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The development of depression in children and adolescents with ADHD

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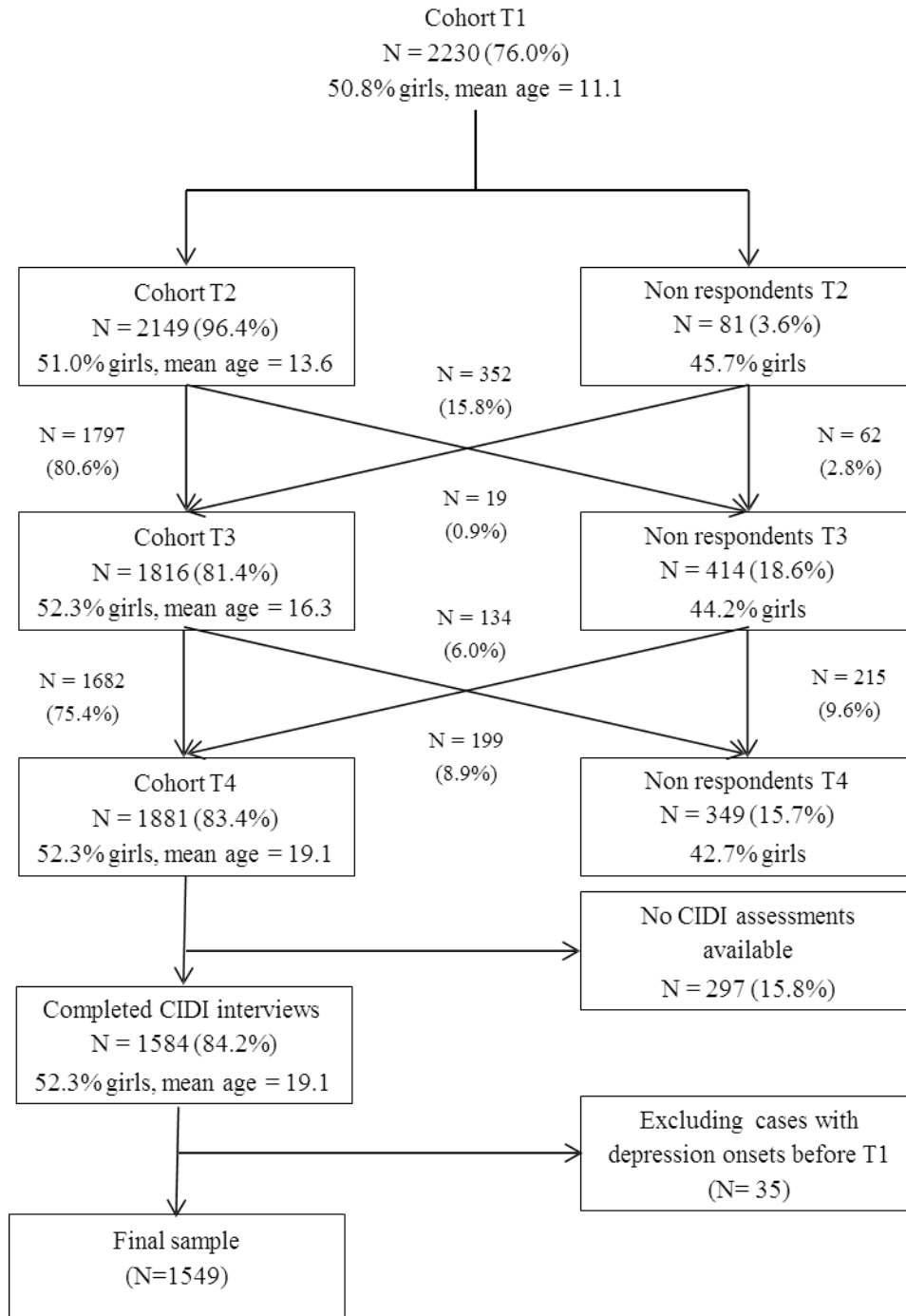
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Appendix 1 Overview of the mean age and gender distributions of participants in the TRAILS sample



Appendix 2 The Amsterdam Neuropsychological Tasks (ANT): task descriptions

The Amsterdam Neuropsychological Tasks program (ANT) (De Sonneville 1999) is a computer aided assessment battery of response time tasks that allow for the systematic evaluation of cognitive capacities. The ANT has proven to be a sensitive and valid tool in non-referred (De Sonneville *et al* 2002, Groot *et al* 2004, Stins *et al* 2005) as well as referred samples of various clinical domains such as minor neurological dysfunction (de Sonneville *et al* 1993), attention deficit disorders (Hanisch *et al* 2004, Slaats-Willemse *et al* 2003), and autism-related disorders (Althaus *et al* 1996). For the present study, five subtasks from the ANT were selected and these are further described below:

1) Baseline speed task

A white fixation cross is projected at the centre of the screen that changes into a white square at random time intervals (Fig. 1). Children are instructed to press a mouse button with their index finger as soon as the white cross is seen. The task consists of two parts, each with 10 practice trials and 32 test trials. The first part requires responses from the non-dominant hand and the second part responses from the dominant hand. The valid response window (VRW) ranges from 150-4000 milliseconds (ms). The post response interval (PRI) ranges from 500 to 2500 ms. The measure ‘processing speed’ is calculated as the mean reaction time (RT) over both the non-dominant and dominant hand responses.

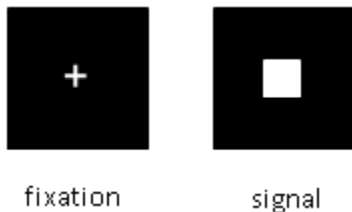


Fig. 1

2) Pattern recognition task

Children are instructed to memorize a predefined target pattern following which they are asked to recognize this pattern from a display set containing four patterns. Patterns contained in half of the display sets appear dissimilar to the target and the other half contain patterns appearing similar to the target (Fig. 2). The task consists of 12 practice trials and 80 test trials. Of the 80 test trials, half require responses with the non-dominant hand and the other half require responses with the dominant hand. The VRW is 200-7000 ms and the PRI is 1200 ms. The measure ‘focussed attention’ is computed by subtracting the mean RT of the dissimilar trials from the similar trials.



