with the young adults alone at age 20. An advantage with this interview over questionnaire is that the researcher is able to examine the level of understanding of the respondent with each topic. It is a powerful form of formative assessment. All respondents are asked the same questions in the same way, thus being easily replicable. Being highly structured, it is a reliable source of data. Problems of structured interviews are that they can be time consuming and can tire the individual who is assessed, which can influence the answers. There is a limited scope for the respondent to answer questions in any detail or depth, and this limits the researcher's opportunity to examine complex issues and opinions. In this research we used both self-report and interview partly to offset some of these disadvantages.

5.2.4 Measuring variables as single items and sum scores

From the questionnaire and structured interview single items were selected to measure parental risk factors. In study one and two we used single items to assess perceived economic satisfaction, biological parents living together, long-term physical illness or disability and SES. We selected these items as being best suited for representing risk factors in parents.

Single items may result in low sensitivity in the analyses. However, research suggests that for some studies one question may be sufficient for valuable information (Bowling, 2005).

5.2.5 Selection bias

The selection of the subset (n=364) after the collection of T2 self-report, was based on the scores on the MFQ and grouped into two levels: Low/middle scoring 0-6/7-25 and high scores ≥ 26 . All high scorers (n=228) and a sample of low and medium scorers (n=136) became the subset. The low/ middle scorers were selected by matching at random one low/middle scorer on age-and-gender for approximately every two high scorers (Agerup, Lydersen, Wallander, & Sund, 2014). This selection process leads to overrepresentation of youth with depression and also an overrepresentation of girls from the high scorers, a group predominated by girls. The results from the prevalence estimates are therefore not representative of the population prevalence.

5.2.6 Statistical analyses

Cross-tabulations were used to describe prevalence of depression at T1 and T2 as well as change over time. This enabled us to analyze our quantitative data using several variables and to compare them.

Ordinal logistic regression was used to study the association of the outcome variable of depression with parental risk factors. We had three possible discreet outcomes of depression, first at age 15, then at age 20. They were the outcome variables of depression diagnoses for Major, Minor and No Depression. With the three categories representing the outcome variable, we used proportional odds, and ordinal logistic regression to study the association with parental risk factors. This treats the outcome as a three-level ordinal variable. The OR in proportional odds logistic regression has the same interpretation as the OR in standard (binary) logistic regression, if a cut-off is made between any two categories of the

dependent variable. The OR quantifies the risk of being in the combined depression group compared to no depression, as well as being in the most severe depression group compared to the not depressed or middle depressed group.

Multinomial logistic regression was used for exploring course of depression and the associated risk factors. In study two, the association of mother's and father's risk factors with the course of depression diagnosis between ages 15 and 20 as the dependent variable and, in study three, adolescent attachment to mother, father and peers at age 15, with the course of depression diagnosis between ages 15 and 20. Parental factors were first examined independently and then jointly, for their association with course of adolescent depression. Analyses were adjusted for adolescent age and sex. When having more than two possible discreet outcomes, the classification method of multinomial logistic regression can be used for generalizing logistic regression to multiclass problems. This model is used to predict the probabilities of the different possible outcomes of a categorically distributed dependent, variable (depression), given a set of independent variables (risk factors). The results of these three studies yielded ORs >1 together with the statistically significant p-value, which means that the parental risk factors and insecure attachment have an association with the course of depression in adolescence to young adulthood. In this context the confidence intervals express the level of uncertainty around the measured effect such that the true population effect lies between the lower and upper limits.

5.2.7 Sample size

The size of this sample was a commendable 345 at age 15 and an adequate 242 at age 20. This sample size decreases the likelihood of random errors and gives more precise estimates with narrower confidence intervals. The sample sizes in similar studies are from n=83 and up to n=551 (Dinya et al., 2012; Jonsson et al., 2011; Kasen et al., 2001; Reeb et al., 2010).

5.3 Power testing

In any study with limited sample size, as fathers represents in this study, it is common practice to conduct a power analyzes before the study is completed. Power is the probability of rejecting the null hypothesis in a future study. Once the study has been conducted, this probability is either 1, if the null hypothesis is rejected, or 0. In this study all sampling was done previously (see study waves 1998, 1999, 2004). For the present study post hoc power calculations are therefore considered futile and fundamentally flawed (Hoenig & Heisey, 2001). In order to quantify uncertainty due to limited sample size at the present analyses we reported confidence intervals and p-values as generally recommended (Bacchetti, 2002; Hoenig & Heisey, 2001). For the best approach for analyzing data and conserving power we used diagnostic status at age 15 and age 20 as dependent variables and parental risk factors as independent variables.

When considering another approach to analyzing data, for example by using the age 20 diagnostic status as dependent variable, and risk factor and age 15 diagnostic status as covariates, we encounter of Lord's paradox. In randomized controlled studies this suggested approach is considered suitable, where the risk factors are not associated with the treatment groups (Vickers & Altman, 2001). However, in an observational study such as the present one, the parental risk factors at age 15 are associated with the diagnostic status at age 15, and such an analysis would typically introduce bias, called Lord's paradox (Fitzmaurice, Laird, & Ware, 2012; Glymour, Weuve, Berkman, Kawachi, & Robins, 2005; Lord, 1967). Lord's paradox has to do with adjustments for pre-existing conditions in group comparison applications. With the data available there simply is no logical statistical procedure that can be counted on to make proper allowances for uncontrolled preexisting differences between groups (Lord, 1967).

Whereas a strength of this research was the inclusion of fathers and consideration of paternal risk factors separately from maternal ones, the sample of participating fathers was rather small compared to that of mothers. Out of 345 fathers invited only around half participated, which is less than we have wished for. This could represent a selection bias in the father information. We could speculate in whether the participating fathers actually represent all fathers or are these fathers a group with high family priorities and resources. As father participation was relatively sparse to start with, we could not dismiss the fathers with missing data. Imputation is the process of replacing missing data with substituted values. This preserves all cases by replacing missing data with a probable value based on other available information. In this research we use imputations for the participating fathers who have missing information on selected variables. This is done to optimize the power of father data and enable multinomial regression analysis with the five selected risk variables. In this research we have made sure that the data is normally distributed, whereas including non-normally distributed variables may introduce bias. Also, “missing at random” is an assumption that justifies the analysis, not a property of the data. For example, the missing at random assumption may be reasonable if a variable that is predictive of missing data in a covariate of interest is included in the imputation model, but not if the variable is omitted from the model. Multiple imputation analyses will avoid bias only if enough variables predictive of missing values are included in the imputation model. In our research we have made sure to avoid these problems (Didelez & Pigeot, 1998; Sterne et al., 2009; White, Royston, & Wood, 2011).

5.3.1 Assessment of parental psychiatric symptoms

Parental psychiatric symptoms were assessed through self-report at one time point, with the limitations associated with self-report discussed above. The Adult Self Report form assesses psychiatric symptoms rather than clinical diagnosis. In addition, because of the

structure of the Adult Self Report form, we cannot separate types of psychiatric symptoms (depression versus anxiety, for example) when evaluating their association with course of depression.

5.3.2 Diagnosis of depression using DSM-IV vs. DSM-5

Since the time of collecting data in 2004 until today the DSM has been revised and changes has been made to the definitions of depression. At the time of the different waves of this study, from 1998 to 2004, both the DSM III and DSM IV (Diagnostic and Statistical Manual) were used to define depressive disorders based on the clinical interviews (American Psychiatric Association, 1978, 2000). For the analyses of the data, DSM IV was used for the three articles constituting this dissertation. Yet changes concerning the current terminology of diagnoses has to be considered because the recent DSM-5 contains some changes for depression in comparison to the previous DSM versions (American Psychiatric Association, 2013). In the main, DSM III, DSM IV and DSM- 5 are similar and cover the same clinical conditions. However, the most prominent changes in regard to depression are: Unipolar disorders are similar across these versions, except the bereavement criterion has been excluded in DSM-5. Minor depression in our study is equivalent to Depression NOS in the DSM-IV and Unspecified Depressive Disorder in the DSM-5. Dysthymia is replaced by Persistent Depressive Disorder in DSM-5 encompassing both chronic MDD and Dysthymia. However, because these two conditions were grouped together in our analyses as Major Depression, this change will have had no effect on the results. There is also the similar diagnostic system the ICD-10 (International Statistical Classification of Diseases and Related Health Problems 10th Revision) which is the most commonly used in Norway, and globally the most often used in public health, hospital and insurance diagnostics. However, the DSM system was chosen for analyses in this study. The focus of the study was not to compare the two systems.

Regarding the adolescents, we were only able to collect information required to diagnose depression and did not obtain information on comorbid disorders. In the multinomial logistic regression analyses we compared the depression groups to the non-depressed, thus not accounting for the insecure attachment that could have occurred in the non-depressed sample.

5.3.3 Generalizability of results

The sample is from the mid-region of Norway, including one moderately sized city as well as rural areas, which may limit generalizability because large urban areas are not represented. Another concern in this study is that the last data collection took place more than 10 years ago and could possibly be dated. Changes in Norwegian society that could possibly have influenced the lives of the families and the course of depression in adolescents since then includes better household economy and rates of immigration that have doubled (Epland & Kirkeberg, 2012; Pettersen, 2014). Increased wealth in Norwegian households could perhaps influence the parental economic dissatisfaction (Agerup et al., 2014), but improved economic circumstances mainly concern the elderly population in Norway and are less likely to have affected relationships in younger generations of parents with children (Ainsworth, 1978). Though significant immigration has occurred, the majority of immigrants have come from neighboring countries and from Europe (54.8%) and these will not necessarily have suffered from traumatic experiences. We don't have data yet on depression in adolescents associated with the current refugee situation in Europe including Norway.

