Emotion dysregulation and the Development of Symptoms of Oppositional Defiant Disorder in School-aged Children: A Longitudinal Study

Gudlaug Marion Mitchison

Thesis for the degree of Philosophiae Doctor

August 2024

School of Health Sciences

FACULTY OF PSYCHOLOGY

UNIVERSITY OF ICELAND

Emotion dysregulation and the Development of Symptoms of Oppositional Defiant Disorder in School-aged Children: A Longitudinal Study

Gudlaug Marion Mitchison

Thesis for the degree of Philosophiae Doctor

Supervisor

Urdur Njardvik, Ph.D.

Doctoral committee

Urdur Njardvik, Ph.D.

Juliette M. Liber, Ph.D.

Dagmar Kr. Hannesdottir, Ph.D.

Freyr Halldorsson, Ph.D.

August 2024

School of Health Sciences

FACULTY OF PSYCHOLOGY

UNIVERSITY OF ICELAND

Frávik í tilfinningastjórnun og þróun einkenna mótþróaþrjóskuröskunar meðal barna á skólaaldri: Langtímarannsókn

Guðlaug Marion Mitchison

Ritgerð til doktorsgráðu

Leiðbeinandi/leiðbeinendur

Urður Njarðvík, Ph.D.

Doktorsnefnd

Urður Njarðvik, Ph.D.

Juliette M. Liber, Ph.D.

Dagmar Kr. Hannesdóttir, Ph.D.

Freyr Halldórsson, Ph.D.

Ágúst 2024

Heilbrigðisvísindasvið

SÁLFRÆÐIDEILD

HÁSKÓLI ÍSLANDS

Thesis for a doctoral degree at the University of Iceland. All right reserved. No part of this publication may be reproduced in any form without the prior permission of the copyright holder.

© Guðlaug Marion Mitchison, 2024

ISBN 978-9935-9764-2-0

ORCID: 0000-0003-4337-1381

Reykjavik, Iceland 2024

Ágrip

Bakgrunnur: Ýmsar kenningar eru til staðar um tengsl á milli frávika í tilfinningastjórnun og einkenna mótþróaþrjóskuröskunar hjá börnum. Einkenni mótþróaþrjóskuröskunar hefur verið skipt í þrjá flokka í nýjustu greiningarkerfum, með skaptengd einkenni í sérstökum flokki frá ögrandi hegðun og hefndarhyggju. Það hefur að hluta til leitt til þess að meiri áhersla hefur verið lögð á tilfinningatengdan þátt röskunarinnar. Rannsóknir hafa fjallað um þann möguleika að frávik í tilfinningastjórnun gætu verið hluti af skaptengda flokknum í greiningarskilmerkjum mótþróaþrjóskuröskunar. Aðrar rannsóknir hafa velt upp möguleikanum á að frávik í tilfinningastjórnun gætu verið eitt af kjarnaeinkennum röskunarinnar. Rannsóknir hafa þó einnig varpað fram þeirri tilgátu að frávik í tilfinningastjórnun gætu verið áhættuþáttur fyrir þróun mótþróaþrjóskuröskunar en frekari rannsókna er þörf.

Markmið: Aðalmarkmið þessarar ritgerðar var að meta hvort og hvernig frávik í tilfinningastjórnun stuðla að þróun einkenna mótþróaþrjóskuröskunar. Rannsóknir hafa sýnt fram á nauðsyn þess að skoða þetta viðfangsefni með langtímarannsóknum. Jafnvel þótt frávik í tilfinningastjórnun og hafi verið rannsökuð af kostgæfni hefur áherslan verið meiri á tengsl þeirra við almennan hegðunarvanda hjá börnum. Þrátt fyrir að vandamál við að stjórna tilfinningum séu áberandi meðal barna með almenn hegðunarvandamál er enn þörf á að rannsaka nánar tengslin á milli frávika í tilfinningastjórnun og einkenna mótþróaþrjóskuröskunar sérstaklega.

Aðferð: Þátttakendur voru foreldrar og kennarar 547 barna, 251 stúlka (45,8%) og 296 drengir (54,2%), á aldrinum 5-6 ára á tíma 1 (meðalaldur = 5,69, SF= .31), 6-7 ára á tíma 2 (meðalaldur = 6,61, SF= .30) og 7-8 ára á tíma 3 (meðalaldur = 7.60, SF= .30. Inntökuskilyrði í rannsóknina voru börn á aldrinum 5 til 6 ára, í leikskóla og með íslenskumælandi foreldra. Foreldrar og kennarar fengu hlekk á spurningalista, sem lagðir voru fyrir á þremur árlegum tímapunktum frá leikskóla til 2. bekkjar í grunnskóla.

Niðurstöður: Samkvæmt niðurstöðum í rannsókn I voru stúlkur almennt með betri tilfinningastjórnun en drengir þar sem þær voru með með hærri meðaltöl á undirkvarða ERC sem metur tilfinningastjórnun (ER). Drengir voru með almennt meiri óstöðuglyndi og neikvæðni þar sem þeir voru með hærri meðaltöl á undirkvarða ERC sem metur óstöðuglyndi og neikvæðni (L/N) og með marktækt fleiri einkenni mótþróaþrjóskuröskunar og meiri almennan hegðunarvanda en stúlkur. Frávik í tilfinningastjórnun höfðu áhrif á einkenni mótþróaþrjóskuröskunar og almennan hegðunarvanda, samkvæmt bæði foreldrum og kennurum, en kynjamunur var takmarkaður.

Misræmi milli upplýsingagjafa var skoðað í rannsókn II. Samræmi á milli foreldra og kennara var áberandi lágt, nema hvað varðar meðaltöl á undirkvarða ERC sem metur óstöðuglyndi og neikvæði (L/N) (ICC: tími 1 = .478; tími 2 = .566). Þegar skoðað var samræmi á meðal kennara á mismunandi skólastigum var misræmi milli upplýsingagjafa minna áberandi en milli foreldra og kennara. Gott samræmi var milli kennara varðandi flokka mótþróaþrjóskuröskunar (skaptengd einkenni (ICC = .499) og ögrandi hegðun (ICC = .475)). Það var mjög gott samræmi fyrir óstöðuglyndi/neikvæðni (L/N) (ICC = .753), og gott samræmi fyrir tilfinningastjórnun (ER) (ICC = .463).

Í rannsókn III voru keyrð röð af líkönum, sem tengdu á hverjum tímapunkti tilfinningastjórnun og óstöðuglyndi/neikvæðni við einkenni mótþróaþrjóskuröskunar. Aðskilin líkön voru keyrð eftir upplýsingargjöfum (foreldrar og kennarar) og eftir kyni, (stúlkur og drengir), alls fjögur líkön. Samkvæmt svörum foreldra bentu niðurstöðurnar til þess að tengsl milli breytanna væru mjög svipuð fyrir bæði drengi og stúlkur. Niðurstöðurnar sýndu að fylgni var á milli tilfinningastjórnunar (ER) og óstöðuglyndis/neikvæðni (L/N) á hverjum tímapunkti við einkenni mótþróaþrjóskuröskunar á sama tímapunkti. Þegar litið var á forspárgildi frávika í tilfinningastjórnunar á tíma 1 á einkenni mótþróaþrjóskuröskunar á tíma 2 og 3 fundust takmörkuð áhrif. Til að prófa þessi forspárgildi með beinni hætti voru einfaldari líkön keyrð. Samkvæmt svörum foreldra sýndi líkanið marktækt samband fyrir bæði tilfinningastjórnun (ER) og óstöðuglyndi/neikvæðni (L/N) á tíma 1 við einkenni mótþróaþrjóskuröskunar á bæði tíma 2 og 3. Fyrir kennaragögnin var aðeins óstöðuglyndi/neikvæðni (L/N) á tíma 1 forspá um einkenni mótþróaþrjóskuröskunar á tímum 2 og 3.

Ályktanir: Þó að niðurstöðurnar úr þessari rannsókn benda til þess að frávik í tilfinningastjórnun séu hluti af einkennum mótþróaþrjóskuröskunar frekar en áhættuþáttur, sýna niðurstöður án efa fram á sterk tengsl á milli þessara þátta. Það gefur til kynna að þegar verið er að kortleggja hegðunarvanda hjá börnum er einnig mikilvægt að kortleggja hvort erfiðleikar með tilfinningastjórnun séu mögulega einnig til staðar.

Lykilorð: tilfinningastjórnun, óstöðuglyndi/neikvæðni, ODD-einkenni, misræmi milli upplýsingagjafa, börn

Abstract

Background: Various theories regarding the link between emotion dysregulation and Oppositional Defiant Disorder symptoms are presented in the current literature. Firstly, with ODD now being viewed as a multi-dimensional construct placing irritability and mood related symptoms in a separate category from defiant behavior and vindictiveness, there has been more emphasis on the emotion related aspect of the disorder. Therefore, some research has discussed the possibility that emotion dysregulation could be part of the mood related dimension of ODD. Secondly, research has also shown that emotion dysregulation is potentially a core feature of ODD because of the high correlation between these two factors. Lastly, that emotion dysregulation could be a possible risk factor for the development of at-risk ODD symptoms later in childhood, but further research is needed.

Aims: The overall aim of this thesis was to better understand how emotion dysregulation contributes to the development of ODD symptoms. Research has highlighted the necessity to examine emotion dysregulation longitudinally among younger children and especially in relation to the development of externalizing disorders. Even though emotion regulation (ER) has been diligently studied, the focus has more been on the association of ER with general behavior problems. While problems in regulating and managing emotions figures markedly in depiction of general behavior problems, research on emotion dysregulation as a dual construct in relation to the development of ODD symptoms specifically are still needed.

Method: Participants were 547 children, 251 girls (45.8%) and 296 boys (54.2%), ages 5-6 at time 1 (mean age = 5.69, SD= .31), ages 6-7 at time 2 (mean age = 6.61, SD= .30) and ages 7-8 at time 3 (mean age = 7.60, SD= .30) and recruited through preschools. The inclusion criteria were children aged 5 or 6 at time 1, attending preschool with Icelandic-speaking parents. Parents and teachers received a link to questionnaires at three annual time points from preschool to 2nd grade.

Results: According to the findings in paper I, girls had higher means on the ER subscale of the ERC than boys, indicating better emotion regulation. The boys had higher means on the L/N subscale of the ERC, DBRS and CP subscale of the SDQ. Indicating that the boys had higher lability/negativity and more behavior problems/ODD symptoms than girls. When examining the cross-sectional relationship between emotion dysregulation and ODD symptoms/conduct problems, the moderation analysis was significant for parent-and-teacher-reported ODD symptoms and conduct problems, with both emotion regulation and lability/negativity contributing individually to those symptoms.

Adding gender to the model resulted in a marginal increase for both parents and teachers, though the increase was only significant for teachers for conduct problems.

Informant discrepancies were examined in paper II. The ICC and Cohen's Kappa values concerning parent-teacher agreement, as well as teacher-teacher agreement across different school levels, preschool (time 1) and elementary school (time 2), were calculated. In terms of mean scores on assessment measures, agreement between parents and teachers was only fair for lability/negativity at both time points (ICC: time 1 = .478; time 2 = .566). For other symptoms (emotion regulation and both ODD dimensions), agreement was markedly poor. When examining agreement among teachers across different school levels, discrepancies between informants were less evident compared to those between parents and teachers. Moderate agreement was observed for mood-related symptoms (ICC = .499) and defiant behavior (ICC = .475), while excellent agreement was noted for lability/negativity (ICC = .753), but only fair agreement for emotion regulation (ICC = .463).

In paper III a series of path models were constructed, linking at each time point emotion regulation and lability/negativity with ODD symptoms. Separate models were run by source (parent reports; teacher reports) and by gender (girls; boys) for a total of four models. According to parent-report, the results indicated that the relationships between variables were very similar for both boys and girls. The results showed that emotion regulation and lability/negativity at each time point were consistently related to ODD symptoms at the same point in time, with emotion regulation being negatively related and lability/negativity positively related. When examining whether emotion regulation and lability/negativity can predict ODD symptoms at a later time point, there were limited effects. To test if emotion regulation and lability/negativity at time 1 can possibly predict ODD symptoms at times 2 and 3, in a more direct manner, simpler path models were created. For the parent data, the model showed a significant predictive relationship for both emotion regulation and lability/negativity at time 1 with ODD symptoms at both times 2 and 3. For the teacher data, only lability/negativity at time 1 was significantly predictive of ODD symptoms at times 2 and 3.

Conclusion: Even if the findings from this thesis point more towards emotion dysregulation being a feature of ODD symptoms rather than a risk factor, it is without a doubt that emotion dysregulation is strongly associated with ODD symptoms. The results indicate that when evaluating possible ODD symptoms among children it is also important to explore whether difficulties with emotion regulation are also present.

Keywords: emotion regulation, lability/negativity, ODD symptoms, informant discrepancies, children

Acknowledgements

Completing my Ph.D. has been quite a journey over a much longer period of time than planned in the beginning as several unplanned live events occurred during this project. I believe I have grown as an academic, as a clinical psychologist and just as a person during this process and I have so many people to thank for that. During the last months of writing, I always reminded myself that I would in the very near future write this section of the thesis and that meant I was done. I thought it would be the easiest part to write and the words would just flow onto the page but that seems not to be the case. I am so overwhelmed with gratitude when I look over my time doing this project that I find myself struggling to find the appropriate words and that almost never happens!

First and foremost, I must thank my amazing, wonderful, and extremely intelligent, wise, and patient supervisor, Urður Njarðvík, who has over the years also become my friend and confidant. It is because of her that I am here today, completing my Ph.D. She has always had time for me, always given me extremely valuable feedback, always cheered me on and overall been an enormous support during this whole process. It is hard to express how extremely grateful I am to her unwavering support during this whole journey, and for that I will always be indebted to her!

I also want to express enormous gratitude towards the amazing and wonderful people in my Ph.D. committee. Juliette M. Liber, Dagmar Kr. Hannesdóttir and Freyr Halldórsson have given me so much support, very valuable feedback and always cheered me on! For that I am very grateful to them.

Furthermore, I need to thank my incredible, strong, and amazing mother, Ingunn Erlingsdóttir. She has been my cheerleader and pillar of strength my whole life. I am who I am because of her. She always believes in me even though I do not believe in myself and always says the right things to keep me going. I also must thank my wonderful brother, Erlingur John Mitchison, for being the big brother I sometimes needed and cheering me on in everything I do in life. I wish my father, Alan Mitchison, was alive today to be part of this journey.

I am so extremely lucky to also have so many amazing, wonderful, loyal, and supportive friends who have cheered me on not only during this journey but during everything that happens in my life. Without them, this, and so many other things, would not have been possible. They are my lifeline and have always been so caring and kind towards me which I will forever be grateful for. Thank you to Elísabet Ásta Eyþórsdóttir and Gísli Torfi Magnússon for letting me be a part of your family and for all your support. Thank you to Fanney Viktoría Kristjánsdóttir and Ragnar Jensson for all your support in everything I

do, for all the late night conversations and for delivering chocolate to me when I needed to write. Thank you to Jóhanna Cortes Andrésdóttir for always being there for me and always taking my phone calls. Thank you to Elín Edda Alexandersdóttir and Ingi Mar Jónsson for always having time (and coffee!) for me when I needed it. Thank you to Gullý Sól Magnúsdóttir for always being there for me and being up for doing something fun when I needed a break. Thank you to Kata Powichrowska for your support and meeting me for lunches and coffee breaks. Finally, thank you to Bjarki Þór Sigvardsson for all the much-needed conversations, support, and the technical help.

I am afraid I cannot go without acknowledging my beautiful cats (that is just how I roll), Dimma, Logi, Bjartur and Freyja, who spent many hours sleeping next to me or incessantly walking over the keyboard when I was trying to write. You are the light of my life.

I also need to give thanks to the University of Iceland Research Fund for the doctoral grant I received during the project. I also need to give a big thank you to all the MSc students who helped me with part of the data collection.

With enormous appreciation I dedicate this thesis to the two women in my life who have encouraged me the most to do this project, my amazing supervisor, Urður Njarðvík and my wonderful mother, Ingunn Erlingsdóttir.

Thank you all from the bottom of my heart!

Contents

Ágrip ... iii
Abstract ... v
Acknowledgements ... vii
List of Abbreviations ... xi
List of Figures ... xii
List of Tables ... xiii
List of Original Papers ... xiv
Declaration of Contribution ... xv
1 Introduction ... 1
1.1 Oppositional Defiant Disorder ... 1
1.2 Emotion dysregulation ... 3
1.3 Emotion dysregulation and general behavior problems ... 5
1.4 Emotion dysregulation and ODD ... 7
1.5 Informant discrepancies ... 8
1.6 Summary ... 10
2 Aims ... 13
2.1 Aim of paper I ... 14
2.2 Aim of paper II ... 14
2.3 Aim of paper III ... 14
3 Materials and Methods ... 15
3.1 Measures ... 15
3.2 Procedure ... 17
3.3 Data analyses ... 18
3.3.1 Paper I ... 18
3.3.2 Paper II ... 19
3.3.3 Paper III ... 19
4 Results ... 21
4.1 Paper I ... 21
4.1.1 Descriptive statistics ... 21
4.1.2 Moderation analysis ... 22
4.1.3 Multivariate interaction ... 23
4.2 Paper II ... 24
4.2.1 Descriptive statistics and effect sizes ... 24
4.2.2 ICC and Cohen´s Kappa ... 26
4.2.3 Two-factor repeated measures ANOVA ... 27
4.3 Paper III ... 28
4.3.1 Descriptive statistics ... 28
4.3.2 Overall models ... 29
4.3.3 Specific Models ... 34
4.4 Summary and conclusions ... 35

5 Discussion **39**
5.1 Paper I 39
5.2 Paper II 40
5.3 Paper III 41
5.4 General discussion 43
5.5 Strengths and limitations 44
6 Conclusions **47**
References **49**
Original Publications **61**
Paper I **63**
Paper II **66**
Paper III **68**

List of Abbreviations

ADHD	Attention Deficit-Hyperactivity Disorder
ADHD-RS-IV	ADHD Rating Scale - IV
ANOVA	Analysis of Variance
CAST	Childhood Autism Spectrum Test
CD	Conduct Disorder
CP	Conduct Problems
DBRS	Disruptive Behavior Rating Scale
DSM	Diagnostic and Statistical Manual of Mental Disorders
ER	Emotion Regulation
ERC	Emotion Regulation Checklist
FIML	Full Information Maximum Likelihood
IRB	Institutional Review Board
ICC	Intraclass Correlation Coefficient
K-SADS-PL	Kiddie Schedule for Affective Disorders and Schizophrenia - Present and Lifetime version
L/N	Lability/Negativity
MANOVA	Multivariate Analysis of Variance
MCAR	Missing Completely at Random
ODD	Oppositional Defiant Disorder
SD	Standard Deviation
SDQ	Strengths and Difficulties Questionnaire

List of Figures

Figure 1. *Flowchart of participation* 18

Figure 2. *Path model for girls with standardized coefficients from parent reports* 30

Figure 3. *Path model for boys with standardized coefficients from parent reports* 30

Figure 4. *Path model for girls with standardized coefficients from teacher reports* 32

Figure 5. *Path model for boys with standardized coefficients from teacher reports* 33

Figure 6. *Path model for emotion regulation and lability/negativity predicting ODD symptoms with standardized coefficients from parent reports* 34

Figure 7. *Path model for emotion regulation and lability/negativity predicting ODD symptoms with standardized coefficients from teacher reports* 34

List of Tables

Table 1. *Diagnostic criteria for Oppositional Defiant Disorder* 2

Table 2. *Mean scores for all measurements at time 1* 22

Table 3. *Moderation effect of gender on the relationship between emotion dysregulation, ODD and conduct problems at time 1* 23

Table 4. *Differences in mean scores among children rated below and above the cut-off scores on the ERC subscales at time 1* 24

Table 5. *Mean scores and effect sizes for ODD dimensions and emotion dysregulation* 25

Table 6. *Inter-rater reliability for scores on the DBRS and ERC* 27

Table 7. *Two-factor repeated measures ANOVA* 28

Table 8. *Mean scores for all measurements (parent reports)* 28

Table 9. *Mean scores for all measurements (teacher reports)* 29

Table 10. *Fit indices for path models based on parent reports* 31

Table 11. *Fit indices for specific path models* 35

List of Original Papers

This thesis is based on the following original publications, which are referred to in the text by their Roman numerals (I, II, III):

I. Mitchison, G. M., Liber, J. M., Hannesdottir, D. K., & Njardvik, U. (2020). Emotion dysregulation, ODD and conduct problems in a sample of five and six-year-old children. *Child Psychiatry & Human Development*, *51*, 71-79. https://doi.org/10.1007/s10578-019-00911-7

II. Mitchison, G. M., Liber, J. M., & Njardvik, U. (2022). Parent and Teacher Ratings of ODD Dimensions and Emotion Regulation: Informant Discrepancies in a Two-phase Study. *Journal of Child and Family Studies*, *31,* 1-11. https://doi.org/10.1007/s10826-021-02168-y

III. Submitted for publication in *Journal of Psychopathology and Behavioral Assessment*

All papers are reprinted by kind permission of the publishers.