(Target pattern)

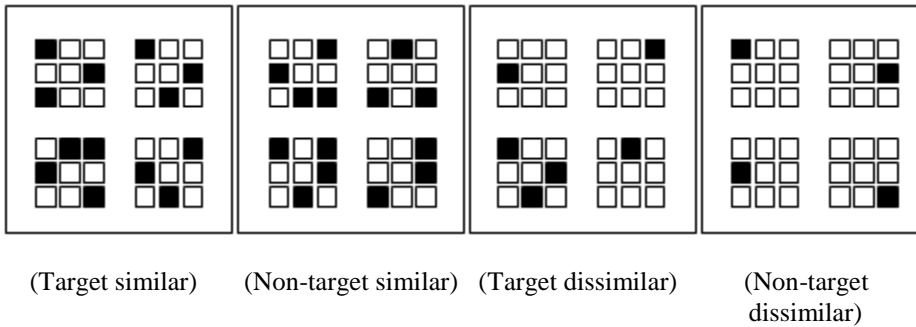


Fig. 2

3) Sustained attention task

Six hundred dot patterns are successively presented on the screen in 50 series of 12 trials. Each series consists of four 3-, 4-, and 5-dot patterns, presented in a pseudo random sequence. Participants responded by pressing either the left or the right mouse button, depending on the stimulus. Responses to 4-dot patterns were made by pressing the mouse button with the dominant hand ('yes response') (Fig. 3). Responses to 3-, or 5-dot patterns were made by pressing the mouse button with the non-dominant hand ('no response'). Task assessments are preceded by 24 practice trials. The measure 'response time variability' is computed as the within-subject standard deviation (i.e. the variability) of the mean RT of the 50 series and is interpretable as a measure of response stability in continuous task performance.

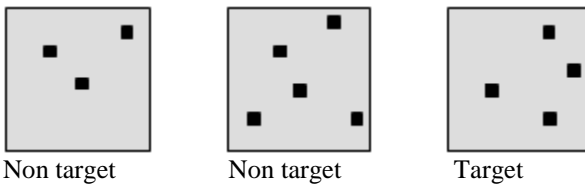


Fig. 3

4) Memory search task

Children are instructed to memorise one (part 1, 40 trials), two (part 2, 72 trials), and three (part 3, 96 trials) target consonant(s). Display sets are subsequently presented that consist of four consonants (Fig. 4). Display sets in half the trials contain the complete target set requiring a 'yes-response' (pressing mouse button by the dominant hand). In the other half, display sets contain none of the target letters or an incomplete target set, requiring a 'no-response' (pressing mouse button by non-dominant hand). Each task (part) is preceded by 12 practice trials. The VRW is 200-8000 ms and the PRI 1200 ms. The measure 'working memory maintenance' is computed by subtracting the mean RT of part 1 (low working memory load) target trials from the mean RT of part 3 (high working memory maintenance load) target trials.

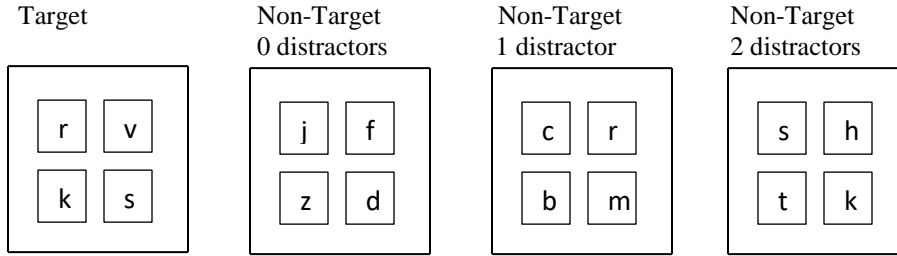


Fig. 4

5) Shifting set task

A horizontal bar is presented in the centre of the screen. In each trial, a coloured square moves across the bar randomly, to either to the left or to right (fig 5). The task consists of three parts. In part 1, children are instructed to copy the movement of a green coloured square (i.e. a green square moving to the left requires pressing the left mouse button, and a green square moving to the right requires pressing the right mouse button). In part 2, children are instructed to ‘mirror’ the direction of a red coloured square (i.e. a leftward moving red square requires pressing the right mouse button, and a rightward moving red button requires pressing the left mouse button). In part 3, the colour of the moving square randomly alternates between green and red. When the square is green, children are required to ‘copy’ its movement (i.e. responses as in part 1), and when the square is red, children are required to ‘mirror’ its movement (i.e. responses as in part 2). Parts 1 and 2 consist of 40 test trials each and are each preceded by 10 practice trials. Part 3 consists of 80 test trials, preceded by 16 practice trials. The VRW is 150 – 6000 ms and the PRI 250 ms. The measure ‘response inhibition’ is computed by subtracting the mean RT of part 1 from the mean RT of part 2. The measure ‘cognitive flexibility’ is computed by subtracting the mean RT of part 1 from the mean RT of part 3.

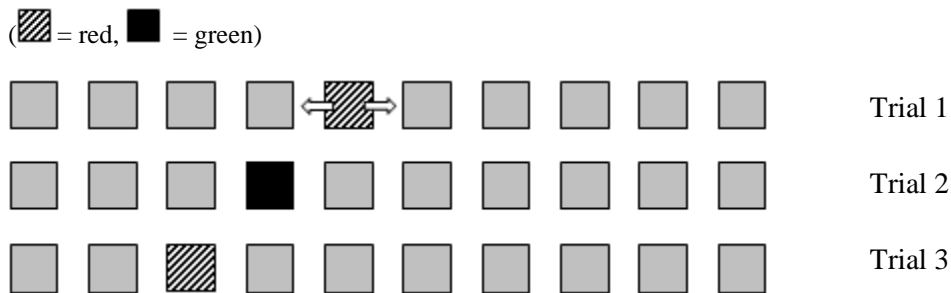


Fig. 5

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Appendix 3.1 Percentage of participants in each group receiving medications for ADHD or depression at the four time points

Groups	Dexamphetamine				Methylphenidate			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	4.7	0	4.7	0	38.1
A	0	0	0	2.8	5.7	0	8.6	20.0
D	0	0	0	0	0	8.5	1.1	2.1
C	0	0.2	0.1	0	0.4	5.2	0.2	1.5
	Atomoxetine				Venlafaxine			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	5.7	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0.7
C	0	0	0	0	0	0	0	0
	Imipramine				Clomipramine			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0.7	0	0
C	0.1	0	0	0	0	0.1	0	0
	Amitriptyline				Nortriptyline			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	0	0
D	0	0.7	0	0	0	0	0	0
C	0	0.1	0	0	0	0.2	0	0
	Fluoxetine				Citalopram			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	0	0	0	2.8	0	0	0
D	0	0	0.3	1.1	0	0	0	1.7
C	0	0	0	0	0	0.1	0	0.1
	Paroxetine				Sertraline			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	0	0
D	0	0	0.3	0.3	0	0	0	0
C	0	0.1	0	0	0	0	0	0.2
	Fluvoxetine				Moclobemide			
	T1	T2	T3	T4	T1	T2	T3	T4
A + D	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	0	0
D	0	0	0.3	0	0	0.7	0	0
C	0	0.1	0	0	0	0.1	0	0