5.4 Interpretation of main findings

From our findings we observe the course of depression and the association with parental risk factors as well as attachment to parents and peers.

5.4.1 Course of depression

The course of depression from adolescence to young adulthood was found overall to be considerably stable. In the course of five years most of the non-depressed remained so (71%). Moreover, more than half (53%) of those with Minor Depression recovered as did about one-fourth (27%) of those with Major Depression. Very few developed Minor Depression in this period. However, there is a strong tendency to develop Major Depression (19% for No-Depression and 42% for Minor Depression at age 15) or remain with Major Depression (62%). This could be partially explained by the fact that most adolescents who develop clinical depression experience their first episode in the transition to late adolescence, sometime between 15-18 years (Abela & Hankin, 2009),(p.336). From mid-adolescence to late adolescence there is a six-fold increase of depression (Hankin et al., 1998), including a marked increase in male depression.

The continuity of Major Depression in our findings is comparable to earlier research that has documented that adolescents with major depressive episodes are at considerable risk of reoccurrence within a few years (Kovacs, 1996; Peter M Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). The cumulative probability of reoccurrence is 40% within two years and 70% within five years (Birmaher et al., 1996). As in our research, other prospective community studies show that adolescent onset of depression is associated with reoccurrence in young adulthood (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996; Fergusson & Woodward, 2002; Kim-Cohen et al., 2003). Between, 40-70% of depressed adolescents experience depression in adulthood. Compared to adolescents with no-depression, those with depression have 2-7 times increased odds of experiencing depression in adulthood (Rutter, Kim-Cohen, & Maughan, 2006).

5.4.2 Sex and course of depression

For the main findings of this thesis regarding course of depression and the prevalence differences between the sexes, we find as with other studies (as mentioned above) that there are more girls than boys. However, the course of depression in this study for both girls and boys is quite stable over the five year period. Of the boys 54% remained non-Depressed compared to 35% of the girls. Boys with Minor Depression at 15 tend to recover. Girls with Minor Depression at 15 either recover or escalate to Major Depression. Boys with Major Depression tend to remain in this clinical state five years later. Also few girls with Major Depression at 15 recover and most continue to experience Major Depression at age 20. Taken as a whole, depression in girls at age 15 projects a more severe depression prognosis into young adulthood than boys. In line with this, a previous study also found that the course of depression in girls is generally more severe and chronic than in boys (Essau, Lewinsohn, Seeley, & Sasagawa, 2010). However, this study relied on retrospective reports as opposed to our longitudinal prospective reports.

The findings of this thesis emphasize the risk for adolescent depression to be a reoccurring disorder throughout adolescence and into young adulthood. Those who were diagnosed with Major Depression often do not recover over the course of five years. Reasons for the maintenance of depression can be many and varied; biological, (hormonal, genetic), psychosocial (personality, parental relationship, other relationships), environmental factors (neighborhood, economy, school,). In this thesis we focused on selected parental factors and cannot rule out other factors disposing adolescents for depression and its subsequent course.

5.4.3 Mothers

Mothers who report having anxiety, depression, social withdrawal, and somatic symptoms are at risk of having an adolescent with clinical depression. This may indicate that

internalizing problems in mothers may interfere with the quality of parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Parenting quality can be expressed in terms of negative cognitions, behaviors and affect and the stressful context of the children's lives (S.H. Goodman & Gotlib, 1999; S.H. Goodman & Tully, 2008). Moreover, high internalizing problems may represent, at least in part, experiences of depression in mothers ranging from sub-clinical to MDD. Between 6% and 17% of women reportedly have an episode of major depression in their lifetime (S.H. Goodman & Tully, 2008), which is between 1.5- 3 times higher prevalence than men (American Psychiatric Association, 2013). This leaves a particular concern for the mental health of their off-spring (R.C. Kessler, 2006; Klein, Lewinsohn, Rohde, Seeley, & Olino, 2005). Thus internalizing problems in mothers may represent considerable negative influences on the adolescent.

Three other maternal risk factors were also associated with adolescent depression, including externalizing problems, economic dissatisfaction and physical illness/disability when considered separately. However, when considered jointly with internalizing problems the associations were diminished and no longer significant. The explanation for this could be statistical suppression due to multi-collinearity among risk factors. It could also be due to the mother's affective well-being, marked by internalizing symptoms, being a more proximal influence on the adolescent and the former factors being more distal risk factors, the effect of which may be mediated by mother's internalizing problems. In the present longitudinal study maternal internalizing problems were also associated with the trajectory represented by adolescents who were depressed at 15 years and either remained depressed or recovered from depression at 20 years of age. These findings suggest maternal internalizing problems represent risk for clinical depression in adolescence, at age 15, but do not predict a distinct course of depression into young adulthood. Other factors not examined here would be needed to explain differential course of depression present in adolescents at age 15.

In addition, previous research has suggested that maternal history of depression is associated with “launching a set of risk factors that predicts the growth of depressive symptoms during adolescence” (p.819) rather than present maternal depression (Kouros & Garber, 2010). Thus, the timing and extent of maternal history of depression can better explain the course of depression in adolescents, rather than maternal current depression (S.H. Goodman & Tully, 2008). Aside from other studies finding the general relationship between depressive symptoms in mothers and adolescent offspring, there are no comparable studies investigating maternal risk factors for the course of depression from adolescence into young adulthood.

This thesis was limited to examining a restricted number of risk factors. Other factors that are also considered influential in the complex relationship between maternal negative affectivity and adolescent depression include heritability, innate dysfunctional neuro regulatory mechanisms, exposure to maternal dysfunctions and the stressful context of family lives (S.H. Goodman & Tully, 2008). Moderators of risk factors to consider are the father's health and involvement with the child, the course and timing of the mother's depression, and characteristics of the child (S.H. Goodman & Gotlib, 1999). Future research with larger samples can expand the examination of familial risk factors influencing depression in adolescence and young adulthood.

We generally did not find differences in the present study in maternal risk factors associated with the sex of the adolescent or young adult. Despite the well-established higher prevalence of depression in females appearing in adolescence (and remaining throughout life), parental risk factors were not different between the sexes. Similar lack of sex effects for negative affectivity have been reported in another Norwegian study (Ranoyen, Stenseng, Klockner, Wallander, & Jozefiak, 2015). We also did not find any differences in the association between maternal risk factors and patterns of depression from adolescence to

young adulthood. However, it is conceivable that the power to detect associations in subsamples, defined by sex, was not sufficient.

5.4.4 Fathers

In this study paternal risk factors were not found to be significantly associated with depression at age 15, but paternal internalizing problems were associated with adolescents remaining depressed from ages 15 to 20. Moreover, this association may suggest that paternal affective dysfunction has a later effect on offspring depression than maternal dysfunction. As yet another explanation, our research was dependent on fathers voluntary participation. Compared to mothers (n=240) we had fewer fathers participating (n=159), resulting in reduced power in the analyses of this subset. Finding that adolescents whose fathers participated had lower prevalence of depression than those whose fathers did not participate, could also represent selection bias. For example, fathers who participated could be more involved fathers or fathers with better mental health, thus moderating the risk of depression (S.H. Goodman & Gotlib, 1999).

There are few longitudinal studies that have examined paternal mental health being associated with adolescent depression. There is an overwhelming bias in the research to focus on maternal influences on child development, including mental health. However the findings in the present study are supported in a few similar studies (Connell & Goodman, 2002; Klein et al., 2005; Reeb & Conger, 2009). Connell and Goodman (2002) compared the association of maternal and paternal psychopathology with internalizing and externalizing disorders in children at different ages. They found that maternal psychopathology was more strongly associated with internalizing disorders in children than paternal psychopathology. Klein et al. (2005) found that depression in fathers was associated with increased risk of depression in adolescents, measured from mid-adolescence to 24 years of age. However, they were limited to studying episodes of MDD of moderate or greater severity. In the same study maternal

MDD was associated with offspring MDD. The offspring had particularly elevated rates of MDD when parents had early onset MDD. Reeb and Conger (2009) found that paternal depressive symptoms were associated with depressive symptoms in adolescents, even when controlling for maternal depressive symptoms, which was also associated with adolescent depressive symptoms.

In summary, growing up with a mother or father with high negative affectivity, including depression, can represent a risk factor for adolescent depression (S.H. Goodman & Gotlib, 1999). Given the influence parents have on child development it is likely they play some role in the development of depression in adolescence and adulthood. Emotion regulation deficits and maladaptive responses to stress observed in depressed parents might heighten the risk of social-emotional deficits and relationship disturbances in adolescents (Garber & Cole, 2010; Hammen, Shih, & Brennan, 2004). This implies that attachment quality plays an important role for the parent-adolescent relationship and the course of depression.