Declaration of Contribution

I: Gudlaug Marion Mitchison (GMM) formulated and designed the study for paper I under the supervision of Urdur Njardvik (UN), Juliette Liber (JL) and Dagmar Kr. Hannesdottir (DH). Data was collected by GMM and UN. GMM analyzed the data and interpreted the results under the supervision of UN. GMM wrote the manuscript under the supervision of UN, JL and DH. All the co-authors read and approved the final version of the manuscript.

II: GMM formulated and designed the study for paper II under the supervision of UN and JL. Data was collected by GMM and UN. GMM analyzed the data, interpreted the results, and wrote the manuscript under the supervision of UN and JL. All the co-authors read and approved the final version of the manuscript.

III: GMM formulated and designed the study for paper III under the supervision of UN, JL and DH. Data was collected by GMM and UN. Freyr Halldorsson (FH) analyzed the data and wrote the results subchapter. GMM interpreted the data under the supervision of FH. GMM wrote the remainder of the manuscript under the supervision of UN, JL, DH and FH. All the co-authors read and approved the final version of the manuscript.

1 Introduction

Studies estimate that the prevalence of disruptive behavior disorders is between 5-13% among school-aged children and is the leading cause for referrals to youth mental health services (Kimonis et al., 2014; Loeber et al., 2000; Maughan et al., 2004; Merikangas et al., 2009; Nock et al., 2007; Polanczyk et al., 2015). Disruptive behavior disorders include two disorders which are Oppositional Defiant Disorder (ODD) and Conduct disorder (CD) (American Psychiatric Association, 2013). Both consist of inadequate impulse control and defilements of social conduct (Burke et al., 2021; Cole et al., 1996; Diamantopoulou et al., 2011; Fairchild, 2021; Noordermeer et al., 2016). ODD, which is, by some, considered as a developmental antecedent of CD, can be identified as early as during the preschool years while CD is usually recognized later. CD is generally considered a more troubling disorder with higher overall negative outcome which makes identification of any precursors, such as ODD, of great importance (Beauchaine et al., 2007; Campbell et al., 2000; Stringaris et al., 2010; Tandon & Giedinghagen, 2017).

Disruptive behavior disorders are of great concern because of their high degree of impairment. Early onset of these disorders can lead to a lifetime persistent trajectory of antisocial behavior and increased mortality rates (Hill, 2003; Loeber et al., 2000; Scott et al., 2017) which in turn leads to momentous cost for the community (Cohen & Piquero, 2007; Scott et al., 2001). The initial years of elementary school seem to be an especially vulnerable time as 65% of children exhibiting elevated levels of aggression when entering elementary school display behavior problems and associated academic difficulties two years later (Kim-Cohen et al., 2005) and have greater social impairment which affects their relationships with parents, teachers and peers (Burke et al., 2014). Despite extensive literature on disruptive disorders, many uncertainties still exist regarding ODD as it is seldom examined separate from CD, especially in non-clinical samples (Boylan et al., 2007; Fairchild, 2021; Greene & Doyle, 1999; Stringaris et al., 2010).

1.1 Oppositional Defiant Disorder

ODD is categorized under the Disruptive, Impulse-Control and Conduct disorders category in the fifth edition of the Diagnostic and Statistical Manual of Mental disorders (DSM-5-TR) (American Psychiatric Association, 2013). The diagnostic criteria for ODD include a persistent pattern of anger, irritability, defiance, argumentative behavior and/or vindictiveness. Symptoms include losing temper, arguing, being easily annoyed, feeling angry, defying, annoying and blaming others and being spiteful. At least four of the eight symptoms included in the diagnostic criteria for ODD must be present for at

least six months during interactions with at least one individual who is not a sibling (the diagnostic criteria for ODD can be seen in Table 1) (American Psychiatric Association, 2013).

ODD symptoms often begin to emerge at the end of the preschool years and can persist into young adulthood and the prevalence for the disorder ranges from 1% to 11% with the average prevalence estimated around 3.6% (Burke & Romano-Verthelyi, 2018; Demmer et al., 2017; Polanczyk et al., 2015). ODD is believed to be more common among boys (Rowe et al., 2010) although that is up for debate as girls may display more covert behavior rather than noticeable defiance (Hamilton & Armando, 2008; Leadbeater et al., 2012). Although the diagnostic criteria for ODD have not changed much over time and the symptoms have remained largely consistent, ODD used to be viewed as a unidimensional construct (Burke & Romano-Verthelyi, 2018). ODD is now being viewed as a multi-dimensional construct placing irritability and mood related symptoms in a separate category from defiant behavior and vindictiveness (Burke et al., 2021; Evans et al., 2017). Introducing this new subcategorization of symptoms into separate ODD dimensions emphasizes the potential importance of the emotion related aspect of the disorder (American Psychiatric Association, 2013; Burke & Romano-Verthelyi, 2018; Frick & Matlasz, 2018; Ollendick et al., 2018). Even though children with ODD are viewed as anti-social and deliberately defiant, it is possible that that interpretation is too constricted and that the disorder extends beyond disruptive oppositional behavior and possibly involves emotional difficulties as well. Emotional difficulties among children can certainly undermine the child's ability to comply with adult demands, which in turn could possibly be masked as defiance (Hamilton & Armando, 2008; Ollendick et al., 2018; Rowe et al., 2010). This emphasizes the importance of identifying factors, such as emotion dysregulation, that could possibly influence the onset and symptom severity of ODD in children.

Table 1.

Diagnostic criteria in the DSM-5TR for Oppositional Defiant Disorder

At least four symptoms from any of the following categories need to be present for at least six months during an interaction with at least one individual who is not a sibling			
Angry/Irritable mood			
1. Often loses temper	2. Is often touchy or easily annoyed	3. Is often angry or resentful	
Argumentative/Defiant Behavior			
4. Often argues with authority figures or, for children and adolescents, with adults	5. Often actively defies or refuses to comply with requests from authority figures or with rules	6. Often deliberately annoys others	7. Often blames others for his or her mistakes or misbehavior
Vindictiveness			
8. Has been spiteful or vindictive at least twice within the past 6 months			

1.2 Emotion dysregulation

Research in psychology has highlighted the importance of further knowledge on emotions because of their important function in both typical and atypical development of children (Cappadocia et al., 2009; Cicchetti et al., 1995; Cole et al., 2004; Cole et al., 1994; Southam-Gerow & Kendall, 2002). Therefore, children's ability to regulate their emotions, or show emotion regulation skills, has been an important topic of research as a steady pattern of poor emotion regulation can compromise behavioral functioning and psychological development (Adrian, Zeman, et al., 2011; Bradley et al., 2009; Cole et al., 2017; Cole et al., 1994; Yu et al., 2022).

Emotion regulation is a multifaceted concept entailing interactions between many different factors such as physiological arousal, facial and behavioral expressions, inter- and intrapersonal goals, incentive, and cognitive appraisals, making meticulous classification of the concept challenging (Adrian, Zeman, & Veits, 2011; Cole et al., 2017; Gross & Thompson, 2007; McMain et al., 2001). Thompson (1994) defined emotion regulation as internal and external processes accountable for monitoring, assessing, and adjusting emotional responses to accomplish personal goals. An example of an external process is when a person tries to look composed when worried and an example of internal process is when a person directs their attention away from something unpleasant (Gross, 2013). Although Thompson's definition of emotion regulation is most frequently cited, there seems to be no single definition on emotion regulation (Bridges et al., 2004; Cole & Deater-Deckard, 2009; Cole et al., 2004; Harrington et al., 2020). Gross (2002) added that emotion regulation also entails any changes in emotion such as possible latency, the magnitude and balance of response. The purpose of emotion regulation is then to manage these changes by reducing, increasing, or sustaining a certain emotion depending on the circumstances (Cole et al., 1994; Gross, 2002; Gross & Thompson, 2007; Southam-Gerow & Kendall, 2002).

It is important to point out that emotion regulation may be differently expressed among children compared to adults in relation to the status of their cognitive functioning (Blandon et al., 2008; Cole et al., 2008). Shields and Cicchetti (1998) specifically defined emotion regulation among children as the aptitude in managing emotional experiences and expressions. They also highlighted the importance of a child's ability to function well in diverse situations. Children who manage to express emotion in an adaptive way more often show higher emotion regulation than children who express their emotions in maladaptive ways (Cicchetti et al., 1995; Gross & Thompson, 2007; Hamaidi et al., 2021). It is also believed that if children understand their emotions, they are more likely to express their emotions in a more adaptive way (McLaughlin et al., 2011). Regardless of different definitions of emotion regulation the consensus in the literature and the key factor seems to be that when emotion regulation skills develop normally, children learn to manage demanding emotional experiences and to convey their emotions in ways that are socially and developmentally appropriate (Cole &

Deater-Deckard, 2009; Cole et al., 1994; Hamaidi et al., 2021; Shields & Cicchetti, 1997, 1998).

When emotion regulation skills do not sufficiently develop children may display emotion dysregulation and show deficiencies in their ability to control and manage their emotions. Emotion dysregulation is commonly described as a lack of age-appropriate regulation skills (Cole et al., 2004; Cole et al., 1994; Gross, 1998; Keenan, 2000; Shields & Cicchetti, 1997, 1998; Thompson, 1994, 2011) and may be viewed as a dual construct. The first aspect being ineffective emotion regulation, when children demonstrate deficiencies in the ability to manage their emotions, which change rapidly and are expressed intensively (Adrian, Zeman, et al., 2011; Bradley et al., 2011; Cole et al., 2004) and the second aspect being sensitivity to emotion eliciting events, or lability, where children swiftly respond to emotion inducing events, often negatively, and have difficulty in recovering from their reactions (Barrett, 2006; Pietromonaco & Barrett, 2009; Shields & Cicchetti, 1997, 1998). Therefore, emotion dysregulation could be described either as low emotion regulation and high lability/negativity, or both. The term dysregulated emotion is preferable to unregulated emotions because dysregulation implies that normal regulatory processes are operating in a dysfunctional manner. Thus, dysregulation is not defined by intense and specific emotions but rather from deviations in how emotion is regulated because intense emotions are not necessarily dysfunctional if they are regulated well (Cole et al., 2017; Cole et al., 1994). A healthy adjustment and development of emotion regulation is very important for children as they are more likely to thrive during their development (Blandon et al., 2008). Research indicates that children acquire skills to regulate their emotions between ages 2-5, making the preschool years and the beginning of elementary school a particularly interesting study period (Blandon et al., 2008; Cole, Dennis, et al., 2009; Cole et al., 2008; Dennis & Kelemen, 2009; Gerstein et al., 2011).

Research has shown that emotion dysregulation can undermine functioning in multiple domains and children with deficits in emotion regulation are more receptive for added difficulties (Binder et al., 2020; Blandon et al., 2008; Paulus et al., 2021). Emotion dysregulation has not only been linked to various psychopathology in children and adolescents, such as depression, anxiety and eating disorders but also described as a transdiagnostic construct in various diagnoses (Binder et al., 2020; Calkins et al., 2019; Cappadocia et al., 2009; Carthy, Horesh, Apter, et al., 2010; Cicchetti et al., 1995; Dennis & Hajcak, 2009; Eisenberg et al., 2010; Frick & Morris, 2004; Gross & Muñoz, 1995; Janiri et al., 2021; Keenan, 2000; McLaughlin et al., 2011; Paulus et al., 2021; Röll et al., 2012; Schäfer et al., 2017; Stringaris et al., 2010; Vogel et al., 2019; Yu et al., 2022). Children diagnosed with anxiety and depression have difficulties regulating emotions and may also have a poorer emotional understanding (Carthy, Horesh, Apter, & Gross, 2010; Gross & Muñoz, 1995; Hannesdottir & Ollendick, 2007; Hofmann et al., 2012; Keenan, 2000) The same goes for children diagnosed with Attention Deficit-Hyperactivity Disorder (ADHD). Emotion dysregulation is more common among these

children, especially among boys (Carlson & Wang, 2007; Hinshaw, 2003; Keenan, 2000; Silverman et al., 2022). In a meta-analysis by Graziano and Garcia (2016) of 77 studies on ADHD and emotion regulation the results showed that children with ADHD displayed deficits in both lability/negativity and emotion regulation and deficits in lability/negativity were more prominent compared to low emotion regulation among children diagnosed with ADHD (Graziano & Garcia, 2016).

It is possible that emotion dysregulation is not only more common among children diagnosed with a mental disorder but that there are important interactions between those factors and that emotion dysregulation could partly explain certain symptoms. Such as, negative emotions among children diagnosed with depression and anxiety, impulsivity and attention deficits among children diagnosed with ADHD and disruptive behavior among children diagnosed with CD (Cappadocia et al., 2009; Carthy, Horesh, Apter, et al., 2010; Carthy, Horesh, Apter, & Gross, 2010; Dennis & Hajcak, 2009; Eisenberg et al., 2010; Frick & Morris, 2004; Gross & Muñoz, 1995; Keenan, 2000; Martel, 2009; McLaughlin et al., 2011).

Gender differences in relation to emotion regulation have received little attention. Among adolescents and adults, the results vary, ranging from no gender differences to better emotion regulation among women compared to men (Nolen-Hoeksema, 2012; Zimmermann & Iwanski, 2014). Sanchis-Sanchis et al. (2020) found that children aged 9–12 scored lower on emotional regulation strategies compared to children aged 13-16 years. In terms of specific emotions, girls reported higher utilization of emotional regulation strategies for managing anger, sadness, and anxiety compared to boys (Sanchis-Sanchis et al., 2020). Hill et al. (2006) found that emotion dysregulation was a stronger predictor for externalizing behavior problems among girls but other studies in this area have not reported any gender comparisons.

1.3 Emotion dysregulation and general behavior problems

As already indicated, children's emotions can influence their behavior and if a child is unable to regulate their emotions, behavior problems may be more common. Several studies have associated deficits in emotion regulation in the manifestation of externalizing behavior problems in general (Ashiabi, 2000; Brenning et al., 2022; Cole et al., 1994; Dunsmore et al., 2013; Fantuzzo et al., 2005; Hill et al., 2006; Silk et al., 2003). Blandon et al. (2010) examined the association between emotion regulation, lability/negativity and generalized behavior problems in a longitudinal study across the ages of 2 to 7. The study included both parent and teacher-report. The authors reported a negative correlation between emotion regulation and externalizing behavior problems and concluded that better emotion regulation was associated with less externalizing behaviors, both according to parents and teachers (Blandon et al., 2010). Hill et al. (2006) assessed longitudinally the role of emotion regulation in externalizing behavior

problems among preschool children. Emotion regulation was assessed when the children were two years old and externalizing problems were assessed when the children were at 2, 4 and 5 years of age. The authors found that children who showed more dysregulation had more severe externalizing behavior problems and emotion dysregulation was found to be a stronger predictor for these symptoms among girls (Hill et al., 2006). Gerstein et al. (2011) examined longitudinally the association between regulatory capabilities and externalizing behavior problems among preschool children (ages 3-5). Externalizing behavior problems were assessed with parent-report and emotion regulation was assessed with distress venting and frustration tasks. The authors reported a positive correlation between distress venting and externalizing behavior problems and concluded that children who displayed dysregulation also showed more severe externalizing behaviors (Gerstein et al., 2011). Halligan et al. (2013) investigated, longitudinally, emotion regulation in children at either high-risk or low-risk for the development of behavior problems. Emotion regulation and behavior problems were assessed using direct observation and parent-reported questionnaire when the children were 12 months, 18 months and 5 years-old. The authors found that children at higher risk for developing externalizing behavior problems showed poorer emotion regulation compared to low-risk children at all assessment periods. They also reported that from 12 months after the first assessment, emotion regulation was stable across different ages and was associated with externalizing behavior problems (Halligan et al., 2013). Hill et al. (2006), Gerstein et al. (2011) and Halligan et al. (2013) all reported either that better emotion regulation among the children were associated with less severe behavior problems or that more dysregulated emotions were linked to more behavior problems. All these studies were based on parent reports of externalizing behavior problems and emotion dysregulation was derived from performance on frustration tasks in a laboratory setting. This could limit the generalizability of the results as it is done in a controlled setting.

McLaughlin et al. (2011) assessed emotion dysregulation and symptomatology at two time points (seven months apart) in a large community sample among children aged 11-14 years old with the use of self-report questionnaires. They found that deficits in emotion regulation predicted increase in symptoms of anxiety, eating disorder pathology and aggressive behavior but not in depressive symptoms. Conversely, psychopathology did not predict emotion dysregulation, supporting the notion that emotion dysregulation could be a predictor rather than a consequence of psychopathology (McLaughlin et al., 2011). Eisenberg et al. (2001) examined the relation of different types of negative emotion and regulation to internalizing and externalizing behavior problems among 55–97-month-old children. The authors administered screening questionnaires to obtain information on internalizing and externalizing behavior problems. Their findings indicated that children with externalizing problems were more prone to anger and low regulation compared to non-disorders and children with internalizing problems. Dunsmore et al. (2013) evaluated

the link between children´s emotion regulation and lability/negativity and ODD symptoms using parent-reported screening questionnaires. The age range of the children was 7-14 years. Authors found that emotional lability/negativity was positively related to externalizing symptoms. As already indicated, many studies have focused on the association between emotion dysregulation and general behavior problems (Binder et al., 2020; Blandon et al., 2010; Eisenberg et al., 2001; Gerstein et al., 2011; Halligan et al., 2013; Hill et al., 2006) and found that deficits in emotion regulation, negative emotions (such as anger) and lability/negativity are associated with more severe behavior problems. As depicted here, many studies have examined the relationship between emotion dysregulation and general behavior problems. However, studies on the connection between emotion dysregulation and ODD symptoms specifically, rather than behavior problems in general, are lacking.

1.4 Emotion dysregulation and ODD

Even though it could be viewed that emotion dysregulation and ODD is obviously linked, it is still subjected to debate what role emotion dysregulation precisely plays in the manifestation and development of ODD symptoms. A wide range of positions have been supported with only a limited number of studies done over a long period of time. Research has implied that emotion dysregulation could be a core feature, risk factor or possible dimension of ODD (Aldao et al., 2016; Cavanagh et al., 2017; Deutz et al., 2020; Frick & Matlasz, 2018; Kleine Deters et al., 2020; Liu et al., 2019; Martel et al., 2012; Ollendick et al., 2018; Stringaris & Goodman, 2009).

Cavanagh, Quinn et al. (2017) argued that emotion dysregulation is possibly a core feature of ODD symptoms as they are highly correlated and therefore concluded that ODD is better conceptualized as a disorder of emotion, rather than a disorder of behavior. Stringaris and Goodman (2009) examined the contributions of temperament to ODD and comorbid disorders (mainly internalizing disorders and ADHD). Temperament was assessed using a screening questionnaire and ODD and other psychopathology was assessed using a diagnostic interview. Children were assessed by mothers when the children were 38 and 91 months old. The authors found that emotions are an important factor in psychopathology as ODD at 91 months was predicted by two different temperamental dimensions, emotionality and activity at 38 months and what is encapsulated by the irritable dimension of ODD (equivalent to the angry/irritable dimension in DSM-5) is an inclination to emotion dysregulation. Furthermore, emotionality strongly predicted comorbid ODD and internalizing disorders (Stringaris & Goodman, 2009). Liu et al. (2019) assessed emotional lability and ODD among children aged 6-16 years using parent-report. They found that emotional lability is a distinct dimension with specific concurrent and predictive validity and a separate construct from the angry/irritable dimension of ODD. Martel et al. (2012) assessed temperament and ODD symptoms among preschool children (aged 3-6) in a cross-sectional study. Temperament was assessed using direct observation and

parent-reported screening questionnaire, but ODD symptoms were assessed by both parents and teachers. The authors found that high levels of negative affect, such as fear, sadness, and anger, appeared to be associated with more severe ODD symptoms (Martel et al., 2012).

Furthermore, Zhang and colleagues (2023) found, among children aged 6 to 13 years (mean age 10 years), a correlation between emotion lability/negativity and ODD symptoms. This association was only seen for teacher-reported symptoms and not parent-reported symptoms. The authors therefore inferred that maybe because parental supervision is lacking in the school environment emotional lability/negativity is more prominently reported among teachers (Zhang et al., 2023). Additionally, two recent studies have examined the relationship between emotion dysregulation and ODD symptoms longitudinally while also examining either parental emotion regulation or responsiveness. Chen and colleagues (2022) examined the longitudinal relations among emotion regulation and ODD symptoms among children aged 6-13. Emotion regulation and ODD symptoms were assessed by the parents at three different time points. The authors found an interaction between children's emotion regulation, parent's emotion regulation and ODD symptoms (Chen et al., 2022). He et al. (2023) also examined the longitudinal relationship between emotion dysregulation and ODD symptoms focusing on parental responsiveness. The study used parent-report on emotion dysregulation and ODD symptoms each year for three consecutive years among children aged 6-13. They found that parental responsiveness was a protective factor for improved emotion regulation among children which in turn influenced ODD symptoms (He et al., 2023).