Groups: A+D (ADHD with an onset of depression); A (only ADHD); D (only an onset of depression); C (comparison)
 N = 1549

Appendix 3.2 Cognitive functioning differences between participants receiving and not receiving medications

Baseline					
	Participants with medications RT - Mean (SD)	Participants without medications RT - Mean (SD)	t	df	p
Processing speed	289.1 (7.97)	331.6 (38.8)	1.89	330	.06
Focussed attention	1463.6 (457.5)	1473.6 (465.8)	.02	329	.99
Response time variability	2420.0 (810.0)	1747.0 (842.7)	-1.38	334	.17
Working memory maintenance	699.4 (60.8)	515.98 (274.6)	-1.21	332	.29
Response inhibition	178.3 (237.9)	249.6 (194.2)	.63	332	.53
Cognitive flexibility	572.3 (115.6)	648.7 (251.0)	.52	326	.61
Follow-up					
	Participants with medications RT - Mean (SD)	Participants without medications RT - Mean (SD)	t	df	p
Processing speed	252.8 (26.5)	252.0 (24.2)	-.19	327	.85
Focussed attention	840.4 (310.8)	807.8 (259.0)	-.65	331	.51
Response time variability	877.8 (357.3)	880.3 (382.1)	.04	333	.97
Working memory maintenance	313.6 (183.6)	807.8 (259.0)	-1.79	335	.07
Response inhibition	226.8 (220.0)	207.4 (169.6)	-1.01	324	.31
Cognitive flexibility	403.0 (176.3)	373.1 (155.0)	-.19	327	.85

RT – Reaction time

Appendix 3.3 Standardized scores of self- (YSR and ASR), parent- (CBCL) and teacher-reported (TCP) ADHD symptoms in the four groups across the four assessment time-points

Assessment time points*	Groups [#]				ANOVA	
	A + D mean (SD)	A mean (SD)	D mean (SD)	C mean (SD)	F	p
T1						
YSR	0.45 (0.95)	0.86 (1.11)	0.16 (0.95)	-0.07 (0.99)	14.78	<.001
CBCL	0.78 (1.33)	1.15 (1.02)	0.06 (0.94)	-0.05 (0.98)	19.85	<.001
TCP	0.65 (1.25)	0.39 (1.23)	-0.02 (0.98)	-0.01 (0.98)	3.84	.009
T2						
YSR	0.95 (1.28)	0.94 (1.06)	0.16 (0.96)	-0.08 (0.97)	22.03	<.001
CBCL	0.99 (1.36)	1.13 (1.03)	0.23 (0.93)	-0.10 (0.96)	26.96	<.001
TCP	0.45 (1.17)	0.92 (1.24)	0.002 (0.96)	-0.03 (0.98)	7.89	<.001
T3						
YSR	0.99 (1.36)	1.13 (1.03)	0.23 (0.93)	-0.10 (0.96)	30.71	<.001
CBCL	1.21 (1.51)	1.49 (1.44)	0.10 (0.90)	-0.08 (0.94)	36.28	<.001
TCP	0.60 (0.80)	0.79 (1.19)	0.09 (0.99)	-0.05 (0.98)	6.46	<.001
T4						
ASR	1.98 (1.17)	1.18 (1.24)	0.43 (1.01)	-0.16 (0.89)	78.90	<.001

*ADHD symptoms were measured using Youth Self Reports (YSR), Child Behavior Checklists (CBCL) and Teacher's Checklist of Pathology (TCP) at the first (T1), second (T2), and third (T3) assessment waves. At the fourth wave (T4) ADHD symptoms were assessed using the Adult Self Reports (ASR)

A+D: ADHD with depression; A: only ADHD; D: only depression; C: comparisons

Appendix 3.4 Standardized scores of self- (YSR and ASR) and parent-reported (CBCL) depressive symptoms in the four groups across the four assessment time-points

Assessment time points*	Groups [#]				ANOVA	
	A + D Mean (SD)	A Mean (SD)	D Mean (SD)	C Mean (SD)	F	p
T1						
YSR	0.40 (0.94)	0.43 (1.23)	0.35 (1.10)	-0.10 (0.94)	19.80	<.001
CBCL	1.01 (1.30)	0.58 (1.20)	0.28 (1.14)	-0.09 (0.92)	20.76	<.001
T2						
YSR	0.32 (0.97)	0.27 (0.88)	0.57 (1.25)	-0.14 (0.87)	44.53	<.001
CBCL	1.08 (1.42)	0.29 (1.26)	0.38 (1.18)	-0.11 (0.90)	27.02	<.001
T3						
YSR	1.02 (1.53)	0.17 (0.94)	0.75 (1.24)	-0.19 (0.81)	79.26	<.001
CBCL	1.01 (1.43)	0.56 (1.16)	0.54 (1.34)	-0.14 (0.83)	40.05	<.001
T4						
ASR	1.55 (1.20)	0.37 (1.20)	0.79 (1.17)	-0.22 (0.80)	117.78	<.001

*Symptoms of depression were measured using Youth Self Reports (YSR) and Child Behaviour Checklists (CBCL) at the first (T1), second (T2), and third (T3) assessment waves and Adult Self Reports (ASR) at the fourth wave (T4)

A+D: ADHD with depression; A: only ADHD; D: only depression; C: comparisons

Appendix 4.1 Standardized scores of self- (YSR and ASR), parent- (CBCL) and teacher-reported (TRF) ADHD symptoms in the four groups across the four assessment time-points