5.5 Attachment

A portion of this thesis examined the role of attachment in depression in adolescence and young adulthood. Less secure attachment to either parent was associated with depression at age 15, but not with a subsequent distinct course of depression. That is, insecure attachment with either parent can be associated with the adolescents either recovering or remaining depressed over the five years between adolescence and young adulthood. Attempting to explain why some recover from depression and some remain depressed, we may consider that moderating factors may play a role for recovery from depression. Moderators were not studied here, but involve protective mechanisms in the adolescent's life. Examples of such moderators from previous research include adolescent's personal attributes and habits that assure a general positive approach to life and sensitivity to other's needs (S.H. Goodman & Gotlib, 1999). Other salient protective factors include having warm and supportive family

relations and at least one stable person attuned to the child, as well as middle to high SES (Scott, Wallander, & Cameron, 2015).

In addition, maternal insecure attachment was associated with adolescents who were not depressed at age 15 but became depressed by age 20. As explained earlier, depression prevalence has a six-fold increase from mid-adolescence to late adolescence (Hankin et al., 1998), which may partially explain the subsequent development of depression in this group of adolescents. In the present study peer attachment did not appear to play a significant role in the course of depression. The findings are conflicting in other studies on parent and peer attachment. One study supports our finding of parent attachment being more important than peer attachment in prediction of psychological well-being (Margolese, Markiewicz, & Doyle, 2005). However another study points to attachment to both parents and peers appearing important in that adolescents with insecure attachment to parents and secure attachment to peers had lower levels of depression than those with secure attachment to parents and insecure peer attachment (Laible et al., 2000). Those with secure attachment to both parents and peers had the lowest depression (Laible et al., 2000).

6. Clinical implications

"Ask how mum and dad are doing when the adolescent is depressed": The health of mothers and fathers as well as attachment quality are important to consider when the adolescent is struggling with depression. From this study we only examined a few of many possible parental factors that may be important for depressed adolescents. Nonetheless, whereas the vast majority of young people do not get depressed, the group who become depressed by mid-adolescence have a high likelihood of staying depressed throughout adolescence. This is especially noteworthy for girls. Therefore, it is important to identify depression as early as possible and provide treatment to alter this trajectory.

Considering the developmental period of adolescence to young adulthood, environmental and biological factors are still strong influences. The findings of the present study highlights that maternal internalizing symptoms are associated with adolescent depression at age 15 and that both maternal and paternal internalizing symptoms are associated with the course of depression from mid-adolescence to young adulthood. This points to the need for increased awareness of adolescent depression associated with parental mental health issues. Our findings suggest that adolescents of parents with internalizing symptoms are at risk for developing depression at least until young adulthood. We also find that the course of depression can vary for individuals despite having mothers or fathers who have depressive symptoms when their child is 15 years old. This emphasizes the need for health personnel, teachers and other important people in adolescents' lives to provide referrals to trained professionals when they encounter adolescents with depression.

6.1 Prevention and treatment of adolescent depression

There are numerous effective approaches to reduce depression in young people. For example, indicated prevention for families vulnerable to depression or other dysfunctions and

with young children emphasize activities that fulfill the child's basic needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). This approach enhances intrinsic motivation and healthy psychological development. Also cognitive behavioral preventive programs have proved to work well in reducing risk for adolescent depression (Gladstone & Beardslee, 2009). As an alternative to indicated prevention approaches, school based universal approaches can be recommended to target a wide range of risk factors (Spence, 2008). For example, the "Beyond Blue Schools Initiative" targets the integration of individual and whole-school change as a holistic depression preventive community program (Sawyer et al., 2010). A Cochrane meta-analysis found that in the short term psychological interventions were more effective than universal prevention (Merry, McDowell, Hetrick, Bir, & Muller, 2004). This meta-analysis indicated that psychological interventions were effective immediately after delivery of the programs in contrast to universal interventions. The follow-up of these studies was less than one year. Thus, it is unclear what the long term effects are for psychological interventions beyond a year and whether universal interventions are useful enough for depression in adolescence.

Further, we find that insecure attachment is associated with the course of Major Depression from mid-adolescence to young adulthood. According to our findings, adolescents with severe depression coupled with less secure parental attachment have a high likelihood to experience depression of a chronic nature. Thus, early intervention in families with insecure attachment could be useful, given that attachment relationships are formed from birth on or even earlier. Meta-analyses of attachment interventions found that the most effective interventions used a behavioral focus in families (Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003). Also interventions with a parent-sensitivity-enhancing approach have been found effective in improving attachment security in young children (Bakermans-Kranenburg et al., 2003).

On the other hand, treatment of adolescents with clinical depression uses many approaches including psychopharmacological agents and individual, group and family therapy. Numerous different specific individual treatment approaches have been proven effective including psychopharmacological treatment with selective serotonin reuptake inhibitors (SSRI) (Goodyer et al., 2008), short term psychodynamic psychotherapy (Leichsenring, Rabung, & Leibing, 2004), cognitive behavioral treatment (CBT)(Weisz, McCarty, & Valeri, 2006), Eye Movement Desensitization Reprocessing (EMDR) (Bae, Kim, & Park, 2008), and Inter Personal Therapy (IPT-A) (Mufson, Dorta, Moreau, & Weissman, 2011; Ying, 2011). A brief adolescent depression group treatment program has been proven effective in a randomized trial (Clarke, Hornbrook, Lynch, & et al., 2001) using the Adolescents Coping with Stress Course (Clarke, Lewinsohn, & Hops, 1990). Family based therapy has also shown to be effective for children with psychiatric disorders including depression (G. Diamond & Josephson, 2005). Finally, related to findings of the current research, Attachment Based Family Therapy (Guy Diamond, Siqueland, & Diamond, 2003) was useful for treating children and adolescents with depression. This treatment involves the family and the child through specific tasks, repairing attachment and promoting child autonomy. Few direct comparisons have been made, but CBT was more effective than interpersonal therapy for insecure attachment in depressed patients (McBride, Atkinson, Quilty, & Bagby, 2006).

More generally, the findings in this theses point to the importance of considering parental mental health and attachment problems when deciding type of intervention for adolescent depression. Regardless of the specific approach, clinicians should enquire about how the parents are doing and then invite mother or father or both into the treatment. Involving parents in the intervention will shift the problem focus from the individual to the family as a whole and ensure that the family gets help where needed. This also applies to

prevention programs. Whereas these typically address adolescents in the community, they should also involve parents and perhaps several generations (grandparents, aunts and uncles, siblings, neighbors etc.) in the prevention programs. When adolescents are insufficiently treated this necessarily affects their development and preparation for adulthood. It also influences their health in adulthood and their relationship to their own children. Thus, early intervention for children at risk or effective clinical intervention for children and adolescents who are depressed is a long term investment for each community and becomes cost efficient for society as a whole.

7. Suggestions for future research

It is highly preferable to include both parents when studying child and adolescent development, including abnormal development. This allows for the examination of maternal and paternal risk factors separately and in combination in association with clinical depression in offspring. In general fathers have been under-represented in studies on adolescents, with and without depression. Our research included father data, but we were unable to obtain an equal number of fathers and mothers to participate. The shortcomings of our research due to underrepresented fathers should be improved upon in future research.

We need to know more about how a broader range of risk factors interact over time and contribute to clinical depression in adolescence and into young adulthood. In our research we studied five parental risk factors and attachment. In future study it would be useful to consider additional parental risk factors. Numerous such factors have been pointed to in previous research, such as the role of lack of parental care, early family discord (Reinherz et al., 1993), caretaker instability, parental criminality, psychopathology and socioemotional problems (Jaffee et al., 2002), parental alcohol use (Chassin, Pitts, DeLucia, & Todd, 1999; R. Lieb et al., 2002) and substance abuse (Hoffmann & Cerbone, 2002). As well as parental diagnoses of depression (Lieb, Isensee, Höfler, Pfister, & Wittchen, 2002; Ramchandani, Stein, Evans, O'Connor, & Team, 2005)

Our findings on the course of depression in adolescents are that some who had mothers with internalizing problems and were depressed at 15 recovered over the next five years and some remained depressed. As mentioned above resilience could play a role in explaining this differential development from apparently the same starting point. Also other moderating factors may occur in this time span such as mother getting support or clinical intervention to improve her mental state or the family improving their economic circumstances. Alternatively, those who remained depressed may be subjected to additional

risk factors not measured in this research. Future research should examine additional factors that could contribute to how some adolescents get well and some remain depressed in the face of the same risk factors.

Our findings indicate that insecure attachment is associated with the course of depression throughout adolescence. The present study did not distinguish between different insecure styles. Whereas Ainsworth (1978) originally described four different attachment styles applicable to children (secure, anxious-resistant insecure attachment, and anxious-avoidant insecure attachment, and disorganized/disoriented attachment), Behrens, Hesse and Main developed a corresponding classification for young adults and adults consisting of secure-autonomous, dismissing, preoccupied, unresolved (grief or trauma) and cannot classify (Behrens, Hesse, & Main, 2007). Future studies should distinguish between the different types of insecure attachment by studying a more nuanced constellation of the parent-child relationship to understand the connection with depression development. Measuring attachment from the perspectives of both adolescents and parents would be beneficial to compare their perceptions and possible differential relationship with depression in adolescents. Questions of whether attachment is stable or possibly influenced by interactions over time would then be possible to study, which could provide a better understanding of depression in the developmental period of adolescence to young adulthood.