In sum, a few studies have focused on examining ODD symptoms specifically, but emotion dysregulation has been evaluated with different designs, methods, and various assessments. Some have only included parent-report while others also included teacher-report. This thesis aimed to address a specific gap in the literature and not only assess ODD symptoms but also emotion dysregulation as a dual construct, evaluating emotion regulation and lability/negativity separately over three timepoints, using both parent- and teacher report. This is believed to be of interest in the light of the recent emphasis placed on the mood-related aspect of ODD (Burke et al., 2021; Dunsmore et al., 2013; Frick & Matlasz, 2018).

1.5 Informant discrepancies

When evaluating any symptoms among children a widely embraced method is the multi-informant assessment. This method involves gathering insights from various sources like parents, teachers, clinicians, and often the child themselves (Achenbach, 2006; Chen et al., 2017; De Los Reyes, 2011; De Los Reyes et al., 2019; Kraemer et al., 2003; Lavigne et al., 2015). Using this approach is imperative, as each source might offer unique perspectives on a child's behavior and functioning, particularly in cases where the child can't self-report due to their age and developmental status. Moreover,

in some situations, evaluating a child's behavior across different contexts becomes crucial, especially for disorders like ADHD (American Psychiatric Association, 2013). However, discrepancies among reports from different sources, termed informant discrepancies, are common and can complicate diagnostic assessments (Achenbach, 2006; Achenbach et al., 1987; De Los Reyes et al., 2015; De Los Reyes & Kazdin, 2005).

Initially attributed to measurement error, these inconsistencies are now thought to be influenced by various factors (Achenbach, 2011; De Los Reyes, 2011; De Los Reyes & Kazdin, 2005). First, differences between reports from parents and other informants might arise from the characteristics of the informants themselves, shaping their interpretations of the same behavior and impacting reporting accuracy (Achenbach, 2006; De Los Reyes & Kazdin, 2005). For instance, consider reports from depressed parents; their negative outlook could affect how they perceive their child's behavior (Ordway, 2011). Second, variations in attributions could contribute to these differences, where some informants attribute a child’s behavior solely to the child's traits, overlooking their own role in influencing the behavior. For instance, parents who are overly controlling might see their child's behavior as defiant, ignoring their own influence, whereas others might see the same conduct as resistance. Another reason for differences in reporting could be the setting in which the informants interact with the child (De Los Reyes & Kazdin, 2005). Home and school environments have different demands and dynamics, leading to varied behaviors in children. At home, it's quieter with fewer demands, allowing for more playtime, whereas teachers might witness the child in more challenging situations (De Los Reyes et al., 2009). Moreover, the interactions between the child and different adults vary, resulting in differences in routines, consequences, and methods between parents and teachers (Achenbach et al., 1987). This can cause the child to display more behavioral difficulties either at home or at school.

Research on these differences in reports focus on the idea that children behave differently in diverse contexts (De Los Reyes et al., 2009; De Los Reyes & Kazdin, 2005). It suggests that one informant's report isn't less important or unreliable; instead, a child's behavior might vary based on the situation (Achenbach, 2011; Achenbach et al., 1987; De Los Reyes et al., 2010). Some studies specifically analyze conflicting reports of externalizing behavior problems, often comparing parent and teacher reports (De Los Reyes et al., 2009; Kerr et al., 2007; Olson et al., 2018). For instance, Kerr et al. (2007) discovered that parents of 3-5-year-olds reported more severe externalizing behavior problems than teachers did. Similarly, De Los Reyes et al. (2009) found low agreement between informants in a sample of 3-5-year-old low-income children, with parents reporting more severe externalizing behavior problems than teachers. Olson et al. (2018) noted that teachers tended to rate boys aged 5 to 13 years higher in severe externalizing behavior problems compared to girls, while mothers did not report significant gender differences. From these findings, it appears that parents tend to highlight more severe issues compared to teachers.

While inconsistencies have been identified in reports of externalizing behavioral problems in young children, there's a scarcity of studies focusing on the differences in evaluating symptoms of specific behavior disorders like ODD, especially in relation to the newly defined dimensions. In a study involving preschoolers, Ezpeleta and Penelo (2015) discovered that differences between informants were more noticeable regarding defiant behavior rather than mood-related symptoms, with parents often reporting more severe problems than teachers. This indicates that irritability and mood-related symptoms in ODD might be less influenced by differing contexts among informants or might be more consistently observed across various settings. There are only a handful of studies that have delved into informant discrepancies regarding difficulties in regulating emotions (Hourigan et al., 2011; Olson et al., 2018; Sarıtaş & Gençöz, 2012). Sarıtaş and Gençöz (2012) noted that adolescents aged 14-17, both boys and girls, reported more challenges in emotion regulation, especially inhibition, compared to their mothers. Discrepancies were more noticeable between mothers and daughters than between mothers and sons. Hourigan et al. (2011) discovered that children aged 7-12 reported greater inhibition, while parents highlighted more expression difficulties, particularly concerning anger and sadness. Lastly, Olson et al. (2018) investigated differences in reports between parents and teachers regarding emotion dysregulation in children aged 5-13, finding that parents rated emotional dysregulation, especially in girls, significantly higher than teachers did.

1.6 Summary

Emotion regulation is a multifaceted and complex concept entailing interactions between many different factors (Adrian, Zeman, & Veits, 2011; Cole et al., 2017; Gross & Thompson, 2007; McMain et al., 2001) and many definitions on emotion regulation are available in the literature (Bridges et al., 2004; Cole & Deater-Deckard, 2009; Cole et al., 2004; Gross, 2013; Harrington et al., 2020; Shields & Cicchetti, 1998; Thompson, 1994). However, the focus in this thesis is on emotion dysregulation and the view that it is a dual construct. The first aspect being ineffective emotion regulation, when children demonstrate deficiencies in the ability to manage their emotions, which change rapidly and are expressed intensively (Adrian, Zeman, et al., 2011; Bradley et al., 2011; Cole et al., 2004) and the second aspect being sensitivity to emotion eliciting events, or lability, where children swiftly respond to emotion inducing events, often negatively, and have difficulty in recovering from their reactions (Barrett, 2006; Pietromonaco & Barrett, 2009; Shields & Cicchetti, 1997, 1998). Hence, emotion dysregulation could be described as low emotion regulation or high lability/negativity, or both. The central feature of low emotion regulation can be viewed as lack of control. A child displaying low emotion regulation would have difficulty managing their emotions, regardless of if the emotion is perceived to be positive or negative, and the emotions could change quickly. The central feature of high lability/negativity can be viewed as intense reactivity. A child displaying high lability/negativity would usually react quickly in a situation and frequently in a negative way and then have difficulty recovering afterwards. Even though

there seems to be no single definition on emotion regulation, there is definite consensus in the literature that emotion dysregulation can undermine functioning in multiple domains and children with deficits in emotion regulation are more receptive for added difficulties (Binder et al., 2020; Blandon et al., 2008). This highlights the importance of not only identifying emotion dysregulation at an early age but also how imperative it is to teach children how to regulate their emotions.

The question isn't whether emotion dysregulation impacts symptoms of ODD, but rather how this impact manifests. Various theories regarding the link between emotion dysregulation and ODD symptoms are presented in the current literature. Firstly, with ODD now being viewed as a multi-dimensional construct placing irritability and mood related symptoms in a separate category from defiant behavior and vindictiveness (Burke et al., 2021; Evans et al., 2017; Frick & Matlasz, 2018), there has been more emphasis on the emotion related aspect of the disorder. Therefore, some research has discussed the possibility that emotion dysregulation could be part of the mood related dimension of ODD (Frick & Matlasz, 2018; Liu et al., 2019; Ollendick et al., 2018). Secondly, research has also shown that emotion dysregulation is a core feature of ODD because of the high correlation between these two factors (Cavanagh et al., 2017; Chen et al., 2022; He et al., 2023; Martel et al., 2012; Zhang et al., 2023). Lastly, that emotion dysregulation could be a possible risk factor for the development of at risk ODD symptoms later in childhood (Calkins et al., 2019; Stringaris & Goodman, 2009) but further research is needed.

2 Aims

The overall aim of this thesis was to better understand how and if emotion dysregulation contributes to the development of ODD symptoms. Research has highlighted the necessity to examine emotion dysregulation longitudinally among younger children and especially in relation to the development of externalizing disorders (Cicchetti et al., 1995; Cole & Deater-Deckard, 2009; Cole et al., 1994; Dunsmore et al., 2013; Hill et al., 2006; Martel, 2009; Southam-Gerow & Kendall, 2002). Even though emotion regulation has been diligently studied, the focus has mainly been on its association with general behavior problems. While problems in regulating and managing emotions figures markedly in depiction of general behavior problems, research on emotion dysregulation as a dual construct in relation to the development of ODD symptoms specifically are still needed (Cole, Hall, & Radzioch, 2009; Cole, Hall, et al., 2009; Cole et al., 1994; Dunsmore et al., 2013; Dunsmore et al., 2016; McLaughlin et al., 2011).

The purpose of this thesis was therefore to assess the relation between emotion dysregulation and the development of ODD in preschoolers and at the beginning of elementary school. The prevalence and nature of emotion dysregulation was assessed and monitored among preschool children, who were followed to the end of their second year at elementary school. In addition, the development of clinical symptoms was assessed and monitored with a specific focus on ODD symptoms. Given that utilizing multiple informants is considered the gold standard for gathering information regarding symptoms of psychopathology in children, it becomes important to evaluate any disparities among informants. As the aim of this thesis is to assess the relationship between emotion dysregulation and ODD symptoms it becomes imperative to examine any potential differences in reports from various informants, particularly concerning emotion dysregulation and ODD symptoms. It is believed that this thesis will add valuable information to the existing literature.

The overall study for this thesis included multiple important characteristics that possibly added to some gaps in the current literature. Firstly, it involved a sizable community sample with a balanced gender distribution. Secondly, it was a longitudinal study assessing children in their last year at preschool and their first two years of elementary school. Lastly, the assessment methodology adhered to the gold standard of data collection, administering questionnaires to multiple sources, including parents and teachers across two different school levels.

2.1 Aim of paper I

The aim of paper I was to examine the cross-sectional association between emotion dysregulation and ODD symptoms. Considering the results from Martel et al. (2012) and Blandon et al (2010) a strong relation between emotion dysregulation and ODD symptoms/conduct problems, especially regarding lability/negativity, was expected. It was also believed that emotion dysregulation, ODD symptoms and conduct problems would be more prominent among boys (Mitchison et al., 2019).

2.2 Aim of paper II

As the overall project included multi-informant assessment it was decided to also examine informant discrepancies. The aim of paper II was to examine these discrepancies between parents and teachers on two dimensions of ODD (irritability/mood related symptoms and defiant behavior/vindictiveness) and two aspects of emotion dysregulation (emotion regulation skills and lability/negativity) at two different time points. Gender differences among the children were also explored. Based on results from other studies (Olson et al. (2018) and Ezpeleta and Penelo (2015)) it was hypothesized that discrepancies between parent and teacher reports would be noticeable especially regarding the defiant behavior/vindictiveness dimension of ODD, and that parents would report more severe emotion dysregulation among the children compared to teachers (Mitchison et al., 2022).

2.3 Aim of paper III

The aim of paper III was to assess the trajectories of emotion regulation, lability/negativity, and ODD symptoms in a longitudinal study, with three time points, including two separate school levels (preschool and elementary school) and for gender. Considering previous research on emotion regulation and ODD symptoms it was hypothesized that the trajectories of emotion regulation, lability/negativity and ODD symptoms would remain somewhat stable across all time points. It was also hypothesized that emotion regulation and lability/negativity at time 1 would predict ODD symptoms at time 2 and 3 (Mitchison, et al., *manuscript under review*).

3 Materials and Methods

Participants were 547 children, 250 girls (45.8%) and 296 boys (54.2%), ages 5-6 at time 1 (mean age = 5.69, SD= .31), ages 6-7 at time 2 (mean age = 6.61, SD= .30) and ages 7-8 at time 3 (mean age = 7.60, SD= .30) and recruited through preschools. The inclusion criteria were children aged 5 or 6 at time 1, attending preschool with Icelandic-speaking parents. Children scoring above the cutoff (>15 points) on the Childhood Autism Spectrum Test (CAST) at time 1 were excluded from the study. At time 2 children who met the diagnostic criteria for any disorder on the Kiddie Schedule for Affective Disorders and Schizophrenia - Present and Lifetime version (K-SADS-PL) were referred to their school system's psychological services for appropriate intervention and thus completed their participation in the study. In total 14 children left the study this way, all after receiving a diagnosis of ADHD. At the time of data collection, which was completed before the COVID-19 pandemic, the Icelandic population was very homogeneous, with 92% of the population of Norse Celtic descent. Questions about race and ethnicity were therefore not included in the study (Statistics Iceland, 2018). The participants' socioeconomic status is representative of the region they were recruited from with the sample consisting of predominantly married couples (83%). Most informants were biological mothers (93%) and supervisory teacher of the child (95%). Majority of the participating parents had a university degree (72%) and were working full-time (70%). Participants, both parents and teachers, were not paid for their participation but entered a lottery to win a monetary reward at each phase. There was significant attrition at time 3, for parents and teachers as 50% of parents and 35% of teachers could not be reached or chose not to participate further in the study.

3.1 Measures

Emotion Regulation Checklist (ERC). Emotion dysregulation was assessed using the ERC, a widely used hetero-evaluation for emotion dysregulation allowing for both parent- and teacher report (Shields & Cicchetti, 1997). The ERC is comprised of 23 items describing children's emotion-related behavior divided into two subscales: (1) Emotion Regulation subscale (ER) containing eight items assessing how well children manage their emotions (e.g. "is a cheerful child" or "can say when s/he is feeling sad, angry or mad, fearful or afraid") and (2) Lability/Negativity subscale (L/N) containing 15 items measuring how easily children get upset (e.g. "exhibits wide mood swings", or "can recover quickly from episodes of upset or distress"). Each item is rated on a four-point Likert scale ranging from never (1) to always (4). A higher score on the Emotion Regulation subscale means better emotion regulation and a higher score on the Lability/Negativity subscale means more lability/negativity. The lowest score possible

for the emotion regulation subscale is 8 and the highest is 32. The lowest possible score for lability/negativity is 15 and the highest is 60. Reliability coefficients are high for the overall scale (α= .89) and for the two subscales (Emotion Regulation α = .83 and Lability/Negativity α = .96) (Molina et al., 2014; Shields & Cicchetti, 1997). The questionnaire has been translated into several languages including Icelandic. A preliminary assessment of the psychometric properties of the Icelandic translation of the ERC indicated acceptable reliability and internal consistency (Emotion Regulation α = .70 and Lability/Negativity α = .89) (Hansen, 2015). The alpha values for the Emotion Regulation subscale in this study were acceptable at time 2 for parents ratings but just below adequate at time 1 and time 3 (Time 1 - α =.65, time 2 - α =.70, time 3 - α =.69) and at all time points for teacher ratings (Time 1 - α =.74, time 2 - α =.75, time 3 - α =.78) and for the Lability/Negativity subscale, again for parent ratings (Time 1 - α =.83, time 2 - α =.83, time 3 - α =.88) and teacher ratings (Time 1 - α =.89, time 2 - α =.89, time 3 - α =.83).

Disruptive Behavior Rating Scale (DBRS). The DBRS contains 26 items assessing inattention, hyperactivity–impulsivity, and oppositional defiant behavior among school-aged children (Barkley, 1997). ODD symptoms were measured using the ODD section of the DBRS which includes eight items describing symptoms of ODD on a four-point Likert scale ranging from never or rarely (0) to very often (3). It includes questions like “argues with adults”, “is angry or resentful” and “is spiteful or vindictive”. The DBRS is based on the DSM-IV diagnostic criteria for both ADHD and ODD. The questionnaire is answered by parents and teachers, and they indicate how often a child displayed symptoms in the past six months (Barkley, 1997). A preliminary assessment of the psychometric properties of the Icelandic translation of the DBRS indicated acceptable reliability and internal consistency (α = .93) (Þrándardóttir, 2003). To assess dimensions of ODD, the questions from the DBRS were grouped together into two variables, irritability/mood related symptoms and defiant behavior/vindictiveness, based on the categorization of the DSM-5 mentioned previously. The alpha values for the DBRS in this study were acceptable at all time points for parent ratings (Time 1 - α =.87, time 2 - α =.88, time 3 - α =.88) and teacher ratings (Time 1- α =.93, time 2 - α =.91, time 3 - α =.91).

Attention Deficit/Hyperactivity Disorder Rating Scale (ADHD-RS-IV). The ADHD-RS-IV is a norm-referenced 18-item checklist that measures symptoms of ADHD according to the diagnostic criteria of the DSM-IV. Two subscales are distinguished on the ADHD Rating Scale; Inattention and Hyperactivity-Impulsivity (DuPaul et al., 1998). The questionnaire is both for parents and teachers who report the frequency of the symptoms over the past six months on a four-point Likert scale ranging from never or rarely (0) to very often (3) and includes questions like “has difficulty sustaining attention in tasks or play activities” and “runs about or climbs excessively in situations in which it is inappropriate”. Assessment of the psychometric properties of the Icelandic translations of the ADHD-RS-IV for both parents and teachers indicated acceptable reliability (Magnússon et al., 1999). The alpha values for the ADHD-RS-IV in this study

were acceptable at all time points for parent ratings (Time 1 - α =.93, time 2 - α =.94, time 3 - α =.95) and teacher ratings (Time 1 - α =.95, time 2 - α =.96, time 3 - α =.95).

Strength and Difficulties Questionnaire (SDQ). The SDQ is a brief but reliable instrument consisting of 25 items measuring psychological attributes among children on a three-point Likert scale ranging from not true (0) to certainly true (2) (Goodman, 1997; Goodman et al., 2000; Stone et al., 2010). The SDQ consists of five subscales measuring emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. The questionnaire is available in many languages and has three versions, self-report, parent report and teacher report. In this study, the conduct problem subscale was used. The SDQ has been translated and standardized in Iceland and its psychometric properties have been found to be acceptable (Steingrimsson & Magnusson, 2008). The alpha values for the SDQ in this study were acceptable at all time points for parent ratings (Time 1 - α =.71, time 2 - α =.71, time 3 - α =.75) and teacher ratings (Time 1- α =.65, time 2 - α =.56, time 3 - α =.56).

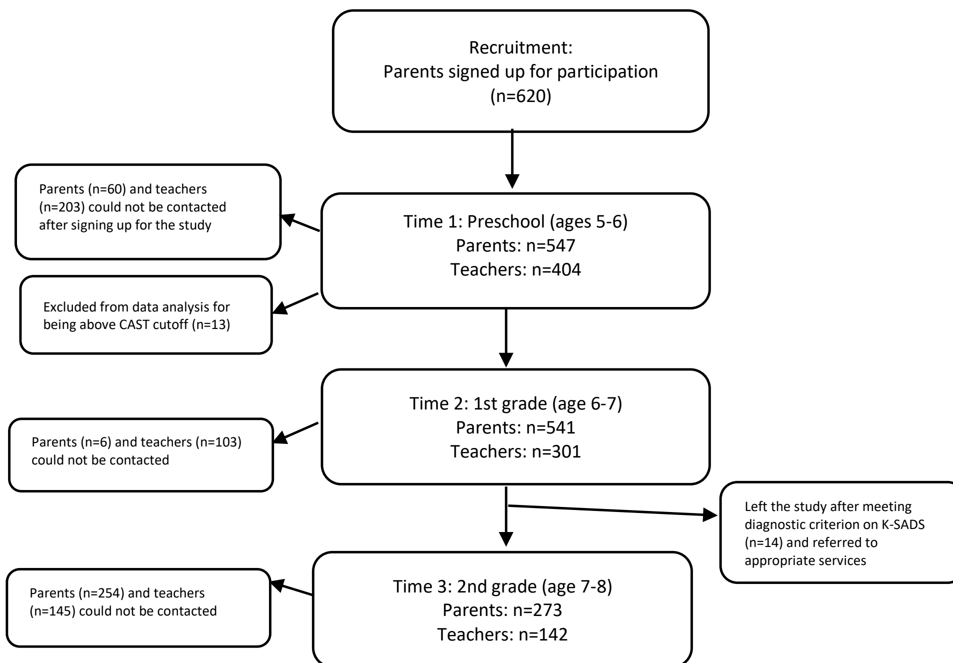
The Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (K-SADS-PL). K-SADS-PL is a semi-structured interview used to diagnose children and adolescents aged 6 to 18 years based on DSM-IV criteria (Kaufman et al., 1997). Over the years, various versions of the K-SADS have been developed, with the K-SADS-PL emerging as the most used (Lauth et al., 2010). This version evaluates both current and past psychopathology, offering comprehensive diagnostic coverage. It also includes skip-out criteria within its screening questions, allowing for the bypassing of further diagnostic inquiries if initial responses are negative. Studies have demonstrated favorable inter-rater and test-retest reliability for the K-SADS-PL, typically showing a kappa coefficient (κ) of ≥ 0.6 (Kaufman et al., 1997; Nishiyama et al., 2020).