Assessment time points*	Groups [#]			
	C Mean (SD)	A Mean (SD)	D Mean (SD)	A + D Mean (SD)
T1				
YSR	-0.09 (0.97)	0.83 (1.10)	0.15 (0.92)	0.72 (1.20)
CBCL	-0.08 (0.96)	1.02 (0.99)	0.02 (0.94)	1.15 (1.25)
TRF	-0.02 (0.98)	0.61 (1.18)	-0.02 (0.97)	0.39 (1.09)
T2				
YSR	-0.09 (0.96)	0.85 (1.07)	0.13 (0.94)	1.00 (1.18)
CBCL	-0.07 (0.95)	1.09 (1.10)	-0.01 (0.94)	1.18 (1.06)
TRF	-0.04 (0.97)	0.78 (1.12)	0.01 (0.98)	0.45 (1.06)
T3				
YSR	-0.11 (0.96)	0.95 (1.01)	0.19 (0.94)	0.96 (1.21)
CBCL	-0.10 (0.92)	1.22 (1.30)	0.07 (0.93)	1.34 (1.18)
TRF	-0.08 (0.96)	0.80 (1.18)	0.11 (1.02)	0.52 (0.93)
T4				
ASR	-0.17 (0.89)	1.06 (1.08)	0.40 (1.03)	1.53 (1.14)

*ADHD symptoms were measured using Youth Self Reports (YSR), Child Behaviour Checklists (CBCL) and Teacher Report Forms (TRF) at the first (T1), second (T2), and third (T3) assessment waves. At the fourth wave (T4) ADHD symptoms were assessed using the Adult Self Reports (ASR)

[#]C: comparisons; A: only ADHD; D: only depression; A+D: ADHD with depression

Appendix 4.2 Standardized scores of self- (YSR and ASR) and parent-reported (CBCL) depressive symptoms in the four groups across the four assessment time-points

Assessment time points	Groups			
	C Mean (SD)	A Mean (SD)	D Mean (SD)	A + D Mean (SD)
T1				
YSR	-0.10 (0.95)	0.46 (1.13)	0.30 (1.07)	0.39 (0.99)
CBCL	-0.10 (0.92)	0.60 (1.23)	0.21 (1.06)	1.10 (1.38)
T2				
YSR	-0.14 (0.88)	0.20 (0.91)	0.52 (1.24)	0.53 (1.12)
CBCL	-0.12 (0.90)	0.33 (1.15)	0.33 (1.14)	1.20 (1.42)
T3				
YSR	-0.19 (0.82)	0.11 (0.87)	0.72 (1.26)	0.86 (1.39)
CBCL	-0.15 (0.84)	0.38 (1.06)	0.47 (1.26)	1.36 (1.55)
T4				
ASR	-0.21 (0.81)	0.21 (1.03)	0.77 (1.18)	1.27 (1.17)

*Symptoms of depression were measured using Youth Self Reports (YSR) and Child Behaviour Checklists (CBCL) at the first (T1), second (T2), and third (T3) assessment waves and Adult Self Reports (ASR) at the fourth wave (T4)

C: comparisons; A: only ADHD; D: only depression; A+D: ADHD with depression

Appendix 5.1 Cox regression estimates of the effect of ADHD symptoms on depression onset before and after adjusting for peer dislike and victimisation and controlling for gender, disruptive behaviours and anxiety

Covariate	B (SE)	<i>p</i>	Wald χ^2	Hazard Ratio	95% CI
Model 1					
ADHD	0.54 (0.19)	0.005	8.03	1.72	1.18 to 2.49
ADHD*time	-0.12 (0.06)	0.065	3.40	0.89	0.79 to 1.01
Model 2					
ADHD	0.51 (0.19)	0.008	7.13	1.67	1.15 to 2.43
ADHD*time	-0.12 (0.06)	0.069	3.30	0.89	0.79 to 1.01
Peer dislike	0.20 (0.10)	0.038	4.31	1.22	1.01 to 1.47
Model 3					
ADHD	0.50 (0.19)	0.010	6.61	1.65	1.13 to 2.41
ADHD*time	-0.10 (0.06)	0.125	2.35	0.91	0.80 to 1.03
Victimisation	0.35 (0.14)	0.010	6.55	1.42	1.09 to 1.85
Victimisation*time	-0.16 (0.08)	0.032	4.59	0.85	0.73 to 0.99
Model 4					
ADHD	0.48 (0.19)	0.013	6.20	1.62	1.11 to 2.37
ADHD*time	-0.10 (0.06)	0.124	2.37	0.91	0.80 to 1.03
Peer dislike	0.21 (0.10)	0.039	4.24	1.24	1.01 to 1.52
Victimisation	0.27 (0.15)	0.066	3.39	1.31	0.98 to 1.75
Victimisation*time	-0.17 (0.08)	0.029	4.78	0.84	0.72 to 0.98

Appendix 5.2 Gender differences in Cox regression estimates of the effect of ADHD symptoms on depression onset before and after adjusting for peer dislike and victimisation and controlling for disruptive behaviours and anxiety

Covariate	Girls			Boys		
	B (SE)	p	HR	B (SE)	p	HR
Model 1						
ADHD	0.57 (0.22)	0.01	1.77	0.55 (0.40)	0.17	1.72
ADHD*time	-0.14 (0.07)	0.06	0.87	-0.09 (0.12)	0.48	0.92
Model 2						
ADHD	0.53 (0.22)	0.01	1.69	0.54 (0.41)	0.19	1.72
ADHD*time	-0.14 (0.08)	0.07	0.87	-0.09 (0.13)	0.46	0.91
Peer dislike	0.23 (0.12)	0.04	1.26	0.24 (0.18)	0.19	1.27
Model 3						
ADHD	0.52 (0.23)	0.02	1.68	0.58 (0.44)	0.19	1.79
ADHD*time	-0.13 (0.08)	0.10	0.88	-0.09 (0.13)	0.45	0.91
Victimisation	0.33 (0.24)	0.17	1.39	0.50 (0.19)	0.009	1.66
Victimisation*time	-0.10 (0.10)	0.32	0.90	-0.29 (0.14)	0.045	0.75
Model 4						
ADHD	0.49 (0.22)	0.02	1.63	0.57 (0.45)	0.20	1.77
ADHD*time	-0.12 (0.08)	0.12	0.89	-0.10 (0.13)	0.44	0.90
Peer dislike	0.23 (0.12)	0.06	1.26	0.27 (0.20)	0.18	1.31
Victimisation	0.25 (0.26)	0.34	1.28	0.43 (0.21)	0.04	1.53
Victimisation*time	-0.11 (0.11)	0.31	0.90	-0.30 (0.15)	0.04	0.74

Table II Overview of all included studies on the associations of ADHD with peer problems and of peer problems with depression