If replicated it would be interesting to learn whether cultural and economic differences play a role in the course of depression in adolescents elsewhere than in Norway. Demographic factors are quite homogeneous in Norway, leaving open the possibility that familial risk factors may operate somewhat differently in other demographic contexts, for example exerting a more powerful influence. Cross-cultural comparisons could be a fruitful avenue in future studies.

8. Conclusions

This study contributed important knowledge about clinical depression of various severity, its course from adolescence to young adulthood, and possible influences of parental factors in this period. The associations of five risk factors from mothers and fathers separately as well as attachment security with mother, father and peers were examined in a population sample of adolescents and their parents using self-report and clinical interviews. The most notable findings were that mothers', but not fathers' internalizing problems were associated with adolescent depression at age 15, and that both parents' internalizing problems were associated with the course of depression over the subsequent five years. This suggests that the adolescents are sensitive to mothers' emotional distress throughout adolescence and that fathers' distress becomes influential on depression as the adolescent develops into young adulthood. Also, insecure attachment in families, involving either parent, is associated with major depression throughout adolescence. Thus, assessing parental mental health and life situation when adolescents are struggling with depression and involving parents in therapy may be useful approaches in mental health as well as community health services.

Our findings may also be important for informing intervention programs for families who are vulnerable to insecure attachment and depression. If not treated these family symptoms may be transmitted across generations and cause the adolescents to suffer needlessly in their development and impair their future adult life. Depression in adolescence affects development on all areas in life. Because attachment is formed in the relationship between parent and child from the beginning of life, and has a continuous influence into adulthood, early intervention programs could be helpful for families at risk. From a public health perspective, it seems important to encourage mothers and fathers to seek professional help and guidance when they experience problems from early on when their children are young. Alternatively, screening for such problems in public health programs, followed by

referrals to appropriate intervention programs, may be useful for reducing the burden of depression in our society.

9. References

- Abela, J. R., & Hankin, B. L. (2009). Cognitive Vulnerability to Depression in Adolescents: A Developmental Psychopathology Perspective. In S. Nolen-Hoeksema & L. M. Hilt (Eds.), *Handbook of Depression in Adolescents* (pp. 335-376). New York: Routledge.
- Abela, J. R., Skitch, S. A., Auerbach, R. P., & Adams, P. (2005). The impact of parental borderline personality disorder on vulnerability to depression in children of affectively ill parents. *Journal of Personality Disorders, 19*(1), 68-83.
- Achenbach, T. M., & Rescorla, L. A. (2003). *Manual for the ASEBA Adult Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth and Families.
- Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. (2014). Longitudinal course of diagnosed depression from ages 15 to 20 in a community sample: patterns and parental risk factors. *Child Psychiatry and Human Development, 45*(6), 753-764. doi:10.1007/s10578-014-0444-8
- Ainsworth, M. D. S. (1973). The development of infant-mother attachment. In B. Cardwell & H. Ricciuti (Eds.), *Review of child development research* (Vol. 3, pp. 1-94). Chicago: University of Chicago Press.
- Ainsworth, M. D. S. (1978). *Patterns of attachment : a psychological study of the strange situation*. Hillsdale, N.J. New York: Lawrence Erlbaum Associates; distributed by Halsted Press Division of Wiley.
- Allen, J. P., & Land, D. (1999). *Attachment in adolescence*.
- Allen, J. P., Porter, M., McFarland, C., McElhaney, K. B., & Marsh, P. (2007). The relation of attachment security to adolescents' paternal and peer relationships, depression, and externalizing behavior. *Child Development, 78*(4), 1222-1239. doi:DOI 10.1111/j.1467-8624.2007.01062.x
- Allen, N. B., Kuppens, P., & Sheeber, L. B. (2012). Heart rate responses to parental behavior in depressed adolescents. *Biological Psychology, 90*(1), 80-87.
- American Psychiatric Association. (1978). *Diagnostic and statistical manual of mental disorders: DSM-III draft/prepared by the Task Force on Nomenclature and Statistics of the American Psychiatric Association*: American Psychiatric Association.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV*. Washington, D.C.: American Psychiatric Association.
- American Psychiatric Association. (2000). *Diagnostic And Statistical Manual Of Mental Disorders DSM-IV-TR Fourth Edition (Text Revision)* Author: American Psychiatr.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders-5*. Washington, DC: American Psychiatric Association.
- Angold, A., Costello, E. J., & Winder, F. (1987). *The development of a questionnaire for use in epidemiological studies of depression in children and adolescents*. London: Medical Research Council.
- Angold, A., Weissman, M. M., John, K., Merikangas, K. R., Prusoff, B. A., Wickramaratne, P., . . . Warner, V. (1987). Parent and child reports of depressive symptoms in children at low and high risk of depression. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 28*(6), 901-915.
- Armsden, G. C., & Greenberg, M. T. (1987). The Inventory of Parent and Peer Attachment - Individual Differences and Their Relationship to Psychological Well-Being in Adolescence. *Journal of Youth and Adolescence, 16*(5), 427-454. doi:Doi 10.1007/Bf02202939
- Armsden, G. C., & Greenberg, M. T. (1989). *The Inventory of Parent and Peer Attachment: Preliminary Test Manual*. Seattle: University of Washington (available from Mark Greenberg, mxg47@psi.edu).

- Armsden, G. C., McCauley, E., Greenberg, M. T., Burke, P. M., & Mitchell, J. R. (1990). Parent and peer attachment in early adolescent depression. *Journal of Abnormal Child Psychology*, *18*(6), 683-697.
- Avenevoli, S., Knight, E., Kessler, R. C., & Merikangas, K. R. (2008). Epidemiology of Depression in Children and Adolescents. In J. R. Z. Abela & B. L. Hankin (Eds.), *Handbook of depression in children and adolescents* (pp. 6-32). New York: Guilford Press.
- Bacchetti, P. (2002). Peer review of statistics in medical research: the other problem. *BMJ: British Medical Journal*, *324*(7348), 1271.
- Bae, H., Kim, D., & Park, Y. C. (2008). Eye movement desensitization and reprocessing for adolescent depression. *Psychiatry Investigation*, *5*(1), 60-65.
- Bahali, K., Tahiroglu, A. Y., Avci, A., & Seydaoglu, G. (2011). Parental psychological symptoms and familial risk factors of children and adolescents who exhibit school refusal. *East Asian Archives of Psychiatry*, *21*(4), 164-169.
- Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., & Juffer, F. (2003). Less is more: meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*(2), 195.
- Barbe, R. P., Williamson, D. E., Bridge, J. A., Birmaher, B., Dahl, R. E., Axelson, D. A., & Ryan, N. D. (2005). Clinical differences between suicidal and nonsuicidal depressed children and adolescents. *The Journal of clinical psychiatry*, *66*(4), 492-498.
- Bardone, A. M., Moffitt, T. E., Caspi, A., Dickson, N., & Silva, P. A. (1996). Adult mental health and social outcomes of adolescent girls with depression and conduct disorder. *Development and Psychopathology*, *8*(04), 811-829.
- Beardslee, W. R., Gladstone, T. R. G., & O'Connor, E. E. (2011). Transmission and Prevention of Mood Disorders Among Children of Affectively Ill Parents: A Review. *Journal of the American Academy of Child and Adolescent Psychiatry*, *50*(11), 1098-1109.
- Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton & J. E. Barrett (Eds.), *Treatment of depression: Old controversies and new approaches*. New York: Raven Press.
- Behrens, K. Y., Hesse, E., & Main, M. (2007). Mothers' attachment status as determined by the Adult Attachment Interview predicts their 6-year-olds' reunion responses: A study conducted in Japan. *Developmental Psychology*, *43*(6), 1553.
- Berndt, T. J. (2002). Friendship quality and social development. *Current directions in psychological science*, *11*(1), 7-10.
- Birch, A. (1997). *Developmental Psychology: From Infancy to Adulthood* (2nd ed.). London: Palgrave Macmillan.
- Birmaher, B., Ryan, N. D., Williamson, D. E., Brent, D. A., Kaufman, J., Dahl, R. E., . . . Nelson, B. (1996). Childhood and adolescent depression: a review of the past 10 years. Part I. *Journal of the American Academy of Child and Adolescent Psychiatry*, *35*(11), 1427-1439.
- Borsini, A., Zunszain, P. A., Thuret, S., & Pariante, C. M. (2015). The role of inflammatory cytokines as key modulators of neurogenesis. *Trends in Neurosciences*. doi:10.1016/j.tins.2014.12.006
- Bowlby, J. (1969). *Attachment and loss*. London,: Hogarth P.; Institute of Psycho-Analysis.
- Bowlby, J. (1988). *A secure base: clinical applications of attachment theory* (Vol. xii). London: Routledge.
- Bowlby, J. (1997). *Attachment : vol. 1 of the "Attachment and loss" trilogy*. London: Pimlico.
- Bowling, A. (2005). Just one question: If one question works, why ask several? *Journal of Epidemiology and Community Health*, *59*(5), 342-345.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, *22*(6), 723.
- Carpenter, J. R., & Kenward, M. G. (2013). *Multiple imputation and its application* (1st ed.). Chichester, West Sussex: John Wiley & Sons.