3.2 Procedure

After obtaining IRB approval (VSNb2016030001/03.01), the preschools in all municipalities of the capital region were invited to participate which are 126 schools in total, whereof 77 (61.1%) agreed to participate. Parents of all children attending their last year at preschool were then invited to participate in the study. A detailed letter was sent to parents of children attending the participating preschools. Parents gave their informed consent by registering electronically for the study and then received, via email, a link to the online questionnaires. The informed consent included permission to contact the child’s teacher. Teachers also received an email with a detailed letter and a link to the questionnaires. Parents and teachers received a link to the questionnaires, which were administered using QuestionPro, at three annual time points from preschool to 2nd grade. Data were collected during spring, approximately one year apart. Figure 1 shows flowchart of participation.

Figure 1.

Flowchart of participation



3.3 Data analyses

3.3.1 Paper I

Paper I was comprised of data from assessments at time 1 and the data analyses included descriptive analyses (frequency, means and standard deviations (SD)) and power calculations. According to power calculations, with SPSS, the minimum sample size needed for the current analyses was 385 participants (using 95% confidence level, .5 SD, and a confidence interval of +/- 5%). The sample size in paper I was 609 children, with either parent-reported data, teacher-reported data, or both. Furthermore, paired sample t-tests were conducted to explore any gender differences in means. Item correlation was also calculated as associations between the scores on the DBRS questionnaire and the lability/negativity subscale on the ERC could possibly be inflated due to similarity in wording of the questions. A value of r=.5 and higher is estimated to be moderate to high correlation (Taylor, 1990) and was used as guideline for which items were removed before further analyses was conducted. Additionally, to test the hypothesis that emotion dysregulation, ODD symptoms and conduct problems would

be more prominent among boys, a regression analysis was conducted to examine the moderation effect of gender on the relationship between emotion dysregulation, ODD symptoms, and conduct problems (SDQ). Lastly, to assess the cross-sectional association between emotion dysregulation and ODD symptoms/conduct problems, a factorial multivariate analysis of variance (MANOVA) was performed to compare outcomes on all measurements among children rated above the cut-off on the ERC subscales, to detect possible group differences for ODD symptoms and conduct problems (SDQ) and assess the relationship between emotion dysregulation and ODD symptoms/conduct problems further. Follow-up analyses of variance (ANOVA) were also conducted to identify group differences. The cut-off scores for the ERC subscales are seldom used compared to mean scores (Blankson et al., 2013; Martin et al., 2010; Maughan & Cicchetti, 2002; Miller et al., 2006). However, during the development and validation of the questionnaire, Shields and Cicchetti (1997) adopted the use of a cut-off score of 1.0 SD from the mean for both subscales. The cut-off score is established by converting raw scores to Z-scores and identifying participants 1.0 SD from the mean. The same was done in this paper but using a more conservative cut-off score of 1.5 SD from the mean both to avoid overestimation of emotion dysregulation in the sample and to correspond with the cut-off score of other questionnaires used (Mitchison et al., 2019).

3.3.2 Paper II

Paper II was comprised of data from assessments at time 1 and time 2 and the data analyses included descriptive statistics that is, means, standard deviations and effect sizes for all variables in the sample. To examine differences in mean scores between parents and teachers, t-tests were computed using Bonferroni adjusted alpha levels of .0125 per test (.05/4). Intraclass correlation coefficient (ICC), a reliability index in interrater reliability analyses, was computed to estimate informant discrepancies between parents and teachers for both ODD dimensions, emotion regulation and lability/negativity. To examine the discrepant reports further, Cohen's Kappa was also computed for children reported above the cut-off score for emotion regulation and lability/negativity. A cut-off score of 1.5 SD from the mean was used. As the purpose of this paper was to assess discrepancies for ODD dimensions, the clinical cut-off score for the full-scale score of the DBRS was not used. Lastly, to assess possible gender differences, a two-factor repeated measure ANOVA was conducted to test possible relations between informant discrepancies and informant type, time and gender (Mitchison et al., 2022).

3.3.3 Paper III

Paper III was comprised of data from assessments at all time points. As described in paper III, item correlation was considered and overlapping questions on the ERC and the DBRS were removed before any further analysis was conducted. Descriptive

statistics, including means and standard deviation, were calculated for all variables in the sample. This was also done to explore the trajectory of ODD symptoms, emotion regulation and lability/negativity over time. A repeated measures ANOVA was conducted to test if there was a significant change in the trajectory. The Greenhouse-Geisser method was used to correct for violations of the sphericity assumption as repeated measures were used for the same participant (Schwertman, 1978). Nesting was not considered a threat in terms of data being affected by school culture as the children came from 77 different preschools. Path analysis was also conducted to test both the overall conceptual model and specific models, examining the hypothesis that emotion regulation and lability/negativity at time 1 will predict ODD symptoms at time 2 and 3. The models were run separately for boys and girls and ADHD symptoms were first added to the model to control for the effects of those variables on ODD symptoms. All path results presented in the following section are based on full-information maximum likelihood estimation (FIML). In addition, to address missing data, Little´s MCAR test was used. This statistical analysis is useful for assessing the assumption if the data is missing completely at random (Li, 2013). Results indeed indicated that the data are missing at random [χ^2 (64179, N=547) =60830, p=1.0]. Furthermore, for each questionnaire at each time point, those who continued in the study were compared to those who dropped out since there was significant attrition, no significant differences were found (p-values ranged from .1-.46) (Mitchison, et al., *manuscript under review*).

4 Results

4.1 Paper I

4.1.1 Descriptive statistics

Table 2 provides an overview of the average scores across all measurements for the entire sample at time 1 and categorized by gender. The children exhibited higher means for emotion regulation compared to lability/negativity, within sample, which means that the children showed overall more emotion regulation and less lability/negativity. Specifically, girls showed a statistically higher mean in emotion regulation based on evaluations by parents ($t(538)=3.625$, $p<.001$) and teachers ($t(396)=5.143$, $p<.001$) compared to boys. Conversely, boys demonstrated a higher mean in lability/negativity as reported by both parents ($t(535)=-3.637$, $p<.001$) and teachers ($t(382)=-5.567$, $p<.001$) compared to boys. A notable variance between parental and teacher reports existed for lability/negativity ($t(343)=6.965$, $p<.001$) but not for emotion regulation ($t(343)=1.875$, $p=.062$). Additionally, differences based on gender emerged for ODD symptoms assessed using the DBRS. Boys exhibited significantly higher mean scores than girls, as indicated by both parental ($t(529)=-2.048$, $p<.05$) and teacher reports ($t(395)=-6.129$, $p<.001$). A significant contrast was observed between parental and teacher reports on ODD symptoms ($t(334)=5.174$, $p<.001$). Similarly, with conduct problems measured by the SDQ, boys displayed higher mean scores compared to girls in assessments from both parents ($t(515)=-2.042$, $p<.05$ and teachers ($t(392)=-6.129$, $p<.001$). However, there wasn't a statistically significant difference in parent versus teacher reports for conduct problems ($t(320)=.0650$, $p=.516$).

Prior to further analysis, item correlation was conducted to address potential question overlap between the ERC and the DBRS. The results showed an overlap between four questions on the lability/negativity subscale of the ERC and five questions on the DBRS. On the ERC these items were; item 2 (“exhibits wide mood swings”), item 6 (“easily frustrated”), item 8 (“tantrums easily”) and item 14 (“responds angrily to limit-setting) and on the DBRS; item 1 (“loses temper”), item 2 (“argues with adults”), item 3 (“actively defies or refuses to comply with adults’ request or rules”), item 6 (“is touchy or easily annoyed”) and item 7. (“is angry or resentful”). The highest correlation was found between item 8 on the ERC and item 1 on the DBRS, $r=.724$. Correlation between other items ranged from $r=.511$ to $r=.595$. The correlation for all items on the Conduct Problems Subscale of the SDQ and the Lability/Negativity subscale of the ERC was below $r<.5$. When these four items were removed from the ERC (items 2, 6, 8 and 14) the correlation between parent rated lability/negativity and ODD symptoms decreased

from r=.748 to r=.631 and r=.816 to r=.731 for teacher report. Correlations between lability/negativity and conduct problems decreased from r=.721 to r=.636 for parent report, and r=.757 to r=.701 for teacher report. Similar results were found when examining change in correlation for genders separately, the correlation for girls decreased from r=.725 to r=.600 for parent report and from r=.769 to r=.668 for teacher report. For boys the correlation decreased from r=.760 to r=.645 for parent report and from r=.797 to r=.713 for teacher report. All correlation coefficients remained statistically significant ($p < .01$).

Table 2.

Mean scores for all measurements at time 1

	Parents (n=550) (303 boys / 247 girls)	**Teachers (n=409)** (210 boys/ 199 girls)
	M (*SD*)	*M (SD)*
Emotion regulation		
Total sample	27.38 (3.03)	27.34 (3.73)
Boys	26.96 (3.11)	26.45 (3.91)
Girls	27.90 (2.85)**	28.30 (3.18)**
Lability/Negativity		
Total sample	25.71 (6.15)	22.17 (6.91)
Boys	26.57 (6.23)**	24.02 (7.69)**
Girls	24.64 (5.88)	20.23 (5.38)
ODD symptoms		
Total sample	4.07 (3.83)	2.43 (4.02)
Boys	4.37 (4.04)*	3.49 (4.85)**
Girls	3.69 (3.52)	1.31 (2.48)
Conduct problems		
Total sample	1.27 (1.42)	1.06 (1.65)
Boys	1.39 (1.51)*	1.52 (1.90)**
Girls	1.13 (1.29)	.548 (1.11)

Note. Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist; ODD symptoms = Disruptive Behavior Rating Scale; Conduct problems = Strengths and Difficulties Questionnaire

*$p < .05$; **$p < .01$

4.1.2 Moderation analysis

An assessment of the moderating influence of gender on the associations between emotion regulation, lability/negativity, and both ODD symptoms and conduct problems was performed using regression analyses. The results can be seen in Table 3. The relationship between overall emotion dysregulation and ODD symptoms/conduct problems was significant for parent-report (F(2,528)=195.650, p<.001) and teacher-report (F(2,392)=226.286, p<.001). Emotion regulation and lability/negativity individually contributed to the variation in ODD symptoms (model 1). Similar patterns were observed for conduct problems (SDQ). The model proved statistically significant for both parent-report (F(2,513)=205.213, p<.001) and teacher-report (F(2,385)=209.460, p<.001), where both emotion regulation and lability/negativity contributed uniquely to the variance in conduct problems (SDQ) (model 1). When gender was added to the model for ODD symptoms (model 2), the overall model was still significant for parent-report (F(3,527)=130.712, p<.001) and teacher-report (F(3,391)=151.063, p<.001) but adding gender to the model resulted only in a marginal

0.1% increase in the model's predictive capacity, which was not statistically significant. When gender was added to the model for conduct problems (model 2), the overall model was also still significant for parent-report, *F*(3,512)=136.596, *p*<.001, and teacher-report, *F*(3,384)=142.506, *p*<.001 but the predictive capacity did not increase at all for parent-report but increased by .6% for teacher-report which was statistically significant (see Table 3).

Table 3.
Moderation effect of gender on the relationship between emotion dysregulation, ODD and conduct problems at time 1

			Emotion regulation		Lability/ negativity		Gender	
	R^2	R^2 *change*	*ß*	*t*	*ß*	*t*	*ß*	*t*
ODD symptoms								
Parents								
Model 1	.426	.426	-.202	-5.380**	.532	14.210**		
Model 2	.427	.001	-.203	-5.415**	.536	14.222**	-.032	-.952
Teachers								
Model 1	.536	.536	-.157	-3.736**	.631	15.058**		
Model 2	.537	.001	-.152	-3.608**	.623	14.526**	.907	.365
Conduct problems								
Parents								
Model 1	.444	.444	-.227	-6.056**	-.527	14.060**		
Model 2	.445	.000	-.228	-6.058**	-.528	14.009**	-.010	-.300
Teachers								
Model 1	.521	.521	-.209	-4.854**	.581	13.507**		
Model 2	.527	.006	-.200	-4.641**	.563	12.884**	.080	2.154*

Note. Model 1: (Constant), emotion regulation and lability/negativity. Model 2: (Constant), emotion regulation, lability/negativity and gender Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist; ODD symptoms = Disruptive Behavior Rating Scale; Conduct problems = Strengths and Difficulties Questionnaire
**p* < .05; ***p* < .01

4.1.3 Multivariate interaction

Finally, comparisons were made between the outcomes on the DBRS and the Conduct Problems Subscale of the SDQ for children rated above and below the cut-off on the ERC subscales. The results are presented in Table 4. A factorial MANOVA revealed a notable multivariate main effect for inadequate emotion regulation on the linear combination of ODD symptoms and conduct problems (SDQ), as reported by both parents (Wilks' λ=.966, *F*(2,505)=8.80,*p*< .01) and teachers (Wilks' λ=.911, *F*(2,376)=18.27, *p* <.01). There was also a significant effect for high lability/negativity for ODD symptoms and conduct problems (SDQ), both according to the parents, Wilks' λ=.853, *F*(2,505)=43.60, *p*<.001, and teachers, Wilks' λ=.649, *F*(2,376)=101.89, *p*<.01. The significant outcomes from the overall MANOVA tests, indicating differences between groups in the symptom composite, prompted further examination through separate follow-up ANOVAs for all measures. The detailed results can also be found in Table 4. Children rated above the lability/negativity cut-off scored significantly higher

on the DBRS and the Conduct Problems Subscale of the SDQ compared to those rated below the cut-off, as reported by both parents and teachers.

Table 4.
Differences in mean scores among children rated below and above the cut-off scores on the ERC subscales at time 1

	Parents		Teachers	
	Below cut-off	Above cut-off	Below cut-off	Above cut-off
	M (*SD*)	*M* (*SD*)	*M (SD)*	*M (SD)*
Emotion regulation	*n=437*	*n=27*	*n=306*	*n=23*
ODD symptoms	3.83 (3.73)	8.54 (3.46)*	2.03 (3.64)	7.37 (5.12)*
Conduct problems	1.14 (1.33)	2.93 (1.44)**	.846 (1.33)	3.50 (2.47)**
Lability/Negativity	*n=426*	*n=38*	*n=295*	*n=34*
ODD symptoms	3.46 (3.10)	11.48 (4.00)**	1.48 (2.39)	10.73 (5.50)**
Conduct problems	1.04 (1.18)	3.52 (1.58)**	.683 (1.08)	4.22 (1.98)**

Note. Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist; ODD symptoms = Disruptive Behavior Rating Scale; Conduct symptoms = Strengths and Difficulties Questionnaire
*$p < .05$ **$p < .01$

4.2 Paper II

4.2.1 Descriptive statistics and effect sizes

Table 5 provides an overview of mean scores and effect sizes across all measurements for the entire sample and separately for gender. Parents reported significantly higher mean scores for ODD symptoms compared to teachers for defiant behavior and mood-related symptoms at both time 1 and time 2 (defiant behavior: time 1, $t(161)=5.847$, $p<.01$; time 2, $t(161)=8.592$, $p<.01$; mood: time 1, $t(161)=2.892$, $p<.01$; time 2, $t(161)=5.807$, $p<.01$). Similar trends were observed for girls, with parents reporting higher means for mood-related symptoms and defiant behavior at both time points (mood: time 1, $t(69)=3.188$, $p<.01$; time 2, $t(69)=3.694$, $p<.01$; defiant behavior: time 1, $t(69)=6.052$, $p<.01$; time 2, $t(69)=5.087$, $p<.01$). Boys also exhibited higher parent-reported means for defiant behavior at both time points and for mood-related symptoms at time 2 (mood: time 2, $t(91)=4.485$, $p<.01$; defiant behavior: time 1, $t(91)=2.923$, $p<.01$; time 2, $t(91)=6.943$, $p.<01$).

Regarding lability/negativity, parents reported significantly higher means compared to teachers on both at time 1 ($t(161)=5.055$, $p.<01$) and at time 2 ($t(161)=6.784$, $p<.01$), similar results were found for girls and boys (girls, time 1, $t(69)=4.623$, $p<.01$; time 2, $t(69)=5.042$, $p<.01$; boys time 1, $t(91)=2.934$, $p<.01$; time 2, $t(91)=4.682$, $p.<01$). Conversely, parents and teachers did not report statistically significant different means for emotion regulation at either time 1 ($t(161)=.0370$, $p=.970$) or at time 2 ($t(161)=2.365$, $p=.019$) for the overall sample. There was also no significant difference between informants for girls at time 1 and time 2 (girls time 1, $t(69)=-1.784$, $p=.079$; time 2, $t(69)=.627$, $p=.533$) but there was a significant difference for boys at time 2 but not at time 1 (time 2, $t(91)=2.588$, $p=.011$; time 1, $t(91)=1.427$, $p=.157$) (see Table 5).

Table 5 provides an overview of mean scores and effect sizes across all measurements for the entire sample and separately for gender. Parents reported significantly higher mean scores for ODD symptoms compared to teachers for defiant behavior and mood-related symptoms at both time 1 and time 2 (defiant behavior: time 1, $t(161)=5.847$, $p<.01$; time 2, $t(161)=8.592$, $p<.01$; mood: time 1, $t(161)=2.892$, $p<.01$; time 2, $t(161)=5.807$, $p<.01$). Similar trends were observed for girls, with parents reporting higher means for mood-related symptoms and defiant behavior at both time points (mood: time 1, $t(69)=3.188$, $p<.01$; time 2, $t(69)=3.694$, $p<.01$; defiant behavior: time 1, $t(69)=6.052$, $p<.01$; time 2, $t(69)=5.087$, $p<.01$). Boys also exhibited higher parent-reported means for defiant behavior at both time points and for mood-related symptoms at time 2 (mood: time 2, $t(91)=4.485$, $p<.01$; defiant behavior: time 1, $t(91)=2.923$, $p<.01$; time 2, $t(91)=6.943$, $p.<01$).

Effect sizes, or Cohen's *d*, between the means of parent and teacher report can also be seen in Table 5. Cohen suggested that $d = 0.2$ be considered a small effect size, 0.5 represents a medium effect size and 0.8 a large effect size (Cohen, 1988). Cohen's d was higher at time 2 compared to time 1 for the whole sample and for both boys and girls. The Cohen's *d*'s were overall small for emotion regulation, large for defiant behavior and mostly medium for mood related symptoms of ODD and lability/negativity, for both boys and girls. However, the effect sizes were mostly larger for girls compared to boys at both time points, for both parent and teacher report (see Table 5).

Table 5.

Mean scores and effect sizes for ODD dimensions and emotion dysregulation

N=162	**Time 1**			**Time 2**		
	Parents	Teachers		Parents	Teachers	
	M (SD)	M (SD)	*d*	M (SD)	M (SD)	*d*
ODD mood dimension						
Total sample	1.23 (1.64)**	.815 (1.50)	0.26	1.35 (1.67)**	.51 (1.18)	0.59
Boys (n=92)	1.40 (1.81)	1.10 (1.78)	0.17	1.57 (1.72)**	.63 (1.36)	0.61
Girls (n=70)	1.01 (1.36)**	.458 (.949)	0.48	1.09 (1.55)**	.33 (.855)	0.63
ODD defiant dimension						
Total sample	2.70 (2.35)**	1.40 (2.30)	0.56	2.91 (2.81)**	.93 (1.96)	0.83
Boys (n=92)	2.99 (2.37)**	2.07 (2.71)	0.36	3.40 (2.89)**	1.16 (2.22)	0.88
Girls (n=70)	2.31 (2.30)**	.50 (1.09)	1.06	2.31 (2.57)**	.60 (1.50)	0.84
Emotion regulation						
Total sample	27.12 (2.96)	27.11 (3.69)	0.00	27.16 (3.34)	26.34 (3.76)	0.23
Boys (n=92)	26.88 (3.00)	26.23 (3.93)	0.19	26.86 (3.41)*	25.66 (3.78)	0.33
Girls (n=70)	27.44 (2.91)	28.27 (3.00)	-0.28	27.56 (3.24)	27.23 (3.58)	0.10
Lability/Negativity						
Total sample	25.38 (5.97)**	22.48 (6.80)	0.45	24.98 (6.33)**	21.39 (6.56)	0.56
Boys (n=92)	26.72 (6.03)**	24.29 (7.61)	0.36	26.24 (6.76)**	22.73 (7.39)	0.50
Girls (n=70)	23.61 (5.43)**	20.10 (4.62)	0.70	23.31 (5.32)**	19.63 (4.79)	0.73

Note. ODD mood dimension and ODD defiant dimension = Disruptive Behavior Rating Scale; Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist. $^{*}p < .0125$; $^{**}p < .01$

4.2.2 ICC and Cohen´s Kappa

To examine informant discrepancies further, both Interclass Correlation Coefficients (ICC) and Cohen's Kappa were conducted to measure the level of agreement between informants. ICC reliability coefficients are estimated as follows: <.40 are poor, .41-.59 fair, .60-.74 are good and >.74 are excellent (Cicchetti, 1994). Cohen´s Kappa´s are estimated as follows: <0 no agreement, .0-.20 poor agreement, .21-.40 fair agreement, .41-.60 moderate agreement, .61-.80 substantial agreement and >.80 almost perfect agreement (Landis & Koch, 1977).