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Abada et al. (2008)	To determine effects of victimisation on mental health of adolescents	Prospective	1742 children from a population based cohort aged 12-13 years at baseline and including both genders	Self-reports of verbal and physical victimisation	Symptoms of depression assessed with the self-reports (CES-D)	Harassment at school was associated with poor mental health and depression, especially in girls
Andrade et al. (2008)	To assess the relationship between social difficulties and sustained/selective attention in clinic-referred children with attention problems	Cross-sectional	101 participants (82 boys, 19 girls) aged 6 to 12 years including children with ADHD, attention problems, and neither ADHD nor attention problems	Teacher-reported social problems (CRS-Revised)	DSM-IV diagnoses of ADHD	Social problems were associated with both selective and sustained attention. Results were more robust for sustained attention
Andrade and Tannock (2013)	To determine associations of hyperactive-inattentive symptoms with peer problems and their mediators	Cross-sectional	Population-based sample of 500 children (245 boys, 255 girls) aged 6-9 years	Parent and teacher reports of social behaviours and peer problems (SDQ)	Parent and teacher rated symptoms of ADHD based on DSM-IV-TR criteria	Hyperactive and inattentive symptoms were associated with peer problems. Conduct problems and pro-social behaviours mediated these relationships
Asher and Wheeler (1985)	To compare loneliness in rejected and neglected children	Short-term prospective with follow-up at 1 week	200 children (89 girls, 111 boys) between third and sixth grade of school	Sociometric measures of peer acceptance, rejection and neglect	Symptoms of loneliness assessed by self-reports	Rejected children were more lonely than neglected children

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Auerbach et al. (2010)	To assess the relationships between social support, stress and depressive outcomes in adolescents	Prospective	258 adolescents aged 12-18 years at baseline (110 boys, 148 girls)	Self-reported social support (SSSCA)	Self-reported symptoms of depression (CES-D)	Interpersonal stress mediates the relationship between social support and depressive symptoms
Bagwell et al. (2001)	To determine the association between childhood ADHD and peer-relationships in adolescence	Cross-sectional	211 participants (202 boys, 9 girls) aged 13-18 years including adolescents with (n=111) and without (n=100) ADHD	Self-reported peer acceptance, friendship, and characteristics of friends; parent-reported peer rejection (CBCL)	DSM-III-R or DSM-IV diagnoses of ADHD by parent and teacher reports (DBDRS; DISC)	Childhood ADHD predicts impairments in peer relations at adolescence
Barchia and Bussey (2010)	To determine factors that mediate the relationship between victimisation and depression	Prospective	1285 children (593 boys, 692 girls) with a mean age of 14.9 years at baseline	Self-reports of physical, verbal and relational victimisation	Symptoms of depression assessed with the CES-D	Rumination mediated the relationship between victimisation and depression
Bauermeister et al. (2005)	To distinguish between ADHD-C and ADHD-I	Cross-sectional	98 participants (58 boys, 40 girls) aged 6-11 years including children with ADHD-C (n=44), ADHD-I (n=25) and no ADHD (n=29)	Parent- and teacher-reported social skills	DSM-IV diagnoses of ADHD by parent and teacher reports (CBCL; DBDRS; TRF)	Children with ADHD-I were less assertive and less likely to initiate social contact than children with ADHD-C
Becker (2014)	To determine the role of sluggish cognitive tempo in pathways from ADHD to peer	Prospective	176 children (82 boys, 94 girls) with a mean age of 9.17 years	Teacher-reported peer relationships (VADTRS), peer preference (DSAS) and popularity	Teacher-rated symptoms of ADHD (VADTRS) based on DSM-IV criteria	Sluggish cognitive tempo in children with ADHD predicts peer functioning

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	functioning problems			(ICS)		difficulties
Bellanti and Bierman (2000)	To determine the association of inattention with social behaviours and peer relations	Cross-sectional	387 children (195 boys, 192 girls) attending kindergarten	Peer nominations of dislike, aggression and prosocial behaviours; teacher-rated social behaviour (TRF)	Parent- and teacher-reported inattention (CBCL; TRF)	Inattention was associated with problems in social behaviour and peer difficulties
Berry et al. (1985)	To compare and differentiate between girls and boys with ADHD	Cross-sectional	228 participants (164 boys, 64 girls) aged 7-14 years including 134 clinic-referred children with ADHD and 94 children with no ADHD	Parent and teacher-reported social behaviour	DSM-III diagnoses of ADD with or without hyperactivity	Both girls and boys with ADHD showed peer problems and aggressive peer-interactions. Girls faced greater peer rejection than boys
Biederman et al. (1998)	To assess normalisation of functioning in clinic-referred boys with persistent ADHD	Prospective	166 boys aged 6-17 years with persistent (n=85), remittent (n=13) and no ADHD (n=68)	Parent and self-reported peer interactions, social behaviours, and social functioning (SAICA)	DSM-III-R diagnoses of ADHD	Social functioning worsened with time in persistent ADHD, irrespective of baseline social functioning
Biederman et al. (2004)	To determine the associations between executive dysfunction and functional outcomes in children with ADHD	Cross-sectional	484 clinic-referred children (224 boys, 260 girls) with (n=259) and without ADHD (n=225) (including both genders) aged 6-17 years	Maternal reports of social functioning (SAICA)	DSM-III-R diagnoses of ADHD based on maternal reports and interviews	In children with ADHD, no social functioning differences were found between those with and without executive dysfunction
Blachman and	To compare	Short-term	228 participants	Sociometric	DSM-IV diagnoses of	Girls with ADHD

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Hinshaw (2002)	friendship patterns between girls with and without ADHD	prospective study with a follow-up period of 5 weeks	aged 6-12 years including 140 clinic-referred girls with ADHD and 88 comparison girls	measures of positive and negative peer regard, and friendship	ADHD based on parent and teacher reports (SNAP; DISC)	(esp. those with ADHD-C) had fewer friendships than girls without ADHD
Blechman et al. (1986)	To assess the relationships of social and academic competence with depression		169 children (82 boys, 87 girls) between third and sixth grade of school	Sociometric measures of peer status; self-reported social competence (HSPPC)	Symptoms of depression assessed with peer nominations and self-reports (CDI-Modified)	Happiness was higher in socially competent children than in academically competent children
Bogart et al. (2014)	To determine the prospective association of peer victimisation with mental health	Prospective	4297 children (2105 boys, 2192 girls) with a mean age of 11.1 years at baseline	Self-reported victimisation (PEQ)	Self-reported depressive symptoms based on DSM-IV criteria (DISC)	Both current and past victims of bullying were more likely to develop depressive symptoms than children not victimised
Boivin et al. (1995)	To assess the relationship of peer rejection, victimisation and social withdrawal with depression and loneliness in childhood	Prospective	567 children (279 boys, 288 girls) aged 9-12 years at baseline	Sociometric measures of victimisation and peer status; peer assessments of social behaviours	Self-reported depressive symptoms (CDI); symptoms of loneliness (LSDQ)	Feelings of loneliness in socially withdrawn children were mediated by victimisation and poor peer status. Loneliness in turn predicted depression
Boivin et al. (1994)	To assess depression in peer rejected children	Cross-sectional	214 children (104 boys, 110 girls) with a mean age of 9	Sociometric measures of peer status, rejection,	Assessment of depressive symptoms with self-reports	Both aggressive-rejected and withdrawn rejected