- Chassin, L., Pitts, S. C., DeLucia, C., & Todd, M. (1999). A longitudinal study of children of alcoholics: predicting young adult substance use disorders, anxiety, and depression. *Journal of Abnormal Psychology, 108*(1), 106.
- Clarke, G. N., Hornbrook, M., Lynch, F., & et al. (2001). A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. *Archives of General Psychiatry, 58*(12), 1127-1134. doi:10.1001/archpsyc.58.12.1127
- Clarke, G. N., Lewinsohn, P. M., & Hops, H. (1990, May 31st 2015). *Instructor's Manual for the Adolescent Coping With Stress Course*. [Electronic Manual]. Portland, Ore.
- Compas, B. E., Worsham, N. L., Eppingjordan, J. E., Grant, K. E., Mireault, G., Howell, D. C., & Malcarne, V. L. (1994). When Mom or Dad Has Cancer - Markers of Psychological Distress in Cancer-Patients, Spouses, and Children. *Health Psychology, 13*(6), 507-515.
- Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: a meta-analysis. *Psychological Bulletin, 128*(5), 746-773.
- Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology, 74*(5), 1380-1397.
- Copeland, W. E., Adair, C. E., Smetanin, P., Stiff, D., Briante, C., Colman, I., . . . Angold, A. (2013). Diagnostic transitions from childhood to adolescence to early adulthood. *Journal of Child Psychology and Psychiatry, 54*(7), 791-799. doi:Doi 10.1111/Jcpp.12062
- Costello, E. J., & Angold, A. (1988). Scales to assess child and adolescent depression: checklists, screens, and nets. *Journal of the American Academy of Child and Adolescent Psychiatry, 27*(6), 726-737.
- Costello, E. J., Benjamin, R., Angold, A., & Silver, D. (1991). Mood variability in adolescents: a study of depressed, nondepressed and comorbid patients. *Journal of Affective Disorders, 23*(4), 199-212.
- Crawford, T. N., Cohen, P., Midlarsky, E., & Brook, J. S. (2001). Internalizing symptoms in adolescents: Gender differences in vulnerability to parental distress and discord. *Journal of Research on Adolescence, 11*(1), 95-118.
- Dahl, R. E., & Spear, L. P. (2004). *Adolescent brain development: Vulnerabilities and opportunities*. New York: New York Academy of Sciences.
- Dantzer, R., O'Connor, J. C., Freund, G. G., Johnson, R. W., & Kelley, K. W. (2008). From inflammation to sickness and depression: when the immune system subjugates the brain. *Nature Reviews Neuroscience, 9*(1), 46-56.
- Daviss, W. B., Birmaher, B., Melhem, N. A., Axelson, D. A., Michaels, S. M., & Brent, D. A. (2006). Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 47*(9), 927-934.
- Derdikman-Eiron, R., Indredavik, M. S., Bratberg, G. H., Taraldsen, G., Bakken, I. J., & Colton, M. (2011). Gender differences in subjective well-being, self-esteem and psychosocial functioning in adolescents with symptoms of anxiety and depression: Findings from the Nord-Trøndelag health study. *Scandinavian Journal of Psychology, 52*(3), 261-267.
- Diamond, G., & Josephson, A. (2005). Family-based treatment research: a 10-year update. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*(9), 872-887. doi:10.1097/01.chi.0000169010.96783.4e
- Diamond, G., Siqueland, L., & Diamond, G. M. (2003). Attachment-based family therapy for depressed adolescents: Programmatic treatment development. *Clin Child Fam Psychol Rev, 6*(2), 107-127.
- Diareme, S., Tsiantis, J., Kolaitis, G., Ferentinos, S., Tsalamaniotis, E., Paliokosta, E., . . . Romer, G. (2006). Emotional and behavioural difficulties in children of parents with multiple sclerosis: a controlled study in Greece. *European Child and Adolescent Psychiatry, 15*(6), 309-318.
- Didelez, V., & Pigeot, I. (1998). Maximum likelihood estimation in graphical models with missing values. *Biometrika, 85*(4), 960-966.

- Didelez, V., & Sheehan, N. (2007). Mendelian randomization as an instrumental variable approach to causal inference. *Statistical Methods in Medical Research*, *16*(4), 309-330. doi:10.1177/0962280206077743
- Dinya, E., Csorba, J., & Grosz, Z. (2012). Are there temperament differences between major depression and dysthymic disorder in adolescent clinical outpatients? *Comprehensive Psychiatry*, *53*(4), 350-354.
- Elder, G. H., Conger, R. D., Foster, E. M., & Ardelt, M. (1992). Families under economic pressure. *Journal of Family Issues*, *13*(1), 5-37.
- Elovainio, M., Pulkki-Raback, L., Jokela, M., Kivimaki, M., Hintsanen, M., Hintsanen, T., . . . Keltikangas-Jarvinen, L. (2012). Socioeconomic status and the development of depressive symptoms from childhood to adulthood: A longitudinal analysis across 27 years of follow-up in the Young Finns study. *Social Science and Medicine*, *74*(6), 923-929.
- Epland, J., & Kirkeberg, M. I. (2012). Wealth distribution in Norway. Evidence from a new register-based data source. Reports 2012/35. Retrieved from <http://www.ssb.no/en/inntekt-og-forbruk/artikler-og-publikasjoner/wealth-distribution-in-norway>
- Essau, C. A., Lewinsohn, P. M., Seeley, J. R., & Sasagawa, S. (2010). Gender differences in the developmental course of depression. *Journal of Affective Disorders*, *127*(1), 185-190.
- Falconier, M. K., & Epstein, N. B. (2011). Female-demand/male-withdraw communication in Argentinian couples: A mediating factor between economic strain and relationship distress. *Personal Relationships*, *18*(4), 586-603.
- Fan, X., Miller, B. C., Park, K.-E., Winward, B. W., Christensen, M., Grotevant, H. D., & Tai, R. H. (2006). An Exploratory Study about Inaccuracy and Invalidity in Adolescent Self-Report Surveys. *Field Methods*, *18*(3), 223-244. doi:10.1177/152822x06289161
- Fergusson, D. M., & Woodward, L. J. (2002). Mental health, educational, and social role outcomes of adolescents with depression. *Archives of General Psychiatry*, *59*(3), 225-231.
- Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2012). *Applied longitudinal analysis* (Vol. 998): John Wiley & Sons.
- Fosse, R. (2009). Ingen gener for psykiske lidelser. *Tidsskrift for Norsk Psykologforening*, *2009*(46), 596-600.
- Garber, J., & Cole, D. A. (2010). Intergenerational transmission of depression: A launch and grow model of change across adolescence. *Development and Psychopathology*, *22*(4), 819-830.
- Gere, M. K., Hagen, K. A., Villabo, M. A., Arnberg, K., Neumer, S. P., & Torgersen, S. (2013). Fathers' mental health as a protective factor in the relationship between maternal and child depressive symptoms. *Depression and Anxiety*, *30*(1), 31-38.
- Gilman, S. E., Kawachi, I., Fitzmaurice, G. M., & Buka, S. L. (2003). Family disruption in childhood and risk of adult depression. *The American Journal of Psychiatry*, *160*(5), 939-946.
- Gladstone, T. R., & Beardslee, W. R. (2009). The prevention of depression in children and adolescents: a review. *The Canadian Journal of Psychiatry/La Revue canadienne de psychiatrie*.
- Glymour, M. M., Weuve, J., Berkman, L. F., Kawachi, I., & Robins, J. M. (2005). When is baseline adjustment useful in analyses of change? An example with education and cognitive change. *American Journal of Epidemiology*, *162*(3), 267-278.
- Goldstein, R. B., Weissman, M. M., Adams, P. B., Horwath, E., Lish, J. D., Charney, D., . . . Wickramaratne, P. J. (1994). Psychiatric disorders in relatives of probands with panic disorder and/or major depression. *Archives of General Psychiatry*, *51*(5), 383-394.
- Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: a developmental model for understanding mechanisms of transmission. *Psychological Review*, *106*(3), 458-490.
- Goodman, S. H., Schwab-Stone, M., Lahey, B. B., Shaffer, D., & Jensen, P. S. (2000). Major depression and dysthymia in children and adolescents: Discriminant validity and differential consequences in a community sample. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*(6), 761-770. doi:10.1097/00004583-200006000-00015