Table 6 displays the ICC and Cohen's Kappa values concerning parent-teacher agreement, as well as teacher agreement across different school levels—preschool (time 1) and elementary school (time 2). In terms of mean scores on assessment measures, agreement between parents and teachers was only fair for lability/negativity at both time points (ICC: time 1 = .478; time 2 = .566). For other symptoms, agreement was markedly poor, as seen in Table 6.

Interestingly, when examining agreement among teachers across different school levels, discrepancies between informants were less pronounced compared to those between parents and teachers. Moderate agreement between teachers was observed for mood-related symptoms (ICC = .499) and defiant behavior (ICC = .475), while excellent agreement was noted for lability/negativity (ICC = .753), but only fair agreement for emotion regulation (ICC = .463) (see Table 6).

Assessing agreement between parent and teacher reports for identifying children above the cut-off score on the emotion regulation and lability/negativity ERC subscales revealed varying results, also outlined in Table 6. Fair agreement existed for lability/negativity at both time points (κ: time 1 = .222; time 2 = .394), but very poor agreement was evident for emotion regulation at both time points (κ: time 1 = .012; time 2 = .034). Moreover, when examining agreement among preschool and elementary school teachers for identifying children above the cut-off score on the ERC, moderate agreement was found for lability/negativity (κ = .413) and very poor agreement for emotion regulation (κ = .091) (see Table 6).

Table 6.

Inter-rater reliability for scores on the DBRS and ERC

	ICC			Cohen´s Kappa		
	Parent - teacher		Teacher-teacher	Parent- teacher		Teacher- teacher
	T1	T2	T1 and T2	T1	T2	T1 and T2
ODD mood dimension	.302	.151	.499	-	-	-
ODD defiant dimension	.222	.197	.475	-	-	-
Emotion regulation	.337	.367	.463	.012	.034	.091
Lability/negativity	.478	.566	.753	.222	.394	.413

Note. ODD mood dimension and ODD defiant dimension = Disruptive Behavior Rating Scale; Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist.

T1 = time 1 and T2 = time 2

ICC reliability coefficients are estimated as follows: <.40 are poor, .41-.59 fair, .60-.74 are good and >.74 are excellent (Cicchetti, 1994). Cohen´s Kappa values are estimated as follows: <0 no agreement, .0-.20 poor agreement, .21-.40 fair agreement, .41-.60 moderate agreement, .61-.80 substantial agreement and >.80 almost perfect agreement (Landis & Koch, 1977).

4.2.3 Two-factor repeated measures ANOVA

Finally, a two-factor repeated measures ANOVA was utilized to explore the influence of informant type, time, and gender on both dimensions of ODD and emotion dysregulation (see Table 7). The effects exhibited variations concerning the within-subjects variables—informant and time—and the between-subjects variable, gender. Both the informant type and the child's gender presented significant main effects on ODD dimensions, emotion regulation, and lability/negativity when comparing reports from parents and teachers.

For the mood-related dimension of ODD, a significant interaction effect emerged solely for informant and time, $F(1,160)=7.351$, $p<.01$, indicating differences in mood-related symptoms reported by parents compared to teachers, which intensified between time-points. In the case of the defiant behavior dimension of ODD, significant interaction effects were found for both informant and time, $F(1,160)=5.841$, $p<.05$, and for informant, time, and gender, $F(1,160)=8.676$, $p<.01$, suggesting variations not only across informants and time but also in relation to the child's gender, notably indicating more distinct symptoms among boys reported by parents at time 1. Regarding emotion regulation, a significant interaction between informant and time was observed, $F(1,160)=4.942$, $p<.05$, while no significant interaction effect was found for lability/negativity, implying stability in these symptoms across time, informant, and gender. According to teacher reports (preschool teachers at time 1 and elementary school teachers at time 2), significant main effects were separately found for time and the child's gender across both ODD dimensions, emotion regulation, and lability/negativity, indicating more prominent symptoms among boys and at time 1. Moreover, a significant interaction effect for time and gender was specifically identified for the defiant behavior dimension of ODD, $F(1,160)=9.122$, $p<.01$ (see Table 7).

Table 7.
Two-factor repeated measures ANOVA

	ODD mood dimension		ODD defiant dimension		Emotion regulation		Lability/ negativity	
	F	*p*	*F*	*p*	*F*	*p*	*F*	*p*
Parents and teachers								
Informant	24.712	.000**	73.641	.000**	1.429	.234	47.239	.000**
Time	1.201	.275	0.955	.330	3.273	.072	5.823	.017*
Gender	7.306	.008**	13.089	.000**	11.350	.001**	19.345	.000**
Informant*gender	0.014	.905	0.171	.680	4.335	.039	0.439	.509
Time*gender	0.681	.410	1.697	.195	0.166	.684	1.240	.267
Informant*time	7.351	.007**	5.841	.017*	4.942	.028*	1.149	.285
Informant*time*gender	2.655	.105	8.676	.004**	0.644	.424	0.638	.426
Preschool and Elementary teachers								
Time	8.007	.005**	5.918	.016*	5.871	.016*	5.242	.023*
Gender	6.705	.010*	14.809	.000**	16.444	.000**	16.431	.000**
Time*gender	2.675	.104	9.122	.003**	0.623	.431	1.188	.277

Note. ODD mood dimension and ODD defiant dimension = Disruptive Behavior Rating Scale; Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist
**p* < .05 ***p* < .01

4.3 Paper III

4.3.1 Descriptive statistics

An overview of the mean scores on all measurements for the overall sample as rated by the parents can be seen in Table 8. Means for emotion regulation, lability/negativity and ODD symptoms were similar at all three time points with no significant change found for emotion regulation, ($F(1.992, 468.122)=0.376$, $p=0.686$; lability/negativity, ($F(1.950, 458.218)=2.401$, $p=0.092$ or ODD symptoms, ($F(1.948, 436.328)=0.133$, $p=0.871$.

Table 8.
Mean scores for all measurements (parent reports)

	Time 1			Time 2			Time 3		
	n	M	SD	n	M	SD	N	M	SD
Emotion regulation									
Overall sample	547	27.35	3.04	541	27.37	3.20	273	27.47	3.17
Boys	299	27.02	3.07	292	27.15	3.28	144	27.04	3.34
Girls	248	27.75	2.95	249	27.62	3.09	129	27.94	2.92
Lability/negativity									
Overall sample	547	25.72	6.12	541	25.58	6.03	273	24.95	6.80
Boys	299	26.52	6.25	292	26.21	6.15	144	25.36	6.92
Girls	248	24.76	5.83	249	24.84	5.83	129	24.50	6.64
ODD symptoms									
Overall sample	532	4.08	3.83	538	4.37	4.04	272	4.22	3.96
Boys	294	4.33	4.03	290	4.64	4.18	144	4.36	4.28
Girls	238	3.79	3.56	248	4.05	3.85	128	4.07	3.57

Note. ODD mood dimension and ODD defiant dimension = Disruptive Behavior Rating Scale; Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist

An overview of the mean scores on all measurements for the overall sample as reported by the teachers can be seen in Table 9. The same results were observed for the teacher

as was for the parents. The means for emotion regulation, lability/negativity and ODD symptoms were similar at all three time points with no significant change found for emotion regulation, ($F(1.769, 123.851)=1.108$, $p=0.328$, lability/negativity, ($F(1.869, 130.802)=2.033$, $p=0.138$ or ODD symptoms, ($F(1.848, 125.648)=1.459$, $p=0.237$.

Table 9.
Mean scores for all measurements (teacher reports)

	Time 1			Time 2			Time 3		
	n	M	SD	*n*	M	SD	*n*	M	SD
Emotion regulation									
Overall sample	404	27.25	3.82	301	26.06	3.84	142	26.01	3.98
Boys	215	26.34	4.06	170	25.38	3.93	77	25.22	4.18
Girls	189	28.27	3.24	131	26.95	3.55	65	26.95	3.52
Lability/negativity									
Overall sample	404	22.30	6.98	301	21.82	6.77	142	21.60	5.83
Boys	215	24.17	7.69	170	23.28	7.63	77	22.19	6.36
Girls	189	20.18	5.34	131	19.94	4.87	65	20.89	5.10
ODD symptoms									
Overall sample	402	2.44	4.00	298	1.64	3.22	139	1.83	3.31
Boys	214	2.48	4.85	168	2.22	3.83	74	2.24	3.96
Girls	188	1.24	2.20	130	0.88	1.96	65	1.37	2.30

Note. ODD mood dimension and ODD defiant dimension = Disruptive Behavior Rating Scale; Emotion Regulation and Lability/Negativity = Emotion Regulation Checklist

4.3.2 Overall models

A series of path models were constructed, linking at each time point emotion regulation and lability/negativity with ODD symptoms. Separate models were run by source (parent reports; teacher reports) and by gender (girls; boys) for a total of four models. In the models, the predictors—emotion regulation and lability/negativity—were allowed to covary within measurement points and relate to subsequent measures of both constructs. Also, the effects of hyperactivity/impulsivity were controlled for. For clarity, hyperactivity/impulsivity and covariances are omitted from the below figures.

4.3.2.1 Parent Reports

Path models with standardized coefficients based on parent report—one for girls and one for boys— can be seen in Figures 2 and 3, respectively.

Figure 2

Path model for girls with standardized coefficients from parent reports

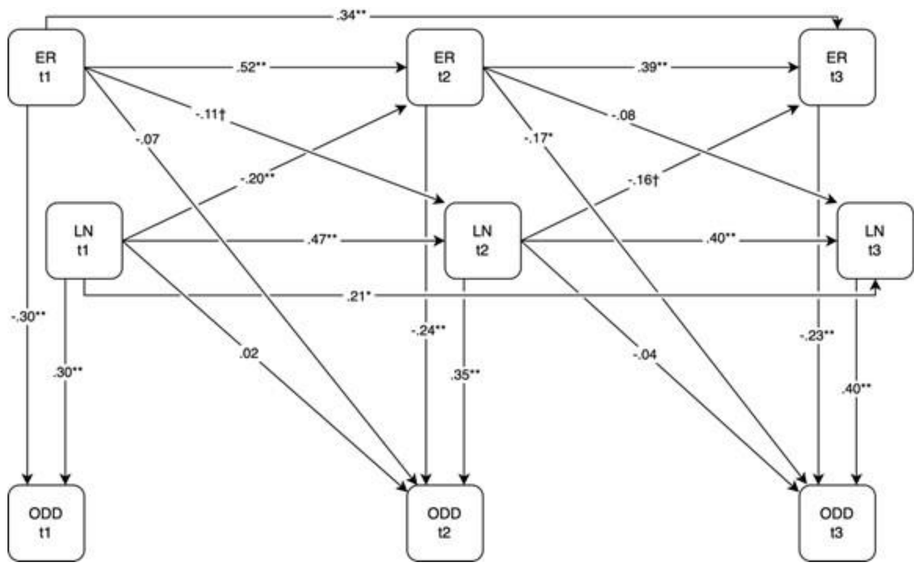
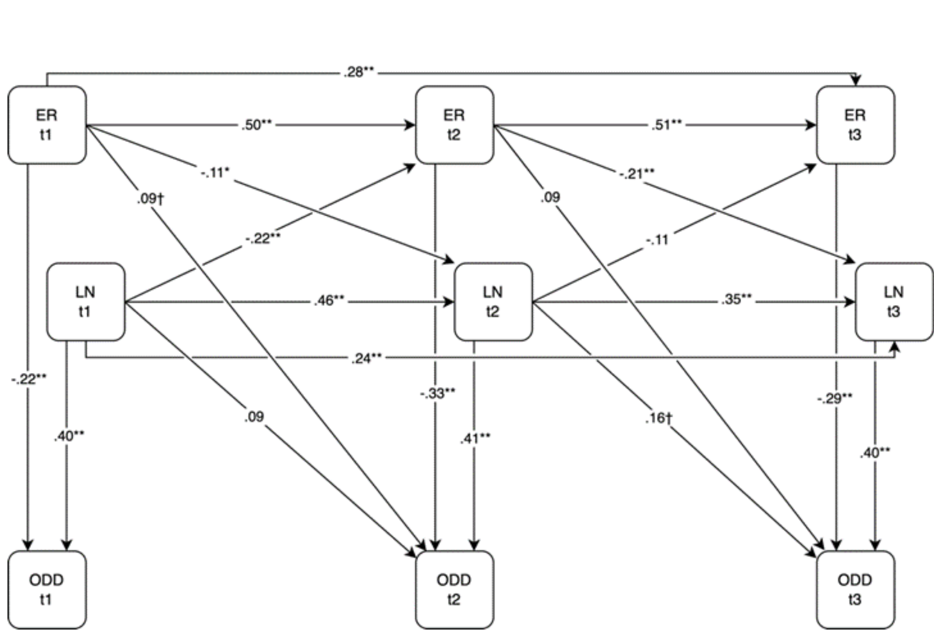


Figure 3

Path model for boys with standardized coefficients from parent reports



When figures 2 and 3 are compared the results indicate that the relationships between variables are very similar for both boys and girls. The results show that emotion regulation and lability/negativity at each time point were consistently related to ODD symptoms at the same point in time, with emotion regulation being negatively related and lability/negativity positively related. When looking at the ability of emotion regulation and lability/negativity to predict ODD symptoms at a later time point, we see limited effects. For boys, emotion regulation at time 1 was only marginally predictive of ODD symptoms at time 2, and lability/negativity at time 2 was marginally predictive of ODD symptoms at time 3. For girls, emotion regulation at time 2 predicted of ODD symptoms at time 3.

As expected, constructs measured at a given time point are positively related to the following measurement of the same construct, e.g., emotion regulation at time 1 was positively associated with emotion regulation at time 2, which was again positively related to emotion regulation at time 3. The same pattern holds for lability/negativity. In addition, emotion regulation and lability/negativity at time 1 had a respective direct positive relationship with emotion regulation and lability/negativity at time 3.

There were some differences in the cross-lagged relationship between emotion regulation and lability/negativity across time points. Emotion regulation at time 1 was negatively related to lability/negativity at time 2 (only marginally so for girls). Likewise, lability/negativity at time 1 was negatively associated with emotion regulation at time 2. Between time 2 and 3, emotion regulation was negatively related to lability/negativity for boys but not for girls. In contrast, lability/negativity at time 2 was not related to emotion regulation at time 3 (marginally so for girls).

Fit indices[1] for the models are in Table 10. The chi2 tests are insignificant at the $p<.05$ level, though given the sample size, this test alone is not a good indicator of model fit (Schumacker & Lomax, 2012). However, the other fit statistics—RMSEA, CFI, and TLI—all indicate good fit with the data (Hu & Bentler, 1999; Pituch & Stevens, 2016; Xia & Yang, 2019).

Table 10.

Fit indices for path models based on parent reports

Model	χ^2	*df*	*p*	**RMSEA**	**CFI**	**TLI** (NNFI)
Girls: Parent report	8.04	6	.235	.035	.998	.986
Boys: Parent report	12.12	6	.059	.056	.995	.968
Girls: Teacher report	6.36	6	.384	.016	.999	.992
Boys: Teacher report	9.82	6	.133	.047	.993	.954

[1] Note on fit indices: An insignificant chi2 test indicates a good model fit. However, the chi2 test is affected by sample size, i.e., larger samples are likely to lead to a significant chi2 test, irrespective of model fit, so this test is not always helpful. For the RMSEA, a lower value is better. A value less than .05 indicates a close fit, while a value ranging from .05–.08 is regarded as an acceptable fit .For the comparative fit index (CFI), a benchmark of at least .90 has been suggested to indicate an acceptable fit .A value of .95 or above shows a very good fit .The same guidelines apply to the Tucker-Lewis index (TLI), also known as the non-normed fit index (NNFI) .

4.3.2.2 Teacher Reports

Path models with standardized coefficients based on teacher reports can be seen in Figures 4 and 5. The structure of these models is precisely the same as the ones used for parent reports.

Figure 4

Path model for girls with standardized coefficients from teacher reports

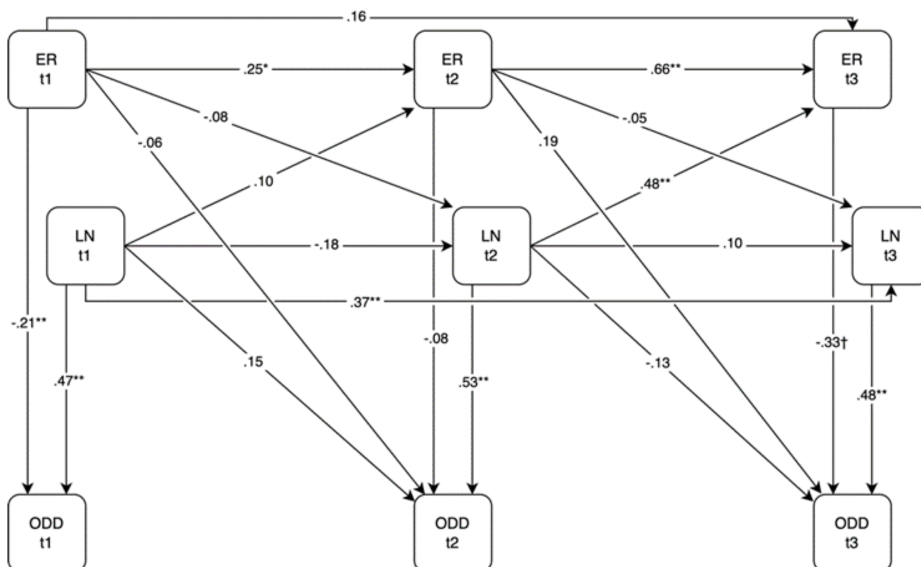
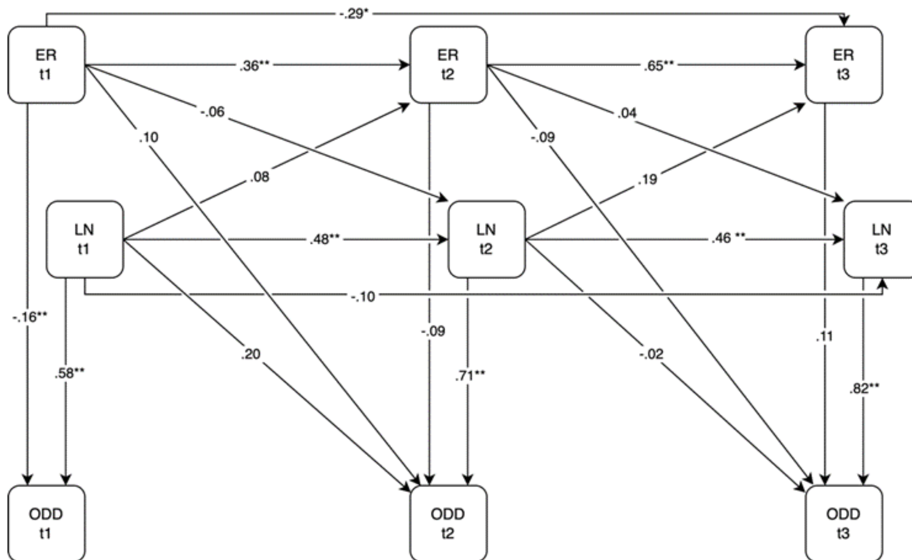


Figure 5

Path model for boys with standardized coefficients from teacher reports



Figures 4 and 5 show more differences between boys and girls when using teacher reports. However, the relationship of emotion regulation and lability/negativity with ODD symptoms at different times were very similar for girls and boys, though less consistent over time. At time 1, both emotion regulation and lability/negativity were related to ODD symptoms. At times 2 and 3, only lability/negativity is related to ODD symptoms. There were also no significant relationships between emotion regulation or lability/negativity and ODD symptoms at subsequent time points.

Measurements of emotion regulation were positively related over time for girls and boys. For girls, however, there was no significant direct relationship between time 1 and time 3 measures, as was seen with parent reports. This same relationship for boys was significant—but the direction was opposite of expectations. Looking at lability/negativity, there were positive relationships between times 1 and 2 and between times 2 and 3 for boys. There was no relationship between times 1 and 3. For girls, there were no significant links between times 1 and 2 or between times 2 and 3. However, there was a positive association between times 1 and 3.