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
			years	neglect and social behaviours	(CDI; DDPCA; LSDQ)	children showed symptoms of depression
Bond et al. (2007)	To determine associations between social relationships and mental health in adolescents	Prospective	2400 children (1124 boys, 1276 girls) aged 13-14 years at baseline	Self-reports of social connectedness and victimisation	Depressive symptoms assessed using the CIS	Poor social relationships at school predicted mood problems
Bond et al. (2001)	To assess the relationship of victimisation with depressive symptoms in young adolescents	Prospective	2680 adolescents (including both boys and girls) aged 13 years at baseline	Self-reports of victimisation and social relations (Interview schedule for social interaction)	Self-reported depressive symptoms assessed with the revised CIS	Recurrent victimisation predicted depressive symptoms, especially in girls
Braet et al. (2013)	To assess the relationships of peer problems and depressogenic cognitions on depressive outcomes	Prospective	228 adolescents (147 boys, 81 girls) aged 12-18 years	Self and parent-reports of peer rejection and victimisation	DSM-IV based diagnoses of depression (SCID); self (YSR) and parent-reported (CBCL) depressive symptoms	Early life peer problems led to the development of depressogenic cognitions in late adolescence and further on to depression
Brendgen et al. (2010)	To understand the relationship of different friendship types with depressed mood	Prospective	201 children (93 boys, 108 girls) aged 11 at baseline	Peer nominated friendship ratings	Depressive symptoms assessed with the CDI	Compared to friendless adolescents, those with non-depressed friends were less depressed, whereas those with depressed friends were more depressed

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Buhs and Ladd (2001)	To understand mediators of the relationship between peer rejection and emotional adjustment	Short-term prospective	399 children (202 boys, 197 girls) with a mean age of 5.5 years	Sociometric measures of peer acceptance, rejection and victimisation; behaviour observations	Assessment of loneliness (LSDQ)	Negative peer treatment and reduced classroom participation mediated the relationship between rejection and loneliness
Bukowski et al. (2010)	To assess if friendship moderates the relationship between peer problems and depression	Prospective	231 children (101 boys, 130 girls) in first-grade of school	Sociometric measures of peer avoidance, exclusion and friendship	Peer nominations of depression	Peer avoidance and exclusion was associated with depression. Friendship moderated these relationships
Cardoos and Hinshaw (2011)	To determine the moderating effects of friendship on pathways from behavioural problems and victimisation in girls with ADHD	Short-term prospective with follow-up at 1, 3 and 5 weeks	228 girls aged 6-12 years including those with (n=140) and without (n=88) ADHD	Sociometric measures of friendship and victimisation; parent reported social competence (CBCL)	DSM-IV diagnoses of ADHD based on parent and teacher reports (SNAP; CBCL; TRF; DISC)	Poor social competence predicted victimisation in girls with ADHD. Friendships reduced the risk for victimisation
Carlson et al. (1997)	To differentiate between girls and boys with disruptive behaviour problems	Cross-sectional	508 participants (362 boys, 146 girls) with a mean age of 7.83 years including children with ADHD-C (n=57), ODD (n=94), ADHD-C plus comorbid ODD	Teacher reports of social functioning	DSM-IV diagnoses of ADHD based on teacher reports (TRF)	Girls with disruptive behaviour problems faced greater peer difficulties than boys

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
			(n=103) and healthy controls (n=254)			
Casement et al. (2014)	To determine neural mechanisms underlying depressive symptoms in girls facing social stress	Prospective	120 girls aged 11-12 years at baseline	Self-reports of victimisation (PEQ)	Parent and self-reported depressive symptoms (K-SADS-E)	Early social stressors impaired reward processing and led to depressive symptoms
Chen et al. (2012)	To determine the relationships between peer relationships, aggression and depression	Prospective	1162 children (580 boys, 582 girls) aged 9-12 years at baseline	Sociometric measures of peer acceptance, rejection, friendship and social behaviours; Teacher rated social behaviours (TCRS)	Assessment of depressive symptoms with the CDI	Aggressive behaviours predicted poor peer relations and depression
Chiang and Gau (2014)	To assess the effects of executive functioning on peer problems in children with persistent ADHD	Cross-sectional	635 participants (525 boys, 110 girls) aged 8-18 years, including 511 clinic referred children with ADHD and 124 children with no ADHD	Parent reports of peer interactions and peer problems (SAICA)	DSM-IV diagnoses of ADHD based on parent and self-reports (K-SADS-E)	A diagnosis of ADHD was associated with peer problems. Deficits in working memory and planning abilities increased the risk of peer problems in children with ADHD
Ciairano et al. (2007)	To assess the patterns of friendships, psychological adjustment and	Prospective	622 adolescents (299 boys, 323 girls) aged 14-20 years	Self-reports and sociometric assessments of friendships, peer relations and self-	Self-reports of depressive symptoms	Reciprocal friendships protect from development of aggressive behaviours