- Goodman, S. H., & Tully, E. (2008). *Children of Depressed mothers. Implications for the Etiology, Treatment, and Prevention of Depression in Children and Adolescents*.pp.415-440. New York: The Guildford Press.
- Goodyer, I. M., Dubicka, B., Wilkinson, P., Kelvin, R., Roberts, C., Byford, S., . . . Harrington, R. (2008). A randomised controlled trial of cognitive behaviour therapy in adolescents with major depression treated by selective serotonin reuptake inhibitors. The ADAPT trial. *Health Technology Assessment, 12*(14), iii-iv, ix-60.
- Grant, K. E., & Compas, B. E. (1995). Stress and anxious-depressed symptoms among adolescents: searching for mechanisms of risk. *Journal of Consulting and Clinical Psychology, 63*(6), 1015-1021.
- Greszta, E. (2006). [Family environment risk factors of depression in adolescence]. *Psychiatria Polska, 40*(4), 719-730.
- Guarnieri, S., Ponti, L., & Tani, F. (2010). The Inventory of Parent and Peer Attachment (IPPA): A study on the validity of styles of adolescent attachment to parents and peers in an Italian sample. *TPM-Testing, Psychometrics, Methodology in Applied Psychology, 17*(3), 103-130.
- Hammen, C., Shih, J. H., & Brennan, P. A. (2004). Intergenerational transmission of depression: test of an interpersonal stress model in a community sample. *Journal of Consulting and Clinical Psychology, 72*(3), 511.
- Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107*(1), 128-140.
- Hart, S. (2008). *Brain, attachment, personality: An introduction to neuroaffective development*: Karnac books.
- Hartrup, W. W., & Laursen, B. (1999). Relationships as developmental contexts: Retrospective themes and contemporary issues. In W. A. C. B. L. (Eds.) (Ed.), *Relationships as Developmental Contexts* (Vol. 30, pp. 13-35).
- Hoenig, J. M., & Heisey, D. M. (2001). The abuse of power: The pervasive fallacy of power calculations for data analysis. *The American Statistician* (Vol. 55, pp. 19-24).
- Hoffmann, J. P., & Cerbone, F. G. (2002). Parental substance use disorder and the risk of adolescent drug abuse: an event history analysis. *Drug and Alcohol Dependence, 66*(3), 255-264.
- Huurte, T., Junkkari, H., & Aro, H. (2006). Long-term psychosocial effects of parental divorce: a follow-up study from adolescence to adulthood. *European Archives of Psychiatry and Clinical Neuroscience, 256*(4), 256-263.
- Hyman, S. E., & Cohen, J. D. (2013). Disorders of Mood and Anxiety. In E. R. Kandel, J. H. Schwartz, T. M. Jessell, S. A. Siegelbaum, & A. J. Hudspeth (Eds.), *Principles of Neural Science* (5th ed., pp. 1407-1409). New York: Mc Graw Hill Medical.
- ISCO-1988. (1990). *International Standard Classification of Occupation Geneva*; .
- Jaffee, S. R., Moffitt, T. E., Caspi, A., Fombonne, E., Poulton, R., & Martin, J. (2002). Differences in early childhood risk factors for juvenile-onset and adult-onset depression. *Archives of General Psychiatry, 59*(3), 215-222.
- Jinyao, Y., Xiongzhao, Z., Auerbach, R. P., Gardiner, C. K., Lin, C., Yuping, W., & Shuqiao, Y. (2012). Insecure attachment as a predictor of depressive and anxious symptomology. *Depression and Anxiety, 29*(9), 789-796. doi:10.1002/da.21953
- Jonsson, U., Bohman, H., von Knorring, L., Olsson, G., Paaren, A., & von Knorring, A. L. (2011). Mental health outcome of long-term and episodic adolescent depression: 15-year follow-up of a community sample. *Journal of Affective Disorders, 130*(3), 395-404.
- Kaasboll, J., Lydersen, S., & Indredavik, M. S. (2012). Psychological symptoms in children of parents with chronic pain-the HUNT study. *Pain*.
- Kahn, R. S., Brandt, D., & Whitaker, R. C. (2004). Combined effect of mothers' and fathers' mental health symptoms on children's behavioral and emotional well-being. *Archives of Pediatrics and Adolescent Medicine, 158*(8), 721-729.

- Kane, P., & Garber, J. (2004). The relations among depression in fathers, children's psychopathology, and father-child conflict: a meta-analysis. *Clinical Psychology Review, 24*(3), 339-360.
- Kasen, S., Cohen, P., Skodol, A. E., Johnson, J. G., Smailes, E., & Brook, J. S. (2001). Childhood depression and adult personality disorder: alternative pathways of continuity. *Archives of General Psychiatry, 58*(3), 231-236.
- Kaufman, J., Birmaher, B., Brent, D., Rao, U., Flynn, C., Moreci, P., . . . Ryan, N. (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): initial reliability and validity data. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(7), 980-988.
- Keenan-Miller, D., Hammen, C. L., & Brennan, P. A. (2007). Health outcomes related to early adolescent depression. *Journal of Adolescent Health, 41*(3), 256-262.
- Kegan, R. (1982). *The evolving self: Problem and process in human development*. Cambridge, Mass.: Harvard University Press.
- Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Cambridge, Mass.: Harvard University Press.
- Kerns, K. A., Tomich, P. L., & Kim, P. (2006). Normative trends in children's perceptions of availability and utilization of attachment figures in middle childhood. *Social Development, 15*(1), 1-22.
- Kessler, R. C. (2006). The epidemiology of depression among women. . In C.L.M. Keyes & S.H. Goodman (Eds.) (Ed.), *Women and depression: A handbook for the social, behavior, and biomedical sciences* (pp.22-40). New York: Cambridge University Press.
- Kessler, R. C., & Walters, E. E. (1998). Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. *Depression and Anxiety, 7*(1), 3-14.
- Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry, 60*(7), 709-717.
- Klein, D. N., Lewinsohn, P. M., Rohde, P., Seeley, J. R., & Olino, T. M. (2005). Psychopathology in the adolescent and young adult offspring of a community sample of mothers and fathers with major depression. *Psychological Medicine, 35*(03), 353-365.
- Korneluk, Y. G., & Lee, C. M. (1998). Children's adjustment to parental physical illness. *Clin Child Fam Psychol Rev, 1*(3), 179-193.
- Kouros, C. D., & Garber, J. (2010). Dynamic Associations between Maternal Depressive Symptoms and Adolescents' Depressive and Externalizing Symptoms. *Journal of Abnormal Child Psychology, 38*(8), 1069-1081.
- Kovacs, M. (1996). The course of childhood-onset depressive disorders. *Psychiatric Annals*.
- Kullik, A., & Petermann, F. (2013). Attachment to parents and peers as a risk factor for adolescent depressive disorders: the mediating role of emotion regulation. *Child Psychiatry and Human Development, 44*(4), 537-548. doi:10.1007/s10578-012-0347-5
- Lahelma, E., Laaksonen, M., Martikainen, P., Rahkonen, O., & Sarlio-Lahteenkorva, S. (2006). Multiple measures of socioeconomic circumstances and common mental disorders. *Social Science and Medicine, 63*(5), 1383-1399.
- Laible, D. J., Carlo, G., & Raffaelli, M. (2000). The differential relations of parent and peer attachment to adolescent adjustment. *Journal of Youth and Adolescence, 29*(1), 45-59. doi:Doi 10.1023/A:1005169004882
- Langton, E. G., Collishaw, S., Goodman, R., Pickles, A., & Maughan, B. (2011). An emerging income differential for adolescent emotional problems. *Journal of Child Psychology and Psychiatry, 52*(10), 1081-1088.
- Lee, A., & Hankin, B. L. (2009). Insecure attachment, dysfunctional attitudes, and low self-esteem predicting prospective symptoms of depression and anxiety during adolescence. *J Clin Child Adolesc Psychol, 38*(2), 219-231. doi:10.1080/15374410802698396

- Leichsenring, F., Rabung, S., & Leibing, E. (2004). The Efficacy of Short-term Psychodynamic Psychotherapy in Specific Psychiatric Disorders: A Meta-analysis. *Archives of General Psychiatry*, *61*(12), 1208-1216.
- Lemstra, M., Neudorf, C., D'Arcy, C., Kunst, A., Warren, L. M., & Bennett, N. R. (2008). A systematic review of depressed mood and anxiety by SES in youth aged 10-15 years. *Canadian Journal of Public Health. Revue Canadienne de Sante Publique*, *99*(2), 125-129.
- Lewinsohn, P. M., Hops, H., Roberts, R. E., Seeley, J. R., & Andrews, J. A. (1993). Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III—R disorders in high school students. *Journal of Abnormal Psychology*, *102*(1), 133.
- Lewinsohn, P. M., Pettit, J. W., Joiner, T. E., Jr., & Seeley, J. R. (2003). The symptomatic expression of major depressive disorder in adolescents and young adults. *Journal of Abnormal Psychology*, *112*(2), 244-252.
- Lieb, R., Isensee, B., Höfler, M., Pfister, H., & Wittchen, H.-U. (2002). Parental major depression and the risk of depression and other mental disorders in offspring: a prospective-longitudinal community study. *Archives of General Psychiatry*, *59*(4), 365-374.
- Lieb, R., Merikangas, K. R., Hofler, M., Pfister, H., Isensee, B., & Wittchen, H. U. (2002). Parental alcohol use disorders and alcohol use and disorders in offspring: a community study. *Psychological Medicine*, *32*(1), 63-78.
- Liu, Y. L. (2006). Paternal/maternal attachment, peer support, social expectations of peer interaction, and depressive symptoms. *Adolescence*, *41*(164), 705-721.
- Lord, F. M. (1967). A paradox in the interpretation of group comparisons. *Psychological Bulletin*, *68*(5), 304-305.
- Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, *20*(5), 561-592.
- Lunde, E. S. (2013). *Levekårsundersøkelsen om helse*. (ISBN 978-82-537-8672-8). Oslo Kongsvinger: Statistisk Sentralbyrå Retrieved from <http://www.ssb.no/sosiale-forhold-og-kriminalitet/artikler-og-publikasjoner/attachment/117607?ts=13f13996378>.
- Margolese, S., Markiewicz, D., & Doyle, A. (2005). Attachment to Parents, Best Friend, and Romantic Partner: Predicting Different Pathways to Depression in Adolescence. *Journal of Youth and Adolescence*, *34*(6), 637-650. doi:10.1007/s10964-005-8952-2
- McBride, C., Atkinson, L., Quilty, L. C., & Bagby, R. M. (2006). Attachment as moderator of treatment outcome in major depression: A randomized control trial of interpersonal psychotherapy versus cognitive behavior therapy. *Journal of Consulting and Clinical Psychology*, *74*(6), 1041.
- McNabb, D. E. (2013). *Nonsampling error in social surveys*: SAGE Publications, Inc.
- Merikangas, K. R., & Knight, E. (2009). *The epidemiology of depression in adolescents*. New York: Routledge, Taylor & Francis Group.
- Merry, S. N., McDowell, H. H., Hetrick, S. E., Bir, J. J., & Muller, N. (2004). Psychological and/or educational interventions for the prevention of depression in children and adolescents. *The Cochrane Library*.
- Miller, A. H., Maletic, V., & Raison, C. L. (2009). Inflammation and its discontents: the role of cytokines in the pathophysiology of major depression. *Biological Psychiatry*, *65*(9), 732-741.
- Millings, A., Buck, R., Montgomery, A., Spears, M., & Stallard, P. (2012). School connectedness, peer attachment, and self-esteem as predictors of adolescent depression. *Journal of Adolescence*, *35*(4), 1061-1067. doi:10.1016/j.adolescence.2012.02.015
- Mufson, L., Dorta, K. P., Moreau, D., & Weissman, M. M. (2011). *Interpersonal psychotherapy for depressed adolescents*: Guilford Press.
- Muris, P., Mayer, B., & Meesters, C. (2000). Self-reported attachment style, anxiety, and depression in children. *Social Behavior and Personality*, *28*(2), 157-162. doi:DOI 10.2224/sbp.2000.28.2.157
- Muris, P., Meesters, C., & van Den Berg, S. (2003). Internalizing and externalizing problems as correlates of self-reported attachment style and perceived parental rearing in normal adolescents. *Journal of Child and Family Studies*, *12*(2), 171-183.