The only significant cross-lagged relationship was between lability/negativity at time 2 and emotion regulation at time 3 for girls. However, the direction of this relationship was positive—i.e., the opposite of what one would expect.

Fit indices for the model can be seen in Table 10. The chi2 tests are insignificant, and the other fit statistics—RMSEA, CFI, and TLI—also indicate a good fit with the data.

4.3.3 Specific Models

To test if emotion regulation and lability/negativity at time 1 are predictive of ODD symptoms at times 2 and 3 in a more direct manner, simpler path models were created. In these models, measures of emotion regulation and lability/negativity at time 1 are allowed to covary, as are the measures of ODD symptoms at times 2 and 3. Also, the effects of hyperactivity/impulsivity are controlled[2]. For the sake of simplicity, hyperactivity/impulsivity and covariances are omitted from the figures presented below.

Figure 6

Path model for emotion regulation and lability/negativity predicting ODD symptoms with standardized coefficients from parent reports

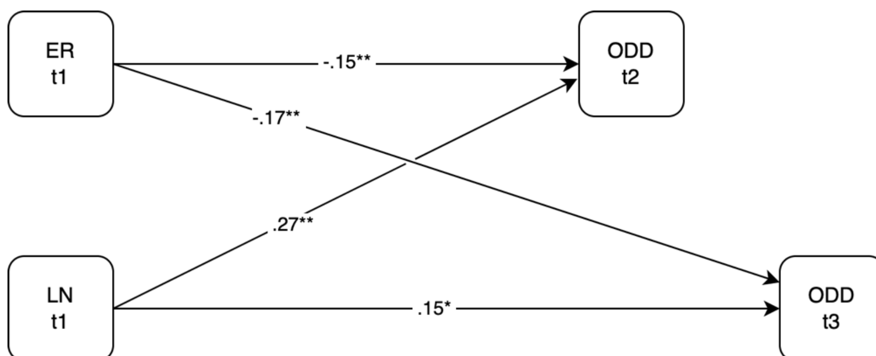
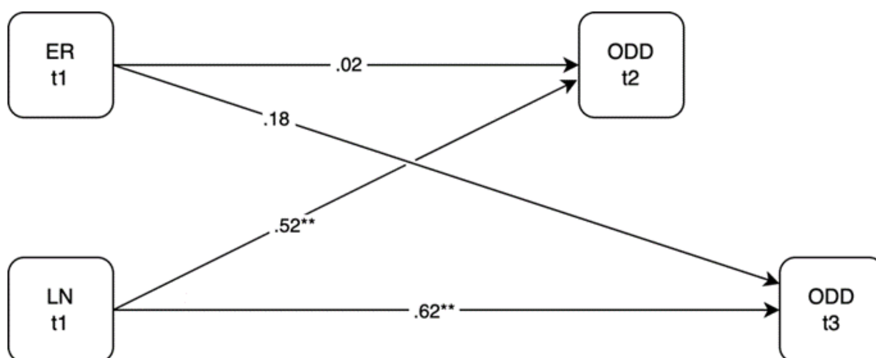


Figure 7

Path model for emotion regulation and lability/negativity predicting ODD symptoms with standardized coefficients from teacher reports



[2] Inattention was initially included but was omitted as it was not significantly related to ODD symptoms and did not impact the results.

Path models with standardized coefficients using parent and teacher data can be seen in Figures 6 and 7.

For the parent data, the model shows a significant relationship for both emotion regulation and lability/negativity at time 1 with ODD symptoms at both times 2 and 3 (see Figure 6). Emotion regulation at time 1 was negatively related to ODD symptoms at times 2 and 3. The same holds for lability/negativity, but as expected, the relationships here are positive. For the teacher data, only lability/negativity at time 1 was significantly predictive of ODD symptoms at times 2 and 3; see Figure 7.

Fit indices for the models using parent and teacher data can be seen in Table 11. The chi2 test is not significant, indicating a good fit. Other fit indices also show a very close fit with the data.

Table 11.
Fit indices for specific path models

Model	χ^2	*df*	*p*	RMSEA	CFI	TLI (NNFI)
Parent report	0.55	2	.761	.000	1.000	1.013
Teacher report	0.57	2	.751	.000	1.000	1.017

4.4 Summary and conclusions

4.4.1 Paper I

The aim of paper I was to examine the cross-sectional association between emotion dysregulation and ODD symptoms. Considering the results from Martel et al. (2012) and Blandon et al (2010) a strong relation between emotion dysregulation and ODD symptoms/conduct problems, especially regarding lability/negativity, was expected. This hypothesis was supported as the cross-sectional relationship between emotion dysregulation and ODD symptoms/conduct problems the moderation analysis was significant for parent-and-teacher-reported ODD symptoms and conduct problems, with both emotion regulation and lability/negativity contributing individually to those symptoms. Furthermore, children who rated above the cut-off on the L/N subscale of the ERC also scored significantly higher on the DBRS and the CP subscale of the SDQ compared to those rated below the cut-off, as reported by both parents and teachers.

The second hypothesis in paper I was that emotion dysregulation, ODD symptoms and conduct problems would be more prominent among boys. This hypothesis was also supported as girls had higher means on the ER subscale of the ERC than boys in a sample of 251 girls and 296 boys aged 5-6 years. That means that the girls had overall higher emotion regulation skills than the boys. The boys had higher means on the L/N subscale of the ERC, DBRS and CP subscale of the SDQ than girls. Indicating that the boys had more lability/negativity and conduct problems/ODD symptoms than the girls. However, adding gender to the model resulted in a marginal increase in the model's

predictive capacity for both parents and teachers, though the increase was only significant for teachers. This means that for parent-report gender did not influence the relationship between emotion dysregulation and ODD symptoms/behavior problems allowing for the assumption that the relationship between emotion dysregulation and conduct problems/ODD symptoms is similar for girls and boys.

4.4.2 Paper II

The aim of paper II was to examine informant discrepancies. Based on results from other studies (Olson et al. (2018) and Ezpeleta and Penelo (2015)) it was hypothesized that discrepancies between parent and teacher reports would be noticeable especially regarding the defiant behavior/vindictiveness dimension of ODD. This hypothesis was supported. In terms of mean scores on assessment measures, agreement between parents and teachers was only fair for lability/negativity at both time points (ICC: time 1 = .478; time 2 = .566). For other symptoms (emotion regulation and both ODD dimensions), agreement was markedly poor. Additionally, when examining agreement among teachers across different school levels, discrepancies between informants were less evident compared to those between parents and teachers. Moderate agreement between teachers (preschool teacher at time 1 and elementary school teachers at time 1) was observed for mood-related symptoms (ICC = .499) and defiant behavior (ICC = .475), while excellent agreement was noted for lability/negativity (ICC = .753), but only fair agreement for emotion regulation (ICC = .463).

The second hypothesis in paper II was that parents would report more severe emotion dysregulation among the children compared to teachers. This hypothesis was partially supported as parents reported significantly higher mean scores for ODD symptoms compared to teachers for defiant behavior and mood-related symptoms at both time 1 and time 2, for both boys and girls. Regarding lability/negativity, parents reported significantly higher means compared to teachers on both at time 1 and at time 2. Similar results were found for girls and boys. Conversely, parents and teachers did not report statistically significant different means for emotion regulation at either time 1 or at time 2 for the overall sample. There was also no significant difference between informants for girls at time 1 and time 2 (but there was a significant difference for boys at time 2 but not at time 1).

4.4.3 Paper III

The aim of paper III was to assess the trajectories of emotion regulation, lability/negativity, and ODD symptoms in a longitudinal study, with three time points, including two separate school levels (preschool and elementary school) and for gender. Considering previous research on emotion regulation and ODD symptoms it was hypothesized that the trajectories of emotion regulation, lability/negativity and ODD symptoms would remain somewhat stable across all time points. This hypothesis was

supported as no significant change was found in emotion regulation, lability/negativity or ODD symptoms over all three time points, both according to parents and teachers.

It was also hypothesized that emotion regulation and lability/negativity at time 1 would predict ODD symptoms at time 2 and 3. The hypothesis was only partially supported. When looking at the ability of emotion regulation and lability/negativity to predict ODD symptoms at a later time point, there were limited effects. At time 1, both emotion regulation and lability/negativity were related to ODD symptoms. At times 2 and 3, only lability/negativity is related to ODD symptoms. There were also no significant relationships between emotion regulation or lability/negativity and ODD symptoms at subsequent time points. To test if emotion regulation and lability/negativity at time 1 are predictive of ODD symptoms at times 2 and 3 in a more direct manner, simpler path models were created. For the parent data, the model shows a significant relationship for both emotion regulation and lability/negativity at time 1 with ODD symptoms at both times 2 and 3. Emotion regulation at time 1 was negatively related to ODD symptoms at times 2 and 3. The same holds for lability/negativity, but as expected, the relationships were positive. For the teacher data, only lability/negativity at time 1 was significantly predictive of ODD symptoms at times 2 and 3.

Additionally in paper III, gender differences were explored and according to parent-report, the results indicated that the relationships between variables were very similar for both boys and girls. The results show that emotion regulation and lability/negativity at each time point were consistently related to ODD symptoms at the same point in time, with emotion regulation being negatively related and lability/negativity positively related. According to teacher-report, the results showed more differences between boys and girls. However, the relationship of emotion regulation and lability/negativity with ODD symptoms at different times were very similar for girls and boys, though less consistent over time.

5 Discussion

This thesis aimed to explore how emotion dysregulation contributes to the development of ODD symptoms, especially among younger children. Past research underscores the need for longitudinal studies focusing on emotion dysregulation and externalizing disorders in children (Cicchetti et al., 1995; Cole & Deater-Deckard, 2009; Cole et al., 1994; Dunsmore et al., 2013; Hill et al., 2006; Martel, 2009; Southam-Gerow & Kendall, 2002). While emotion regulation has been extensively studied, its specific link to ODD symptoms requires further investigation (Cole, Hall, & Radzioch, 2009; Cole, Hall, et al., 2009; Cole et al., 1994; Dunsmore et al., 2013; Dunsmore et al., 2016; McLaughlin et al., 2011). Over a span of three years, a large community sample of 5-6-year-old children was assessed using comprehensive clinical screening questionnaires at three intervals and across two educational stages (preschool and elementary school).

5.1 Paper I

Paper I aimed to explore the associations between emotion dysregulation, symptoms of ODD and conduct problems in preschool-aged boys and girls at time 1. The unique aspect of this research was the use of multi-informant evaluation, incorporating a DSM criteria-based measure for ODD symptoms.

The assessment in paper I revealed significant findings. The means for emotion regulation were high and lability/negativity were moderate, indicating children's ability to manage and express emotions appropriately, yet also suggesting sensitivity to emotional triggers and difficulty in recovery afterwards. Parents reported more issues compared to teachers concerning ODD symptoms and lability/negativity, while both parent and teacher reports were similar regarding emotion regulation and conduct problems. This disparity might highlight differing interpretations by parents and teachers regarding problematic behaviors in different settings or could be due to contextual differences in behavior.

Correlation analyses supported a strong link between emotion dysregulation, ODD symptoms, and conduct problems, consistent with previous research (Blandon et al., 2010; Martel et al., 2012). Despite some item similarities in questionnaires, correlations remained generally low, except for a few items on lability/negativity and the DBRS questionnaire which were removed.

Simple gender comparisons indicated more severe lability/negativity and poorer emotion regulation among boys, aligning with the hypothesis that these symptoms would be more prevalent in boys. However, gender did not significantly moderate the relationships between emotion dysregulation, ODD symptoms, and conduct problems,

except for a minor impact on the relationship between emotion dysregulation and conduct problems but only according to teachers. This suggests that emotion dysregulation significantly predicted ODD symptoms and conduct problems regardless of gender, emphasizing its influence on behavioral severity in both boys and girls.

Furthermore, children displaying poor emotion regulation or high lability/negativity demonstrated more severe ODD symptoms and conduct problems. This association, when children scored above the cut-off for emotion dysregulation, suggests potential clinical implications. Using clinical screening questionnaires might effectively identify children at risk for various difficulties, aiding in identification of early intervention needs.

Overall, the findings in paper I underscores the significance of emotion dysregulation in possibly affecting the severity of ODD symptoms and conduct problems, highlighting its potential effects for additional behavioral challenges, regardless of gender.

5.2 Paper II

Paper II aimed to investigate the differences in reporting between parents and teachers concerning two dimensions of ODD - irritability/mood-related symptoms and defiant behavior/vindictiveness - as well as two elements of emotion dysregulation - emotion regulation skills and lability/negativity. It included repeated assessments among preschool children, also exploring potential gender disparities. Based on prior research (Ezpeleta & Penelo, 2015; Olson et al., 2018), the hypothesis was that differences in reports between parents and teachers, especially regarding defiant behavior/vindictiveness in ODD, would be notable. Additionally, it was expected that parents would report more prominent emotion dysregulation compared to teachers.

Several key findings emerged from this paper. Parents consistently reported more problems in overall ODD dimensions and lability/negativity compared to teachers, aligning with similar studies highlighting parents' tendency to report more severe externalizing behavior issues than teachers (De Los Reyes et al., 2009; Hourigan et al., 2011; Kerr et al., 2007; Olson et al., 2018). Interestingly, when children moved from preschool to elementary school, parents reported an escalation in problematic behavior, whereas teachers did not, as evidenced by larger effect sizes at the second time point.

The agreement between parents and teachers for ODD dimensions, both mood-related symptoms and defiant behavior, was found to be poor, especially during preschool, which is congruent with previous studies (Ezpeleta & Penelo, 2015; Kerr et al., 2007; Olson et al., 2018). Conversely, when children reached first grade, discrepancies between parent-teachers were more noticeable for mood-related symptoms of ODD. These results could suggest that problematic behavior may be more prominent in the home compared to the school setting or that parents and teachers interpret problematic behavior differently. These findings may also imply that when children get

older more emphasis is placed on compliance, making any deviations from those expectations more noticeable. Informant discrepancies were not as prominent among different teachers as we found moderate agreement for both ODD dimensions, especially mood related symptoms. This supports the notion that the context is an important part of assessment, even though these teachers were at two different school levels and assessments were made a year apart, there seemed to be greater similarities in teachers' ratings. This is consistent with findings from other studies on the subject of context (De Los Reyes et al., 2009; De Los Reyes & Kazdin, 2005)

Regarding emotion regulation, there was poor agreement between parents and teachers, whereas teacher-teacher reports showed fair agreement. Particularly, disagreement was profound for children scoring above the cut-off on emotion regulation, for both parent-teacher report and teacher-teacher report, indicating greater difficulty in consensus on the severity of deficits in emotion regulation. This could be attributed to the subjectivity and visibility of emotional regulation compared to lability/negativity. That is congruent with research on the assessment of informant discrepancies on internalizing and externalizing profiles among children (Curhan et al., 2020; Genachowski et al., 2023).

Gender comparisons unveiled that both parents and teachers perceived boys as having more severe lability/negativity and poorer emotion regulation compared to girls, aligning with expectations due to the prevalence of ODD being higher in boys (Merikangas et al., 2009; Nock et al., 2007). Interestingly, larger discrepancies in reporting were observed for girls than boys, especially concerning defiant behavior and lability/negativity. This might suggest variations in the expression of ODD symptoms and emotion dysregulation between genders or different displays of problematic behavior in home versus school settings. This is in line with previous research on larger discrepancies for girls compared to boys (Berg-Nielsen et al., 2012; Santos et al., 2020; Yang et al., 2021).

Moreover, there were significant differences between parent and teacher ratings for mood-related ODD symptoms, defiant behavior, and lability/negativity but not for emotion regulation. The discrepancies between parents and teachers were somewhat consistent across time, particularly for lability/negativity, which showed stable agreement levels. These outcomes parallel findings from Olson et al. (2018) and suggest ongoing informant discrepancies between parental and teacher perceptions of children's behavior across various domains, highlighting the complexities of assessment consistency between home and school environments.

5.3 Paper III

Paper III aimed to evaluate the trajectory of emotion regulation, lability/negativity, and symptoms of ODD over time. It was hypothesized that trajectories for emotion regulation, lability/negativity, and ODD symptoms would demonstrate consistency

across all three time points and that early emotion regulation and lability/negativity would predict subsequent ODD symptoms.

There were several interesting findings. Initially, according to both parents and teachers, mean scores for emotion regulation, lability/negativity, and ODD symptoms remained stable and relatively low across all time points. This stability persisted even as children transitioned through different school environments and encountered different teachers. These outcomes support the hypothesis, consistent with previous research highlighting the stability of ODD symptoms, emotion regulation, and lability/negativity (Keenan et al., 2011; Vogel et al., 2021).

Furthermore, when examining parental reports through path models, the analysis showed a concurrent developmental pattern: emotion regulation and lability/negativity at each interval consistently correlated with ODD symptoms at the same time point. Children with lower reported emotion regulation tended to exhibit higher levels of ODD symptoms as described by their parents. Similarly, higher levels of lability/negativity corresponded to increased ODD symptoms. This association was the same for both boys and girls. However, while a strong concurrent relationship existed between emotion regulation, lability/negativity, and ODD symptoms, the predictive capacity in the overall models was limited for both genders.

Regarding teacher reports, the co-development of emotion regulation, lability/negativity, and ODD symptoms demonstrated less consistency compared to parental reports. During preschool, both emotion regulation and lability/negativity correlated with ODD symptoms, according to teachers but in elementary school, only lability/negativity retained this relationship. This difference might stem from the visibility and disruptiveness of lability/negativity in a classroom setting, making it more readily identifiable by teachers than internalized processes related to emotion regulation, especially as children mature. The discrepancies in results between parental and teacher reports may be attributed to children exhibiting different behaviors in different settings, such as at home versus school. This behavioral variation could account for the discrepancies in the relationship between emotion regulation, lability/negativity, and ODD symptoms in teacher ratings (Achenbach, 2006; Achenbach et al., 1987; De Los Reyes et al., 2015; De Los Reyes & Kazdin, 2005; Zhang et al., 2023).

While the overall path models did not conclusively establish that preschool-measured emotion dysregulation predicts ODD symptoms in subsequent years, the results suggest a co-developmental relationship between emotion regulation, lability/negativity, and ODD symptoms over time. There could be several reasons for why these factors co-develop over time. There could be shared neurobiological mechanisms or even common genetic factors. Interrelated psychological processes could also contribute to the co-development between emotion dysregulation and ODD symptoms, that is, poor emotion regulation skills could lead to children displaying ODD

symptoms. These factors could also share the same risk factors, or both be influenced by the same environmental influences. It is beyond the scope of this thesis to infer what would be a likely reason but could be an important topic of research to further understand the association between emotion dysregulation and ODD symptoms.

Simpler path models focusing on the direct relationship between preschool emotion regulation/lability/negativity and elementary school ODD symptoms indicated that better parental-reported emotion regulation might serve as a protective factor against later ODD symptoms. Conversely, parent-reported lability/negativity in preschool could potentially be seen as a factor that contributes for the possible development of at-risk or more severe ODD symptoms in elementary school. However, when teachers reported better emotion regulation, it did not seem to influence the severity of ODD symptoms. Conversely, increased teacher-reported lability/negativity was associated with higher reported ODD symptoms.

5.4 General discussion

When compiling all the findings together, each paper had noteworthy results that add to the existing literature.

The findings in paper I showed a robust correlation among emotion dysregulation, ODD symptoms, and conduct problems in 5-6-year-old children, particularly concerning lability/negativity. Gender discrepancies emerged, with boys exhibiting more pronounced emotion dysregulation, ODD symptoms, and conduct problems. However, gender did not moderate the relationship between emotion dysregulation, ODD symptoms, or conduct problems. It appears that children's emotional management and sensitivity to emotion-triggering events, coupled with difficulty in recovery, significantly impact the severity of ODD symptoms and conduct problems, irrespective of gender. These results contribute to a growing body of literature on young children, shedding more light on the relationship between emotion dysregulation, ODD symptoms, and conduct problems (Blandon et al., 2010; Chen et al., 2022; Gerstein et al., 2011; He et al., 2023; Hill et al., 2006; Martel et al., 2012; Paulus et al., 2021; Zhang et al., 2023). These findings also provide valuable information about the clinical presentation of emotion dysregulation, ODD symptoms and conduct problems and suggest that emotional difficulties among young children should be considered when exploring causes of behavioral difficulties in daily life.

The findings in paper II revealed notable discrepancies among informants, particularly between parents and teachers, with greater consensus observed among preschool and elementary school teachers compared to parent-teacher agreements. Parent-teacher informant discrepancies were more pronounced for defiant behavior/vindictiveness than for irritability/mood-related symptoms of ODD during the preschool years, aligning with previous research (Ezpeleta & Penelo, 2015). Moreover, these differences were more apparent for girls compared to boys. When assessing emotion regulation and

lability/negativity, inconsistencies between parents and teachers were more evident for emotion regulation, suggesting disagreement across settings (home vs. school) is more common on the adaptive aspect of emotion regulation compared to the maladaptive one. These findings underscore the importance of considering informant discrepancies in multi-informant assessments of young children. Environmental context and the informant's relationship with the child should be considered when evaluating ODD dimensions and emotion regulation, particularly given the substantial informant discrepancies observed in this paper. Furthermore, the gender differences noted are intriguing; while behavior problems are typically more prevalent among boys, higher informant agreement for boys might partially contribute to this trend, while lower prevalence for girls might contribute to poorer agreement. Future longitudinal studies should explore informant discrepancies for ODD dimensions and emotion dysregulation, examining their stability over time and their impact on diagnostic decisions.