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	antisocial behaviour in adolescents			reported social behaviours		
Cole (1990)	To assess the relationship between social competence and depression in childhood	Cross-sectional	750 children (383 boys, 367 girls) in the fourth grade of school	Sociometric and teacher reported peer acceptance and rejection	Depressive symptoms assessed using the CDI; teacher rated depressive symptoms based on the DSM-III-R	Socially competent children were less depressed than those non-competent
Cole (1991)	To assess if depression is influenced by competency in social, academic, sport, physical attractiveness and conduct domains	Cross-sectional	1422 children (712 boys, 710 girls) with a mean age of 9.3 years	Sociometric measures of social competence	Symptoms of depression assessed with the CDI	Poor social competence was associated with symptoms of depression
Cole et al. (1996)	To assess causal relationships between social/academic competence and depression	Prospective	945 children (480 boys, 465 girls) aged 8.37-11.36 years	Self-reported (HSPPC), parent-reported and peer nominated measures of social competence	Assessment of depressive symptoms using the CDI-self and parent-reported; sociometric and teacher-reported measures of depressive symptoms	Poor social competence predicted depression, but depression did not predict poor social competence
Cole et al. (1997)	To assess the relationship between self-perceived competency and depression in children	Prospective	617 children aged 8-13 years including both boys and girls	Self-perceived social acceptance (HSPPC); sociometric measures of social status and competence	Depressive symptoms assessed with the CDI	Self-perceived social competence was associated with changes in depressive symptoms for both boys and girls
Comiskey et al.	To determine	Cross-sectional	552 children (276	Self-reports of	Depressive symptoms	Social support and

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
(2012)	epidemiological and socioeconomic factors associated with childhood depression		boys, 276 girls) aged 4-12 years	social support and peer relations (Kidscreen-27)	assessed with the CDI-short version	peer relations were predictors of childhood depression
Connors et al. (2012)	To determine the association between inattention and peer problems	Prospective	1532 children (758 boys, 774 girls) aged 10-11 years	Self-reports of victimisation and quality of peer relationship	Self and parent-reported inattention using a 3-item questionnaire (rated on a 3-point scale)	Inattention predicted victimisation and a poor quality of peer relationships
Crick and Nelson (2002)	To assess gender differences in victimisation by friends and its relationship to psychological adjustment	Cross-sectional	496 children (244 boys, 252 girls) between fourth and sixth grade of school	Sociometric measures of peer acceptance, rejection and friendship; Self-reports of victimisation and social anxiety (Franke and Hymel social anxiety scale)	Assessments of internalising problems with teacher (CBCL) and self-reports (Weinberger adjustment inventory-short form); self-reported symptoms of loneliness (AWLS)	Relational victimisation was more common in girls whereas physical victimisation was more common in boys. Both forms of victimisation were associated with internalising problems
Crick et al. (2006)	To assess the relationship between social aggression and psychological adjustment	Prospective	224 children (111 boys, 113 girls) in third and fourth grades of school	Crick et al. (2006)	To assess the relationship between social aggression and psychological adjustment	Prospective
de Moura et al. (2011)	To determine the prevalence of victimisation in school-age children	Cross-sectional	1075 students aged 6-18 years, including boys (n=566)and girls (n=509)	Self-reported victimisation	Symptoms of hyperactivity assessed with self and parent reports (SDQ)	Children with hyperactivity were likely to be victimised
Deane and Young	To assess adolescent	Retrospective	4 girls with ADHD	Interpretations of	Teacher and parent	Girls with ADHD

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
(2014)	functioning in girls with ADHD and conduct disorders (CD)		and comorbid CD and 4 girls with neither ADHD nor CD, aged 13-16 years	audio-taped interviews on social-skills, peer support and victimisation	rated symptoms of hyperactivity (Rutter questionnaires)	and CD faced victimisation and had poor peer support. These children also faced developmental barriers, coping abilities to which were poor
Desjardins and Leadbeater (2011)	To determine moderators of the associations between relational victimisation and depression	Prospective	540 adolescents (246 boys, 294 girls) between 12-19 years at baseline	Self-reported victimisation (SEQ) and peer emotional support (perceived social support from friends scale)	Assessment of depressive symptoms with self-reports (BCFPI)	Relational victimisation was associated with depressive symptoms. Emotional support from peers moderated this relationship
Diamantopoulou et al. (2005)	To determine the associations between ADHD symptoms and peer relations	Cross-sectional	Population-based sample of 635 children (321 boys, 314 girls) aged 12 years, including both boys and girls	Sociometric measures of social preference and peer status, self-reported loneliness, teacher-reported prosocial behaviour (Social initiative scale)	Teacher-rated ADHD symptoms based on DSM-IV criteria (ARS-IV)	ADHD symptoms were associated with peer dislike. Peers were more likely to tolerate ADHD symptoms in boys than girls
Diamantopoulou et al. (2007)	To determine the associations of ADHD symptoms and executive functioning with social adjustment	Prospective	Population-based sample of 112 children (50 boys, 62 girls) aged 8 years	Sociometric measures of peer preference	Parent and teacher rated ADHD symptoms based on DSM-IV criteria (ARS-IV)	ADHD symptoms predicted poor social functioning

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Efron et al. (2014)	To compare peer function of children with and without ADHD and further assess gender and ADHD subtype differences in associations	Cross-sectional	391 participants (259 boys, 132 girls) aged 6-8 years including 179 children with ADHD (93 combined type, 64 inattentive type, and 22 hyperactive-impulsive type) and 212 children without ADHD	Parent and teacher reports of peer problems and social functioning (SDQ)	DSM-IV diagnoses of ADHD based on parent reports (DISC-IV)	Children with ADHD had more peer problems than those without ADHD. Parent but not teacher reported peer problems were higher in boys with ADHD than girls. Social functioning did not differ by subtype
Elkins et al. (2011)	To assess adjustment in children with ADHD and further determine gender differences	Cross-sectional	Population-based sample of 998 children (479 boys, 519 girls) aged 12 years with (n=253) and without (n=745) ADHD	Self-reported victimisation and popularity, teacher-reports of peer relationships	DSM-IV diagnoses of ADHD based on teacher reports, parent and/or child interviews (DISC-revised)	Girls with ADHD-I had the poorest peer functioning
Erhardt and Hinshaw (1994)	To assess the influence of behaviours on peer outcomes in boys with and without ADHD	Short-term prospective with follow-up at 3 days	49 participants aged 6-12 years including clinic-referred boys with ADHD (n=25) and population drawn comparison boys (n=24)	Sociometric measures of friendship ratings and (social) behaviour observations	DSM-III-R diagnoses of ADHD based on parent reports (CASQ)	Boys with ADHD faced greater peer rejection than those without ADHD. Aggressive behaviour predicted negative peer nominations
Fauber et al. (1987)	To determine associations between social functioning and depressive	Cross-sectional	89 adolescents (39 boys, 50 girls) aged 11-15 years	Self (HSPPC) and teacher (Teacher's rating scale) reports of social	Assessment of depressive symptoms using CDI	Low teacher and self-reported social competence was associated with