- Muris, P., Meesters, C., van Melick, M., & Zwambag, L. (2001). Self-reported attachment style, attachment quality, and symptoms of anxiety and depression in young adolescents. *Personality and Individual Differences, 30*(5), 809-818. doi:Doi 10.1016/S0191-8869(00)00074-X
- Nantel-Vivier, A., & Pihl, R. O. (2008). Biological vulnerability to depression. *Handbook of depression in children and adolescents, 103-123.*
- Natsuaki, M. N., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., Harold, G. T., Reiss, D., & Leve, L. D. (2014). Raised by Depressed Parents: Is it an Environmental Risk? *Clin Child Fam Psychol Rev, 17*(4), 357-367. doi:10.1007/s10567-014-0169-z
- Nolen-Hoeksema, S. (2006). *The Etiology of Gender Differences in Depression*: American Psychological Association.
- Nomura, Y., Wickramaratne, P. J., Warner, V., Mufson, L., & Weissman, M. M. (2002). Family discord, parental depression, and psychopathology in offspring: ten-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(4), 402-409.
- Nrugham, L., Holen, A., & Sund, A. M. (2010). Associations between attempted suicide, violent life events, depressive symptoms, and resilience in adolescents and young adults. *Journal of Nervous and Mental Disease, 198*(2), 131-136.
- Oppenheim-Gluckman, H., Marioni, G., Chambry, J., Aeschbacher, M. T., & Graindorge, C. (2005). Personal experience of adolescents with a brain-injured parent: preliminary study. *Annales de Readaptation et de Medecine Physique, 48*(9), 650-661.
- Overbeek, G., Vollebergh, W., Engels, R. C. M. E., & Meeus, W. (2003). Parental attachment and romantic relationships: Associations with emotional disturbance during late adolescence. *Journal of Counseling Psychology, 50*(1), 28-39. doi:Doi 10.1037//0022-0167.50.1.28
- Pace, C. S., San Martini, P., & Zavattini, G. C. (2011). The factor structure of the Inventory of Parent and Peer Attachment (IPPA): A survey of Italian adolescents. *Personality and Individual Differences, 51*(2), 83-88.
- Pelkonen, M., Marttunen, M., & Aro, H. (2003). Risk for depression: a 6-year follow-up of Finnish adolescents. *Journal of Affective Disorders, 77*(1), 41-51.
- Pettersen, S. V. (2014, August 25, 2014). Nøkkeltall for Innvandring og Innvandrere. SSB. Retrieved from <http://www.ssb.no/innvandring-og-innvandrere/nokkeltall/innvandring-og-innvandrere>
- Pettit, J. W., Lewinsohn, P. M., Seeley, J. R., Roberts, R. E., & Yaroslavsky, I. (2010). Developmental relations between depressive symptoms, minor hassles, and major events from adolescence through age 30 years. *Journal of Abnormal Psychology, 119*(4), 811-824.
- Prenoveau, J. M., Craske, M. G., Zinbarg, R. E., Mineka, S., Rose, R. D., & Griffith, J. W. (2011). Are anxiety and depression just as stable as personality during late adolescence? Results from a three-year longitudinal latent variable study. *Journal of Abnormal Psychology, 120*(4), 832-843. doi:10.1037/a0023939
- Purper-Ouakil, D., Michel, G., & Mouren-Simeoni, M. C. (2002). Vulnerability to depression in children and adolescents: update and perspectives. *Encephale, 28*(3 Pt 1), 234-240.
- Raja, S. N., McGee, R., & Stanton, W. R. (1992). Perceived Attachments to Parents and Peers and Psychological Well-Being in Adolescence. *Journal of Youth and Adolescence, 21*(4), 471-485. doi:Doi 10.1007/Bf01537898
- Ramchandani, P., Stein, A., Evans, J., O'Connor, T. G., & Team, A. S. (2005). Paternal depression in the postnatal period and child development: a prospective population study. *The Lancet, 365*(9478), 2201-2205.
- Ranøyen, I., Stenseng, F., Klockner, C. A., Wallander, J., & Jozefiak, T. (2015). Familial aggregation of anxiety and depression in the community: the role of adolescents' self-esteem and physical activity level (the HUNT Study). *BMC Public Health, 15*, 78. doi:10.1186/s12889-015-1431-0
- Ranøyen, I., Klöckner, C. A., Wallander, J., & Jozefiak, T. (2014). Associations between internalizing problems in adolescent daughters versus sons and mental health problems in mothers versus fathers (The HUNT study). *Journal of Child and Family Studies, 1-13.*

- Reeb, B. T., & Conger, K. J. (2009). The unique effect of paternal depressive symptoms on adolescent functioning: associations with gender and father-adolescent relationship closeness. *J Fam Psychol*, 23(5), 758-761. doi:10.1037/a0016354
- Reeb, B. T., Conger, K. J., & Wu, E. Y. (2010). Paternal Depressive Symptoms and Adolescent Functioning: The Moderating Effect of Gender and Father Hostility. *Fathering*, 8(1), 131-142.
- Reinherz, H. Z., Giaconia, R. M., Pakiz, B., Silverman, A. B., Frost, A. K., & Lefkowitz, E. S. (1993). Psychosocial risks for major depression in late adolescence: A longitudinal community study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32(6), 1155-1163.
- Rice, F., Harold, G., & Thapar, A. (2002). The genetic aetiology of childhood depression: a review. *Journal of Child Psychology and Psychiatry*, 43(1), 65-79.
- Roelofs, J., Meesters, C., ter Huurne, M., Bamelis, L., & Muris, P. (2006). On the Links Between Attachment Style, Parental Rearing Behaviors, and Internalizing and Externalizing Problems in Non-Clinical Children. *Journal of Child and Family Studies*, 15(3), 319-332. doi:10.1007/s10826-006-9025-1
- Rohde, P., Lewinsohn, P. M., Seeley, J. R., Klein, D. N., Andrews, J. A., & Small, J. W. (2007). Psychosocial functioning of adults who experienced substance use disorders as adolescents. *Psychol Addict Behav*, 21(2), 155-164. doi:10.1037/0893-164X.21.2.155
- Romer, G., Schulte-Markwort, M., & Riedesser, P. (2002). Children of somatically ill parents as exemplified by children whose mothers have cancer. *Geburtshilfe und Frauenheilkunde*, 62(6), 537-542.
- Rosenfarb, I. S., Becker, J., & Khan, A. (1994). Perceptions of parental and peer attachments by women with mood disorders. *Journal of Abnormal Psychology*, 103(4), 637-644.
- Rosenstein, D. S., & Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology*, 64(2), 244-253.
- Rothman, K. J. (2012). *Epidemiology: an introduction*: Oxford University Press.
- Rutter, M., Kim-Cohen, J., & Maughan, B. (2006). Continuities and discontinuities in psychopathology between childhood and adult life. *Journal of Child Psychology and Psychiatry*, 47(3-4), 276-295.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68.
- Sadock, B. J., & Sadock, V. A. (2004). *Kaplan and Sadock's comprehensive textbook of psychiatry*. PA, USA: Lippincott Williams & Wilkins.
- Saveanu, R. V., & Nemeroff, C. B. (2012). Etiology of Depression: Genetic and Environmental Factors. *Psychiatric Clinics of North America*, 35(1), 51+. doi:DOI 10.1016/j.psc.2011.12.001
- Sawyer, M. G., Harchak, T. F., Spence, S. H., Bond, L., Graetz, B., Kay, D., . . . Sheffield, J. (2010). School-based prevention of depression: A 2-year follow-up of a randomized controlled trial of the beyondblue schools research initiative. *Journal of Adolescent Health*, 47(3), 297-304.
- Scott, S. M., Wallander, J. L., & Cameron, L. (2015). Protective Mechanisms for Depression among Racial/Ethnic Minority Youth: Empirical Findings, Issues, and Recommendations. *Clin Child Fam Psychol Rev*, 18(4), 346-369.
- Shaffer, D., Gould, M. S., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., & Aluwahlia, S. (1983). A Childrens Global Assessment Scale (Cgas). *Archives of General Psychiatry*, 40(11), 1228-1231.
- Sihvola, E., Keski-Rahkonen, A., Dick, D. M., Pulkkinen, L., Rose, R. J., Marttunen, M., & Kaprio, J. (2007). Minor depression in adolescence: phenomenology and clinical correlates. *Journal of Affective Disorders*, 97(1-3), 211-218.
- Silberg, J. L., Maes, H., & Eaves, L. J. (2010). Genetic and environmental influences on the transmission of parental depression to children's depression and conduct disturbance: an extended Children of Twins study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 51(6), 734-744. doi:10.1111/j.1469-7610.2010.02205.x
- Simpson, A. R. (2008). Changes in young adulthood. *MIT Young adult development project*. Retrieved from <http://hrweb.mit.edu/worklife/youngadult/contact.html>