The findings in paper III implied a strong relationship and co-development over time between emotion regulation, lability/negativity, and ODD symptoms. While specific models indicated the predictive nature of emotion dysregulation for ODD symptoms, the overall models did not. These findings imply that emotion dysregulation may be considered more of a characteristic or feature of ODD symptoms rather than a direct risk factor, as indicated by the stronger pattern of co-development observed in the overall models. However, this implication should be approached with caution.

5.5 Strengths and limitations

The overall strengths of this thesis were numerous. First, the longitudinal nature of the data, spanning three time points from preschool to elementary school, enabled comparisons across different school levels and settings. Second, nearly equal gender ratio allowed for reliable gender comparisons. Third, the thesis included both parental and teacher reports on emotion regulation, lability/negativity, and ODD symptoms offering a comprehensive understanding of the child's behavior in various contexts. Moreover, the assessment utilized DSM diagnostic criteria-based measures for ODD symptoms and a questionnaire measuring emotion regulation and lability/negativity separately. Lastly, the analyses were conducted after overlapping items in the ERC and DBRS had been removed. The overall thesis also had some limitations which should be acknowledged. There's a possibility of selection bias as participants may have been more inclined to join the study if their children exhibited more serious problematic behavior. However, another weakness or more of a complication of the thesis was that in the sample emotion regulation was generally high and lability/negativity was low. Furthermore, ODD symptoms were not rated as severe, and the vast majority of the sample were below the clinical cutoff score. Lastly, there was notable attrition between the second and third time points, possibly due to participants no longer finding it beneficial to participate or changes in the child's behavior, either betterment or waning.

There were also specific limitations related to each paper. In paper I the data was cross-sectional, thereby unable to depict developmental processes. Also, when comparing children above the cut-off score, results should be interpreted with caution as there were unequal numbers of children in each group. In paper II the same limitation was faced when comparing children above and below the cut-off score due to unequal numbers. Also, family characteristics, known to influence informant discrepancies (De Los Reyes et al., 2015) were not measured and could not be included in data analysis in paper II, nor was information on race or ethnicity obtained. In paper III the biggest limitation was attrition between the second and third time points but one of the bigger strengths in that paper was that analyses were conducted after controlling for ADHD symptoms.

6 Conclusions

The overall aim of this thesis was to examine the relationship between emotion dysregulation and the development of ODD symptoms. The main hypothesis for the longitudinal data was that emotion dysregulation (low emotion regulation and high lability/negativity) would predict ODD symptoms at time 2 and time 3. The hypothesis was only partially supported. Findings from the overall models showed limited effects of the predictive value of emotion dysregulation on the development of ODD symptoms. The simpler models showed that both emotion regulation and lability/negativity were significantly predictive of ODD symptoms according to parent-report. According to teachers, only lability/negativity at time 1 was significantly predictive of ODD symptoms at time 2 and 3. Even with these mixed results and the findings pointing more towards emotion dysregulation being a feature of ODD symptoms rather than a risk factor, it is without a doubt that emotion dysregulation is strongly associated with ODD symptoms. Additional research questions were also addressed in this thesis. The first one relating to gender differences. Interestingly, findings reveled that gender differences varied. The results showed that emotion regulation was higher for girls than boys and that lability/negativity, ODD symptoms and conduct problems were more prominent among the boys. However, the relationship between emotion dysregulation and ODD symptoms was not different for girls and boys. Even though ODD symptoms and behavior problems are more prominent among boys, the co-development between those factors and emotion dysregulation seems to be the same for both genders. These results indicate that the need for addressing possible emotion dysregulation is of equal importance for both genders when assessing ODD symptoms in the diagnostic process.

Moreover, informant discrepancies were also examined, and the findings implicated more differences in parent and teacher-reports than teacher-teacher reports. This is also important information in relation to the association between emotion dysregulation and ODD symptoms. If there are differences in either the manifestation of these symptoms or in the perception of the informant of the child, the setting must be analyzed. That is, if a child displays more severe symptoms or dysregulation in either the home or school setting is a potential cause for consideration when designing a suitable intervention and support for the child, parents and teachers.

Although the findings in this thesis contribute to existing research, further longitudinal studies spanning from earlier in the preschool years, before ODD symptoms start to develop, to longer into the elementary school years, when possible ODD is diagnosed would be beneficial. It could maybe better answer the question on if emotion dysregulation could be a risk factor for an ODD diagnosis or as seen in this thesis a factor that co-develops. Furthermore, such longitudinal study could also monitor the

development of the symptoms longer and better examine if emotion dysregulation influences symptom severity of ODD. Also, research has discussed the possibility that emotion dysregulation could be a part of the mood related dimension of ODD rather than the other two dimensions of the disorder. This was not addressed in this thesis and could be an interesting topic to examine if the co-development between emotion dysregulation and ODD differs between dimensions of the disorder. Lastly, it would likely be beneficial to examine what underlying factors could possibly be influencing the co-development of emotion dysregulation and ODD symptoms and if children with this combination of symptoms need a different approach in the intervention given.

In a practical sense, the findings in this thesis highlight not only the possible significance of assessing potential emotion dysregulation in the diagnostic process of children but also the consideration of need for addressing deficits in early childhood emotion regulation and lability/negativity through combined interventions. That is, not only targeting ODD symptoms but also addressing emotion dysregulation, in order to disrupt potential adverse developmental trajectories involving both emotion dysregulation and ODD symptoms.

References

Achenbach, T. M. (2006). As others see us: Clinical and research implications of cross-informant correlations for psychopathology. *Current Directions in Psychological Science*, *15*(2), 94-98.

Achenbach, T. M. (2011). Commentary: Definitely more than measurement error: But how should we understand and deal with informant discrepancies? *Journal of Clinical Child and Adolescent Psychology*, *40*(1), 80-86.

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*(2), 213.

Adrian, M., Zeman, J., Erdley, C., Lisa, L., & Sim, L. (2011). Emotional dysregulation and interpersonal difficulties as risk factors for nonsuicidal self-injury in adolescent girls. *Journal of Abnormal Child Psychology, 39*(3), 389-400. https://doi.org/10.1007/s10802-010-9465-3

Adrian, M., Zeman, J., & Veits, G. (2011). Methodological implications of the affect revolution: A 35-year review of emotion regulation assessment in children. *Journal of Experimental Child Psychology, 110*(2), 171-197. https://doi.org/http://dx.doi.org/10.1016/j.jecp.2011.03.009

Aldao, A., Gee, D. G., De Los Reyes, A., & Seager, I. (2016). Emotion regulation as a transdiagnostic factor in the development of internalizing and externalizing psychopathology: Current and future directions. *Development and Psychopathology, 28*(4pt1), 927-946.

American Psychiatric Association. (2013). Diagnostic and Statistical Manual of Mental Disorders (5th Edition ed.). Author.

Ashiabi, G. S. (2000). Promoting the emotional development of preschoolers. *Early Childhood Education Journal, 28*(2), 79-84.

Barkley, R. A. (1997). Defiant children: A clinician's manual for assessment and parent training. Guilford Press.

Barrett, L. F. (2006). Valence is a basic building block of emotional life. *Journal of Research in Personality, 40*(1), 35-55. https://doi.org/10.1016/j.jrp.2005.08.006

Beauchaine, T. P., Gatzke-Kopp, L., & Mead, H. K. (2007). Polyvagal theory and developmental psychopathology: Emotion dysregulation and conduct problems from preschool to adolescence. *Biological Psychology, 74*(2), 174-184.

Berg-Nielsen, T. S., Solheim, E., Belsky, J., & Wichstrom, L. (2012). Preschoolers' psychosocial problems: In the eyes of the beholder? Adding teacher characteristics as determinants of discrepant parent–teacher reports. *Child Psychiatry and Human Development, 43*, 393-413.

Binder, A. S., Brown, H. R., & Harvey, E. A. (2020). Executive Function and Trajectories of Emotion Dysregulation in Children with Parent-Reported Behavior Problems. *Journal of Abnormal Child Psychology*, 1-13. https://doi.org/https://doi.org/10.1007/s10802-019-00616-4

Blandon, A. Y., Calkins, S. D., Grimm, K. J., Keane, S. P., & O'Brien, M. (2010). Testing a developmental cascade model of emotional and social competence and early peer acceptance. *Development and Psychopathology, 22*(4), 737-748. https://doi.org/10.1017/S0954579410000428

Blandon, A. Y., Calkins, S. D., Keane, S. P., & O'Brien, M. (2008). Individual differences in trajectories of emotion regulation processes: the effects of maternal depressive symptomatology and children's physiological regulation. *Developmental Psychology, 44*(4), 1110. https://doi.org/10.1037/0012-1649.44.4.1110

Blankson, A. N., O'Brien, M., Leerkes, E. M., Marcovitch, S., Calkins, S. D., & Weaver, J. M. (2013). Developmental dynamics of emotion and cognition processes in preschoolers. *Child Development, 84*(1), 346-360.

Boylan, K., Vaillancourt, T., Boyle, M., & Szatmari, P. (2007). Comorbidity of internalizing disorders in children with oppositional defiant disorder. *European Child and Adolescent Psychiatry, 16*(8), 484-494.

Bradley, B., DeFife, J. A., Guarnaccia, C., Phifer, J., Fani, N., Ressler, K. J., & Westen, D. (2011). Emotion dysregulation and negative affect: Association with psychiatric symptoms. *Journal of Clinical Psychiatry, 72*(5), 685-691. https://doi.org/10.4088/JCP.10m06409blu

Bradley, R. T., Atkinson, M., Tomasino, D., Rees, R. A., & Galvin, P. (2009). Facilitating emotional self-regulation in preschool children: efficacy of the early heartsmarts program in promoting social, emotional and cognitive development. Boulder Creek (CA): HeartMath Research Center, Institute of HeartMath.

Brenning, K., Soenens, B., Vansteenkiste, M., De Clercq, B., & Antrop, I. (2022). Emotion regulation as a transdiagnostic risk factor for (non) clinical adolescents' internalizing and externalizing psychopathology: Investigating the intervening role of psychological need experiences. *Child Psychiatry & Human Development*, 1-13.

Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. *Child Development, 75*(2), 340-345.

Burke, J. D., Johnston, O. G., & Butler, E. J. (2021). The irritable and oppositional dimensions of oppositional defiant disorder: integral factors in the explanation of affective and behavioral psychopathology. *Child and Adolescent Psychiatric Clinics, 30*(3), 637-647. https://doi.org/https://doi.org/10.1016/j.chc.2021.04.01

Burke, J. D., & Romano-Verthelyi, A. M. (2018). Oppositional defiant disorder. In M. M. Martel (Ed.), Developmental Pathways to Disruptive, Impulse-Control and Conduct Disorders (pp. 21-52). Elsevier.

Burke, J. D., Rowe, R., & Boylan, K. (2014). Functional outcomes of child and adolescent oppositional defiant disorder symptoms in young adult men. *Journal of Child Psychology and Psychiatry, 55*(3), 264-272.

Calkins, S. D., Dollar, J. M., & Wideman, L. (2019). Temperamental vulnerability to emotion dysregulation and risk for mental and physical health challenges. *Development and Psychopathology, 31*(3), 957-970. https://doi.org/https://doi.org/10.1017/S0954579419000415

Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology, 12*(03), 467-488.

Cappadocia, M. C., Desrocher, M., Pepler, D., & Schroeder, J. H. (2009). Contextualizing the neurobiology of conduct disorder in an emotion dysregulation framework. *Clinical Psychology Review, 29*(6), 506-518.

Carlson, S. M., & Wang, T. S. (2007). Inhibitory control and emotion regulation in preschool children. *Cognitive Development, 22*(4), 489-510. https://doi.org/10.1016/j.cogdev.2007.08.002

Carthy, T., Horesh, N., Apter, A., Edge, M. D., & Gross, J. J. (2010). Emotional reactivity and cognitive regulation in anxious children. *Behaviour Research and Therapy, 48*(5), 384-393.

Carthy, T., Horesh, N., Apter, A., & Gross, J. J. (2010). Patterns of emotional reactivity and regulation in children with anxiety disorders. *Journal of Psychopathology and Behavioral Assessment, 32*(1), 23-36.

Cavanagh, M., Quinn, D., Duncan, D., Graham, T., & Balbuena, L. (2017). Oppositional defiant disorder is better conceptualized as a disorder of emotional regulation. *Journal of Attention Disorders, 21*(5), 381-389. https://doi.org/10.1177/1087054713520221

Chen, H., He, T., Xu, M., Zhao, J., Li, L., & Lin, X. (2022). Children's oppositional defiant disorder symptoms make parents difficult to be nice: Longitudinal association among parent emotion regulation, child emotion regulation and children's oppositional defiant disorder symptoms in Chinese children with oppositional defiant disorder. *Clinical Child Psychology and Psychiatry, 27*(4), 1155-1169. https://doi.org/10.1177/13591045211055822

Chen, Y.-C., Hwang-Gu, S.-L., Ni, H.-C., Liang, S. H.-Y., Lin, H.-Y., Lin, C.-F., Tseng, Y.-H., & Gau, S. S.-F. (2017). Relationship between parenting stress and informant discrepancies on symptoms of ADHD/ODD and internalizing behaviors in preschool children. *PLoS One, 12*(10), e0183467.

Cicchetti, D., Ackerman, B. P., & Izard, C. E. (1995). Emotions and emotion regulation in developmental psychopathology. *Development and Psychopathology, 7*(01), 1-10.

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment, 6*(4), 284.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. Routledge.

Cohen, M., & Piquero, A. (2007). New evidence and the monetary value of savings among high risk youth. *Vanderbilt Law and Economics Research Paper* (08-07).

Cole, P. M., & Deater-Deckard, K. (2009). Emotion regulation, risk, and psychopathology. Journal of Child *Psychology and Psychiatry, 50*(11), 1327-1330.

Cole, P. M., Dennis, T. A., Smith-Simon, K. E., & Cohen, L. H. (2009). Preschoolers' Emotion Regulation Strategy Understanding: Relations with Emotion Socialization and Child Self-regulation. *Social Development, 18*(2), 324-352. https://doi.org/10.1111/j.1467-9507.2008.00503.x

Cole, P. M., Hall, S. E., & Hajal, N. J. (2017). Emotion Dysregulation as a Vulnerability to Psychopathology. In T. P. Beauchaine (Ed.), Child and Adolescent Psychopathology (3rd ed., pp. 346-386). John Wiley and Sons Inc.

Cole, P. M., Hall, S. E., & Radzioch, A. M. (2009). Emotional dysregulation and the development of serious misconduct. In S. L. Olson & A. J. Sameroff (Eds.), Biopsychosocial regulatory processes in the development of childhood behavioral problems (pp. 186-211). Cambridge University Press

Cole, P. M., Hall, S. E., Radzioch, A. M., Olson, S., & Sameroff, A. (2009). Emotional dysregulation and the development of serious misconduct. Biopsychosocial regulatory processes in the development of childhood behavioral problems, 186-211.

Cole, P. M., Luby, J., & Sullivan, M. W. (2008). Emotions and the development of childhood depression: Bridging the gap. *Child Dev Prespect, 2*(3), 141-148.

Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development, 75*(2), 317-333. https://doi.org/10.1111/j.1467-8624.2004.00673.x

Cole, P. M., Michel, M. K., & Teti, L. O. D. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development, 59*(2-3), 73-102.

Cole, P. M., Zahn-Waxler, C., Fox, N. A., Usher, B. A., & Welsh, J. D. (1996). Individual differences in emotion regulation and behavior problems in preschool children. *Journal of Abnormal Psychology, 105*(4), 518.

Curhan, A. L., Rabinowitz, J. A., Pas, E. T., & Bradshaw, C. P. (2020). Informant discrepancies in internalizing and externalizing symptoms in an at-risk sample: The role of parenting and school engagement. *Journal of Youth and Adolescence, 49*, 311-322.

De Los Reyes, A. (2011). Introduction to the special section: More than measurement error: Discovering meaning behind informant discrepancies in clinical assessments of children and adolescents. *Journal of Clinical Child and Adolescent Psychology, 40*(1), 1-9.

De Los Reyes, A., Alfano, C. A., & Beidel, D. C. (2010). The relations among measurements of informant discrepancies within a multisite trial of treatments for childhood social phobia. *Journal of Abnormal Child Psychology, 38*(3), 395-404.

De Los Reyes, A., Augenstein, T. M., Wang, M., Thomas, S. A., Drabick, D. A., Burgers, D. E., & Rabinowitz, J. (2015). The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological Bulletin, 141*(4), 858.

De Los Reyes, A., Cook, C. R., Gresham, F. M., Makol, B. A., & Wang, M. (2019). Informant discrepancies in assessments of psychosocial functioning in school-based services and research: Review and directions for future research. *Journal of school psychology, 74*, 74-89.

De Los Reyes, A., Henry, D. B., Tolan, P. H., & Wakschlag, L. S. (2009). Linking informant discrepancies to observed variations in young children's disruptive behavior. *Journal of Abnormal Child Psychology, 37*(5), 637-652.

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: a critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131*(4), 483.

Demmer, D. H., Hooley, M., Sheen, J., McGillivray, J. A., & Lum, J. A. (2017). Sex differences in the prevalence of oppositional defiant disorder during middle childhood: a meta-analysis. *Journal of Abnormal Child Psychology, 45*(2), 313-325.

Dennis, T. A., & Hajcak, G. (2009). The late positive potential: a neurophysiological marker for emotion regulation in children. *Journal of Child Psychology and Psychiatry, 50*(11), 1373-1383.

Dennis, T. A., & Kelemen, D. A. (2009). Preschool children's views on emotion regulation: Functional associations and implications for social-emotional adjustment. *International Journal of Behavioral Development, 33*(3), 243-252. https://doi.org/10.1177/0165025408098024

Deutz, M. H., Geeraerts, S. B., Belsky, J., Deković, M., van Baar, A. L., Prinzie, P., & Patalay, P. (2020). General psychopathology and dysregulation profile in a longitudinal community sample: Stability, antecedents and outcomes. *Child Psychiatry & Human Development, 51*, 114-126.

Diamantopoulou, S., Verhulst, F. C., & Van der Ende, J. (2011). The parallel development of ODD and CD symptoms from early childhood to adolescence. *European child & adolescent psychiatry, 20*, 301-309.

Dunsmore, J. C., Booker, J. A., & Ollendick, T. H. (2013). Parental emotion coaching and child emotion regulation as protective factors for children with oppositional defiant disorder. *Social Development, 22*(3), 444-466. https://doi.org/10.1111/j.1467-9507.2011.00652.x

Dunsmore, J. C., Booker, J. A., Ollendick, T. H., & Greene, R. W. (2016). Emotion socialization in the context of risk and psychopathology: Maternal emotion coaching predicts better treatment outcomes for emotionally labile children with oppositional defiant disorder. *Social Development, 25*(1), 8-26. https://doi.org/10.1111/sode.12109

DuPaul, G. J., Anastopoulos, A. D., Power, T. J., Reid, R., Ikeda, M. J., & McGoey, K. E. (1998). Parent ratings of attention-deficit/hyperactivity disorder symptoms: Factor structure and normative data. *Journal of Psychopathology and Behavioral Assessment, 20*(1), 83-102.

Eisenberg, N., Cumberland, A., Spinrad, T. L., Fabes, R. A., Shepard, S. A., Reiser, M., Murphy, B. C., Losoya, S. H., & Guthrie, I. K. (2001). The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development, 72*(4), 1112-1134.

Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children’s maladjustment. *Annual Review of Clinical Psychology, 6*, 495.

Evans, S. C., Burke, J. D., Roberts, M. C., Fite, P. J., Lochman, J. E., Francisco, R., & Reed, G. M. (2017). Irritability in child and adolescent psychopathology: An integrative review for ICD-11. *Clinical psychology review, 53*, 29-45.

Ezpeleta, L., & Penelo, E. (2015). Measurement invariance of oppositional defiant disorder dimensions in 3-year-old preschoolers. *European Journal of Psychological Assessment*.

Fairchild, G. (2021). Juvenile disruptive behaviour disorders: oppositional defiant disorder (ODD) and conduct disorder (CD). In Child and Adolescent Mental Health (pp. 293-304). CRC Press.

Fantuzzo, J. W., Bulotsky-Shearer, R., Fusco, R. A., & McWayne, C. (2005). An investigation of preschool classroom behavioral adjustment problems and social–emotional school readiness competencies. *Early Childhood Research Quarterly, 20*(3), 259-275. https://doi.org/10.1016/j.ecresq.2005.07.001

Frick, P. J., & Matlasz, T. M. (2018). Disruptive, impulse-control, and conduct disorders. In M. M. Martel (Ed.), Developmental Pathways to Disruptive, Impulse-Control and Conduct Disorders (pp. 3-20). Elsevier.

Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology, 33*(1), 54-68.

Genachowski, K. J., Starin, N. S., Cummings, C. M., Alvord, M. K., & Rich, B. A. (2023). Interpretation of informant discrepancy in school-based psychological assessment of internalizing and externalizing symptoms. *Journal of Emotional and Behavioral Disorders, 31*(4), 248-259.

Gerstein, E. D., y Arbona, A. P., Crnic, K. A., Ryu, E., Baker, B. L., & Blacher, J. (2011). Developmental risk and young children’s regulatory strategies: Predicting behavior problems at age five. *Journal of Abnormal Child Psychology, 39*(3), 351-364. https://doi.org/10.1007/s10802-010-9471-5

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581-586.

Goodman, R., Ford, T., Simmons, H., Gatward, R., & Meltzer, H. (2000). Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *The British Journal of Psychiatry, 177*(6), 534-539.

Graziano, P. A., & Garcia, A. (2016). Attention-deficit hyperactivity disorder and children's emotion dysregulation: A meta-analysis. *Clinical Psychology Review, 46*, 106-123. https://doi.org/10.1016/j.cpr.2016.04.011

Greene, R. W., & Doyle, A. E. (1999). Toward a transactional conceptualization of oppositional defiant disorder: Implications for assessment and treatment. *Clinical Child and Family Psychology Review, 2*(3), 129-148.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281-291.

Gross, J. J. (2013). Emotion regulation: taking stock and moving forward. Emotion, 13(3), 359.

Gross, J. J., & Muñoz, R. F. (1995). Emotion regulation and mental health. *Clinical Psychology: Science and Practice, 2*(2), 151-164.

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations.

Halligan, S. L., Cooper, P. J., Fearon, P., Wheeler, S. L., Crosby, M., & Murray, L. (2013). The longitudinal development of emotion regulation capacities in children at risk for externalizing disorders. *Development and Psychopathology, 25*(2), 391-406. https://doi.org/10.1017/s0954579412001137

Hamaidi, D. A., Mattar, J. W., & Arouri, Y. M. (2021). Emotion Regulation and Its Relationship to Social Competence among Kindergarten Children in Jordan. *European journal of contemporary education, 10*(1), 66-76.

Hamilton, S. S., & Armando, J. (2008). Oppositional defiant disorder. *American Family Physician, 78*(7).

Hannesdottir, D. K., & Ollendick, T. H. (2007). The role of emotion regulation in the treatment of child anxiety disorders. *Clinical Child and Family Psychology Review, 10*(3), 275-293.

Hansen, A. V. (2015). Próffræðilegir eiginleikar íslenskrar útgáfu Emotion Regulation Checklist (ERC) University of Iceland]. Reykjavik.

Harrington, E. M., Trevino, S. D., Lopez, S., & Giuliani, N. R. (2020). Emotion regulation in early childhood: Implications for socioemotional and academic components of school readiness. *Emotion, 20*(1), 48.

He, T., Zhang, W., Tang, Y., Hinshaw, S. P., Wu, Q., & Lin, X. (2023). Unidirectional or Bidirectional? Relation between Parental Responsiveness and Emotion Regulation in Children with and without Oppositional Defiant Disorder. *Research on Child and Adolescent Psychopathology*, 1-15.

Hill, A. L., Degnan, K. A., Calkins, S. D., & Keane, S. P. (2006). Profiles of externalizing behavior problems for boys and girls across preschool: the roles of emotion regulation and inattention. *Developmental Psychology, 42*(5), 913. https://doi.org/10.1037/0012-1649.42.5.913

Hill, J. (2003). Early identification of individuals at risk for antisocial personality disorder. *B J Psychiatry, 182*(S44), s11-s14.

Hinshaw, S. P. (2003). Impulsivity, emotion regulation, and developmental psychopathology: specificity versus generality of linkages. *Annals of the New York Academy of Sciences, 1008*(1), 149-159.

Hofmann, S. G., Sawyer, A. T., Fang, A., & Asnaani, A. (2012). Emotion dysregulation model of mood and anxiety disorders. *Depression and Anxiety, 29*(5), 409-416.

Hourigan, S. E., Goodman, K. L., & Southam-Gerow, M. A. (2011). Discrepancies in parents' and children's reports of child emotion regulation. *Journal of Experimental Child Psychology, 110*(2), 198-212.

Hu, L., & Bentler, P. (1999). Structural Equation Modeling: Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Janiri, D., Moccia, L., Conte, E., Palumbo, L., Chieffo, D. P. R., Fredda, G., Menichincheri, R. M., Balbi, A., Kotzalidis, G. D., & Sani, G. (2021). Emotional dysregulation, temperament and lifetime suicidal ideation among youths with mood disorders. *Journal of Personalized Medicine, 11*(9), 865.

Kaufman, J., Birmaher, B., Brent, D., Rao, U., Flynn, C., Moreci, P., Williamson, D., & 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, K. (2000). Emotion dysregulation as a risk factor for child psychopathology. *Clin Psychol-Sci Pr, 7*(4), 418-434.

Keenan, K., Boeldt, D., Chen, D., Coyne, C., Donald, R., Duax, J., Hart, K., Perrott, J., Strickland, J., & Danis, B. (2011). Predictive validity of DSM-IV oppositional defiant and conduct disorders in clinically referred preschoolers. *Journal of Child Psychology and Psychiatry, 52*(1), 47-55. https://doi.org/10.1111/j.1469-7610.2010.02290.x

Kerr, D. C., Lunkenheimer, E. S., & Olson, S. L. (2007). Assessment of child problem behaviors by multiple informants: A longitudinal study from preschool to school entry. *Journal of Child Psychology and Psychiatry, 48*(10), 967-975.

Kim-Cohen, J., Arseneault, L., Caspi, A., Tomás, M. P., Taylor, A., & Moffitt, T. E. (2005). Validity of DSM-IV conduct disorder in 4½–5-year-old children: A longitudinal epidemiological study. *American Journal of Psychiatry, 162*(6), 1108-1117.

Kimonis, E., Frick, P., & McMahon, R. (2014). Conduct and oppositional defiant disorders. *Child psychopathology*, 145-179.

Kleine Deters, R., Naaijen, J., Rosa, M., Aggensteiner, P. M., Banaschewski, T., Saam, M. C., Schulze, U. M., Sethi, A., Craig, M. C., & Sagar-Ouriaghli, I. (2020). Executive functioning and emotion recognition in youth with oppositional defiant disorder and/or conduct disorder. *The World Journal of Biological Psychiatry, 21*(7), 539-551.

Kraemer, H. C., Measelle, J. R., Ablow, J. C., Essex, M. J., Boyce, W. T., & Kupfer, D. J. (2003). A new approach to integrating data from multiple informants in psychiatric assessment and research: Mixing and matching contexts and perspectives. *American Journal of Psychiatry, 160*(9), 1566-1577.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 159-174.

Lauth, B., Arnkelsson, G. B., Magnússon, P., Skarphéðinsson, G. Á., Ferrari, P., & Pétursson, H. (2010). Validity of K-SADS-PL (Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version) depression diagnoses in an adolescent clinical population. *Nordic journal of psychiatry, 64*(6), 409-420.

Lavigne, J. V., Dahl, K. P., Gouze, K. R., LeBailly, S. A., & Hopkins, J. (2015). Multi-domain predictors of oppositional defiant disorder symptoms in preschool children: cross-informant differences. *Child Psychiatry & Human Development, 46*, 308-319.

Leadbeater, B., Thompson, K., & Gruppuso, V. (2012). Co-occurring trajectories of symptoms of anxiety, depression, and oppositional defiance from adolescence to young adulthood. *Journal of Clinical Child & Adolescent Psychology, 41*(6), 719-730.

Li, C. (2013). Little's test of missing completely at random. *The Stata Journal, 13*(4), 795-809.

Liu, L., Chen, W., Vitoratou, S., Sun, L., Yu, X., Hagger-Johnson, G., Wu, Z., Yang, L., Qian, Q., & Wang, Y. (2019). Is emotional lability distinct from “angry/irritable mood,”“negative affect,” or other subdimensions of oppositional defiant disorder in children with ADHD? *Journal of Attention Disorders, 23*(8), 859-868. https://doi.org/10.1177/1087054715624228

Loeber, R., Burke, J. D., Lahey, B. B., Winters, A., & Zera, M. (2000). Oppositional defiant and conduct disorder: a review of the past 10 years, part I. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*(12), 1468-1484.

Magnússon, P., Smári, J., Grétarsdóttir, H., & Prándardóttir, H. (1999). Attention-Deficit/Hyperactivity symptoms in Icelandic schoolchildren: assessment with the Attention Deficit/Hyperactivity Rating Scale-IV. *Scandinavian journal of psychology, 40*(4), 301-306. https://doi.org/10.1111/1467-9450.404130

Martel, M. M. (2009). Research Review: A new perspective on attention-deficit/hyperactivity disorder: emotion dysregulation and trait models. *Journal of Child Psychology and Psychiatry, 50*(9), 1042-1051.

Martel, M. M., Gremillion, M. L., & Roberts, B. (2012). Temperament and common disruptive behavior problems in preschool. *Personality and Individual Differences, 53*(7), 874-879. https://doi.org/http://dx.doi.org/10.1016/j.paid.2012.07.011

Martin, S. E., Boekamp, J. R., McConville, D. W., & Wheeler, E. E. (2010). Anger and sadness perception in clinically referred preschoolers: Emotion processes and externalizing behavior symptoms. *Child Psychiatry and Human Development, 41*(1), 30-46.

Maughan, A., & Cicchetti, D. (2002). Impact of child maltreatment and interadult violence on children’s emotion regulation abilities and socioemotional adjustment. *Child Development, 73*(5), 1525-1542.

Maughan, B., Rowe, R., Messer, J., Goodman, R., & Meltzer, H. (2004). Conduct disorder and oppositional defiant disorder in a national sample: developmental epidemiology. *Journal of Child Psychology and Psychiatry, 45*(3), 609-621.

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy, 49*(9), 544-554. https://doi.org/10.1016/j.brat.2011.06.003

McMain, S., Korman, L. M., & Dimeff, L. (2001). Dialectical behavior therapy and the treatment of emotion dysregulation. *Journal of Clinical Psychology, 57*(2), 183-196.

Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7.

Miller, A. L., Fine, S. E., Kiely Gouley, K., Seifer, R., Dickstein, S., & Shields, A. (2006). Showing and telling about emotions: Interrelations between facets of emotional competence and associations with classroom adjustment in Head Start preschoolers. *Cognition & Emotion, 20*(8), 1170-1192.

Mitchison, G. M., Liber, J. M., Hannesdottir, D. K., & Njardvik, U. (2019). Emotion Dysregulation, ODD and Conduct Problems in a Sample of Five and Six-Year-Old Children. *Child Psychiatry and Human Development*, 1-9.

Mitchison, G. M., Liber, J. M., & Njardvik, U. (2022). Parent and teacher ratings of ODD dimensions and emotion regulation: informant discrepancies in a two-phase study. *Journal of Child and Family Studies*, 1-11.

Molina, P., Sala, M. N., Zappulla, C., Bonfigliuoli, C., Cavioni, V., Zanetti, M. A., Baiocco, R., Laghi, F., Pallini, S., & De Stasio, S. (2014). The Emotion Regulation Checklist–Italian translation. Validation of parent and teacher versions. *European Journal of Developmental Psychology, 11*(5), 624-634. https://doi.org/10.1080/17405629.2014.898581

Nishiyama, T., Sumi, S., Watanabe, H., Suzuki, F., Kuru, Y., Shiino, T., Kimura, T., Wang, C., Lin, Y., & Ichiyanagi, M. (2020). The Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (K-SADS-PL) for DSM-5: A validation for neurodevelopmental disorders in Japanese outpatients. *Comprehensive Psychiatry, 96*, 152148.

Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2007). Lifetime prevalence, correlates, and persistence of oppositional defiant disorder: results from the National Comorbidity Survey Replication. *Journal of Child Psychology and Psychiatry, 48*(7), 703-713. https://doi.org/10.1111/j.1469-7610.2007.01733.x

Nolen-Hoeksema, S. (2012). Emotion regulation and psychopathology: the role of gender. *Annual Review of Clinical Psychology, 8,* 161-187.

Noordermeer, S. D., Luman, M., & Oosterlaan, J. (2016). A systematic review and meta-analysis of neuroimaging in oppositional defiant disorder (ODD) and conduct disorder (CD) taking attention-deficit hyperactivity disorder (ADHD) into account. *Neuropsychology review, 26*, 44-72.

Ollendick, T. H., Booker, J. A., Ryan, S., & Greene, R. W. (2018). Testing Multiple Conceptualizations of Oppositional Defiant Disorder in Youth. *Journal of Clinical Child and Adolescent Psychology, 47*(4), 620-633. https://doi.org/https://doi.org/10.1080/15374416.2017.1286594

Olson, S. L., Davis-Kean, P., Chen, M., Lansford, J. E., Bates, J. E., Pettit, G. S., & Dodge, K. A. (2018). Mapping the growth of heterogeneous forms of externalizing problem behavior between early childhood and adolescence: a comparison of parent and teacher ratings. *Journal of Abnormal Child Psychology*, 1-16.

Ordway, M. R. (2011). Depressed mothers as informants on child behavior: Methodological issues. *Research in Nursing and Health, 34*(6), 520-532.

Paulus, F. W., Ohmann, S., Möhler, E., Plener, P., & Popow, C. (2021). Emotional dysregulation in children and adolescents with psychiatric disorders. A narrative review. *Frontiers in psychiatry, 12*, 628252. https://doi.org/https://doi.org/10.3389/fpsyt.2021.628252

Pietromonaco, P. R., & Barrett, L. F. (2009). Valence focus and self-esteem lability: reacting to hedonic cues in the social environment. *Emotion, 9*(3), 406. https://doi.org/10.1037/a0015691

Pituch, K., & Stevens, J. (2016). Applied Multivariate Statistics for the Social Sciences. 6th edn. New York and London. In: Routledge/Taylor & Francis Group.

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, 56*(3), 345-365. https://doi.org/doi:10.1111/jcpp.12381

Rowe, R., Costello, E. J., Angold, A., Copeland, W. E., & Maughan, B. (2010). Developmental pathways in oppositional defiant disorder and conduct disorder. *Journal of Abnormal Psychology, 119*(4), 726. https://doi.org/10.1037/a0020798

Röll, J., Koglin, U., & Petermann, F. (2012). Emotion regulation and childhood aggression: Longitudinal associations. *Child Psychiatry and Human Development, 43*(6), 909-923.

Sanchis-Sanchis, A., Grau, M. D., Moliner, A.-R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in psychology, 11*, 497592.

Santos, G., Farrington, D. P., da Agra, C., & Cardoso, C. S. (2020). Parent-teacher agreement on children's externalizing behaviors: Results from a community sample of Portuguese elementary-school children. *Children and Youth Services Review, 110*, 104809.

Sarıtaş, D., & Gençöz, T. (2012). Discrepancies between Turkish mothers' and adolescents' reports of adolescents' emotion regulation difficulties. *Journal of Clinical Psychology, 68*(6), 661-671.

Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of youth and adolescence, 46*, 261-276.

Schumacker, R. E., & Lomax, R. G. (2012). A Beginner's Guide to Structural Equation Modeling. Routledge.

Schwertman, N. C. (1978). A note on the Geisser-Greenhouse correction for incomplete data split-plot analysis. *Journal of the American Statistical Association, 73*(362), 393-396.

Scott, J. G., Pedersen, M. G., Erskine, H. E., Bikic, A., Demontis, D., McGrath, J. J., & Dalsgaard, S. (2017). Mortality in individuals with disruptive behavior disorders diagnosed by specialist services–A nationwide cohort study. *Psychiatry Research, 251*, 255-260.

Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: follow up study of antisocial children into adulthood. *BMJ, 323*(7306), 191.

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Developmental Psychology, 33*(6), 906.

Shields, A., & Cicchetti, D. (1998). Reactive aggression among maltreated children: The contributions of attention and emotion dysregulation. *Journal of Clinical Child Psychology, 27*(4), 381-395.

Silk, J. S., Steinberg, L., & Morris, A. S. (2003). Adolescents' emotion regulation in daily life: Links to depressive symptoms and problem behavior. *Child Development, 74*(6), 1869-1880.

Silverman, M. R., Bennett, R., Feuerstahler, L., Stadterman, J., Dick, A. S., Graziano, P., & Roy, A. K. (2022). Measuring emotion dysregulation in children with attention-deficit/hyperactivity disorder: revisiting the factor structure of the emotion regulation checklist. *Behavior Therapy, 53*(2), 196-207.

Southam-Gerow, M. A., & Kendall, P. C. (2002). Emotion regulation and understanding: Implications for child psychopathology and therapy. *Clinical Psychology Review, 22*(2), 189-222.

Statistics Iceland. (2018). (Statistics Iceland, Issue. O. P. Corp. https://issuu.com/hagstofa/docs/iceland_in_figures_2018

Steingrimsson, G., & Magnusson, P. (2008). Manual: Strengths and Difficulties Questionnaire. Landspitali University Hospital: Reykjavik, Iceland.

Stone, L. L., Otten, R., Engels, R. C., Vermulst, A. A., & Janssens, J. M. (2010). Psychometric properties of the parent and teacher versions of the strengths and difficulties questionnaire for 4-to 12-year-olds: a review. *Clinical Child and Family Psychology Review, 13*(3), 254-274.

Stringaris, & Goodman. (2009). Mood lability and psychopathology in youth. *Psychological Medicine, 39*(8), 1237-1245.

Stringaris, A., & Goodman, R. (2009). Three dimensions of oppositionality in youth. *Journal of Child Psychology and Psychiatry, 50*(3), 216-223. https://doi.org/10.1111/j.1469-7610.2008.01989.x

Stringaris, A., Maughan, B., & Goodman, R. (2010). What's in a disruptive disorder? Temperamental antecedents of oppositional defiant disorder: findings from the Avon longitudinal study. *Journal of the American Academy of Child and Adolescent Psychiatry, 49*(5), 474-483.

Tandon, M., & Giedinghagen, A. (2017). Disruptive behavior disorders in children 0 to 6 years old. *Child and Adolescent Psychiatric Clinics, 26*(3), 491-502.

Taylor, R. (1990). Interpretation of the correlation coefficient: a basic review. *J Diagn Med Sonogr, 6*(1), 35-39.

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development, 59*(2-3), 25-52.

Thompson, R. A. (2011). Emotion and emotion regulation: Two sides of the developing coin. *Emotion Review, 3*(1), 53-61. https://doi.org/10.1177/1754073910380969

Vogel, A. C., Jackson, J. J., Barch, D. M., Tillman, R., & Luby, J. L. (2019). Excitability and irritability in preschoolers predicts later psychopathology: The importance of positive and negative emotion dysregulation. *Development and Psychopathology, 31*(3), 1067-1083. https://doi.org/10.1017/S0954579419000609

Vogel, A. C., Tillman, R., El-Sayed, N. M., Jackson, J. J., Perlman, S. B., Barch, D. M., & Luby, J. L. (2021). Trajectory of emotion dysregulation in positive and negative affect across childhood predicts adolescent emotion dysregulation and overall functioning. *Development and Psychopathology, 33*(5), 1722-1733. https://doi.org/10.1017/s0954579421000705

Xia, Y., & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior research methods, 51*, 409-428.

Yang, P., Schlomer, G. L., Lippold, M. A., & Feinberg, M. E. (2021). Longitudinal discrepancy in adolescent aggressive behavior problems: Differences by reporter and contextual factors. *Journal of Youth and Adolescence, 50*, 1564-1581.

Yu, R. A., Goulter, N., & McMahon, R. J. (2022). Longitudinal associations between parental warmth, harsh discipline, child emotion regulation, and ODD dimensions. *Child Psychiatry and Human Development, 53*(6), 1266-1280. https://doi.org/https://doi.org/10.1007/s10578-021-01205-7

Zhang, W., Li, Y., Li, L., Hinshaw, S., & Lin, X. (2023). Vicious cycle of emotion regulation and ODD symptoms among Chinese school-age children with ODD: a random intercept cross-lagged panel model. *Child and Adolescent Psychiatry and Mental Health, 17*(1), 47. https://doi.org/https://doi.org/10.1186/s13034-023-00579-x

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood:Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development, 38*(2), 182-194. https://doi.org/10.1177/0165025413515405

Þrándardóttir, H. (2003). Árangur skapstillingarnámskeiðs fyrir ofvirk börn. University of Iceland. Reykjavík.

Original Publications

Paper I

Paper I

Paper II

Paper III