- Skrove, M., Romundstad, P., & Indredavik, M. S. (2013). Resilience, lifestyle and symptoms of anxiety and depression in adolescence: the Young-HUNT study. *Social Psychiatry and Psychiatric Epidemiology*, 48(3), 407-416. doi:10.1007/s00127-012-0561-2
- Slavich, G. M. (2014). Understanding inflammation, its regulation, and relevance for health: A top scientific and public priority. *Brain, Behavior, and Immunity*. doi:10.1016/j.bbi.2014.10.012
- Spence, S. H. (2008). Integrating individual and whole-school change approaches in the prevention of depression in adolescents. *Handbook of depression in children and adolescents*, 333-353.
- Sterne, J. A., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., . . . Carpenter, J. R. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *BMJ*, 338, b2393. doi:10.1136/bmj.b2393
- bmj.b2393 [pii]
- Sullivan, P. F., Neale, M. C., & Kendler, K. S. (2000). Genetic epidemiology of major depression: review and meta-analysis. *American Journal of Psychiatry*, 157(10), 1552-1562.
- Sund, A. M. (2004). *Development of depressive symptoms in early adolescence: the youth and mental health study*. (236), NTNU, [Trondheim].
- Sund, A. M., Larsson, B., & Wichstrom, L. (2001). Depressive symptoms among young Norwegian adolescents as measured by the Mood and Feelings Questionnaire (MFQ). *European Child Adolescent Psychiatry*, 10(4), 222-229.
- Sund, A. M., Larsson, B., & Wichstrom, L. (2011). Prevalence and characteristics of depressive disorders in early adolescents in Central Norway. *Child and Adolescent Psychiatry and Mental Health*, 5(1), 28.
- Sund, A. M., & Wichstrom, L. (2002). Insecure attachment as a risk factor for future depressive symptoms in early adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41(12), 1478-1485. doi:10.1097/00004583-200212000-00020
- Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *Lancet*, 379(9820), 1056-1067.
- Thompson, R. A. (2008). Early Attachment and Later Development, Familiar Questions, New Answers. In J. a. S. Cassidy, P.R. (Ed.), *Handbook of Attachment, Theory, Research, and Clinical Applications* (Second ed., pp. 351). New York, London: The Guildford Press.
- Twenge, J. M., & Nolen-Hoeksema, S. (2002). Age, gender, race, socioeconomic status, and birth cohort differences on the children's depression inventory: a meta-analysis. *Journal of Abnormal Psychology*, 111(4), 578-588.
- Tyrka, A. R., Wier, L., Price, L. H., Ross, N. S., & Carpenter, L. L. (2008). Childhood parental loss and adult psychopathology: effects of loss characteristics and contextual factors. *International Journal of Psychiatry in Medicine*, 38(3), 329-344.
- Vander Stoep, A., Adrian, M. C., Rhew, I. C., McCauley, E., Herting, J. R., & Kraemer, H. C. (2012). Identifying comorbid depression and disruptive behavior disorders: Comparison of two approaches used in adolescent studies. *Journal of Psychiatric Research*, 46(7)(0), 873-881.
- Vickers, A. J., & Altman, D. G. (2001). Analysing controlled trials with baseline and follow up measurements. *BMJ*, 323(7321), 1123-1124.
- Vignoli, E., & Mallet, P. (2004). Validation of a brief measure of adolescents' parent attachment based on Armsden and Greenberg's three-dimension model. *Revue Européenne de Psychologie Appliquée/European Review of Applied Psychology*, 54(4), 251-260.
- Waters, E., & Cummings, E. M. (2000). A secure base from which to explore close relationships. *Child Development*, 71(1), 164-172.
- Wei, M. F., Heppner, P. P., & Mallinckrodt, B. (2003). Perceived coping as a mediator between attachment and psychological distress: A structural equation modeling approach. *Journal of Counseling Psychology*, 50(4), 438-447. doi:10.1037/0022-0167.50.4.438
- Weinbach, R. W., & Grinnell, R. M. (2013). *Statistics for social workers* (9 ed.): Pearson.
- Weissman, M. M., Warner, V., Wickramaratne, P., Moreau, D., & Olfson, M. (1997). Offspring of depressed parents. 10 Years later. *Archives of General Psychiatry*, 54(10), 932-940.

- Weisz, J. R., McCarty, C. A., & Valeri, S. M. (2006). Effects of psychotherapy for depression in children and adolescents: a meta-analysis. *Psychological Bulletin*, *132*(1), 132.
- Weitzman, M., Rosenthal, D. G., & Liu, Y. H. (2011). Paternal depressive symptoms and child behavioral or emotional problems in the United States. *Pediatrics*, *128*(6), 1126-1134.
- Welch, A. S., Wadsworth, M. E., & Compas, B. E. (1996). Adjustment of children and adolescents to parental cancer. Parents' and children's perspectives. *Cancer*, *77*(7), 1409-1418.
- Wells, V. E., Deykin, E. Y., & Klerman, G. L. (1985). Risk factors for depression in adolescence. *Psychiatric Developments*, *3*(1), 83-108.
- White, I. R., Royston, P., & Wood, A. M. (2011). Multiple imputation using chained equations: issues and guidance for practice. *Statistics in Medicine*, *30*(4), 377-399.
- WHO. (2014). Recognizing adolescence. *Health for the world's adolescents, a second chance in the second decade*. Retrieved from <http://apps.who.int/adolescent/second-decade/section2/page1/recognizing-adolescence.html>
- Wight, R. G., Botticello, A. L., & Aneshensel, C. S. (2006). Socioeconomic context, social support, and adolescent mental health: A multilevel investigation. *Journal of Youth and Adolescence*, *35*(1), 115-126.
- Wilkinson, R. B. (2004). The role of parental and peer attachment in the psychological health and self-esteem of adolescents. *Journal of Youth and Adolescence*, *33*(6), 479-493. doi:10.1023/B:Joyo.0000048063.59425.20
- Williamson, D. E., Ryan, N. D., Birmaher, B., Dahl, R. E., Kaufman, J., Rao, U., & Puig-Antich, J. (1995). A case-control family history study of depression in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*(12), 1596-1607.
- Wood, A., Kroll, L., Moore, A., & Harrington, R. (1995). Properties of the mood and feelings questionnaire in adolescent psychiatric outpatients: a research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *36*(2), 327-334.
- World Health Organization. (2010). International Statistical Classification of Diseases and Related Health Problems. 10th. Retrieved from <http://apps.who.int/classifications/icd10/browse/2010/en#/F30-F39>
- Ying, Y. Z. (2011). Interpersonal Psychotherapy for Depressed Adolescents. *Journal of Social Work*, *2*, 024.
- Young, J. J., Bruno, D., & Pomara, N. (2014). A review of the relationship between proinflammatory cytokines and major depressive disorder. *Journal of Affective Disorders*, *169*, 15-20. doi:10.1016/j.jad.2014.07.032
- Zastrow, C., & Kirst-Ashman, K. K. (2009). *Understanding Human Behavior and the Social Environment* (8th ed.). USA: Brooks/Cole.

PAPER I

Maternal and paternal
psychosocial risk factors
for clinical depression in
a Norwegian community
sample of adolescents

Is not included due to copyright

PAPER II

Longitudinal Course of
Diagnosed Depression from
Ages 15 to 20 in a Community
Sample: Patterns and
Parental Risk Factors

Is not included due to copyright

PAPER III

Associations Between Parental Attachment and Course of Depression Between Adolescence and Young Adulthood

Is not included due to copyright