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	symptoms in adolescents			competence; Behaviour observations		depressive symptoms
Fekkes et al. (2004)	To determine the associations between involvement in bullying and depression	Cross-sectional	2766 children (1370 boys, 1384 girls, and 12 gender not known) aged 9-12 years	Self-reports of bullying and victimisation	Self-reported symptoms of depression (Short form depression questionnaire for children)	Victims and bully victims had higher chances of depression than children not involved in bullying
Fekkes et al. (2006)	To assess if victimisation precedes mental health problems or vice-versa	Prospective	1118 children aged 9-11 years including both genders	Self-reported bullying and victimisation (Olweus bully/victim questionnaire)	Self-reported symptoms of depression and anxiety (KIVPA and short depression inventory for children)	Victimisation increased risk for anxiety and depression. Symptoms of depression and anxiety in turn increased risk for being newly victimised
Fine et al. (2008)	To assess differences in social perception among typically developing children, children with ADHD, and children with autistic spectrum disorders (ASD)	Cross-sectional	Clinic referred children (N=86) with ADHD (n=30), ASD (n=37) and typically developing controls (n=19) aged 6 – 15 years, including both boys (n=59) and girls (n=27)	Assessments of child's perceptions of social situations using the CASP	DSM-IV diagnoses of ADHD (diagnoses were confirmed using the Behaviour Rating Scale for Children)	Symptoms of inattention were associated with poor interpretations of social interactions
Fite et al. (2014)	To assess the moderating effects of peer relationships	Prospective	289 adolescent boys with a mean age of 16 years	Self-reported peer rejections (YSR) and social	Self-reports of depressive symptoms (YSR, ASR)	Socially aggressive behaviours predicted

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	in pathways from social aggression to depression amongst boys			behaviours (RPAQ)		depressive symptoms. These relationships were mediated by peer rejection
Fleming and Jacobsen (2009)	To determine the associations between bullying and depression in middle school students	Cross-sectional	8131 adolescents (3962 boys, 4084 girls) aged 13-15 years	Self-reports of bullying and victimisation	Self-reported measures of depressive symptoms	Boys were more likely to report victimisation, while girls were more likely to report depression following victimisation
Fontaine et al. (2009)	To assess the role of loneliness as a mediator of the relationship between social preference and depression	Prospective	585 kindergarten aged children (304 boys, 281 girls)	Sociometric measures of peer acceptance and rejection	Parent (CBCL), teacher (TRF), and self-reported (YSR) anxious/depressed symptoms; self-reports of loneliness (LSDQ)	Loneliness partly mediated the relationship between low social preference and anxious/depressed symptoms in adolescence
Frankel and Feinberg (2002)	To assess social problems in children with ADHD and oppositional defiant disorder (ODD) who were referred for friendship problems	Cross-sectional	95 children (77 boys, 18 girls) referred to the clinics for friendship problems aged 6-12 years including participants with ADHD (n=20), ODD (n=14), ADHD plus ODD (n=30), and neither	Parent reported measures of social skills	DSM-III-R diagnoses of ADHD	A diagnosis of ADHD was associated with high disruptive behaviour and low resistance to provocation

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
			ADHD nor ODD (n=31)			
Gibb et al. (2012)	To determine the relationship between victimisation and depressogenic inferential styles	Prospective	100 children (41 boys, 59 girls) aged 8-12 years at baseline	Self-reported peer victimisation (SEQ)	Self-reported depressive symptoms assessed with the CDI	Peer victimisation increased cognitive vulnerability to depression
Goodyer and Altham (1991)	To determine the relative contributions of friendship difficulties, family adversities and lifetime exit events to anxiety and depression	Cross-sectional	100 clinic referred children (including both boys and girls) and 100 age and gender matched controls	Self-reports of friendship; parent and teacher reported social competence	DSM-III based diagnoses of depression and anxiety	All three factors (friendship difficulties, family adversities and lifetime exit events) were associated with anxiety and depression
Goodyer et al. (1991)	To understand the influence of social relationships on developmental courses of depression	Prospective	49 participants (23 boys, 26 girls) including children with anxiety (n=21) and depression (n=28) with a mean age of 13.1 years at baseline	Parent reports of social competence and friendships	DSM-III based diagnoses of depression	Lack of friendships predicted poor recovery from depression
Goodyer et al. (1997)	To assess if any pattern of social characteristics predict depression	Short-term prospective with follow up at 36 weeks	68 clinic referred children (including both boys and girls) between 8-16 years of age	Self and parent reported friendships	DSM-III-R based diagnoses of depression with self and parent reports (K-SADS-E)	A lack of friendships predicted depression in children
Goodyer et al. (1989)	To assess peer relationships of children with	Cross-sectional	200 participants (98 boys, 102 girls) including clinic-	Self and parent reported friendship quality	Self-reported symptoms of depression	Pre-pubertal children with poor friendships showed

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	depression		referred children with emotional disorders (n=100) aged 8-16 years as well as age and gender matched controls (n=100)			depressed-anxious symptoms while post-pubertal children with poor friendships showed only depressive symptoms
Goodyer et al. (1990a)	To assess the relationship of social achievements and friendship difficulties with depression	Cross-sectional	200 participants (98 boys, 102 girls) including clinic-referred children aged 7-16 years as well as age and gender matched controls (n=100)	Self-reports of friendship difficulties	Assessment of depression with self and parent reports (Rutter's A2 questionnaire)	Interactions between a lack of social achievement and friendship difficulties were associated with depression
Goodyer et al. (1990b)	To compare the effects of undesirable events and friendship quality on symptoms of depression	Cross-sectional	200 participants (98 boys, 102 girls) including clinic-referred children aged 7-16 years as well as age and gender matched controls (n=100)	Self and parent reported friendship quality	Assessment of depression with self and parent reports (Rutter's A2 questionnaire)	Undesirable events and friendship quality exerted independent effects on the risk for depression
Greene et al. (2001)	To assess social functioning in clinic referred girls with ADHD	Cross-sectional	Girls with (n=127) and without (n=114) ADHD. For some analyses a comparative sample of boys with (n=140) and without (n=120) ADHD was also included (N=501).	Parent reported measures of peer difficulties and social competence	DSM-III-R diagnoses based on parent interviews (K-SADS-E)	Girls with ADHD had a poorer social functioning than girls without ADHD. No differences in social impairments were found between girls and

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Gregory et al. (2007)	To determine associations among interpersonal cognitions, anxiety and depression	Cross-sectional	300 pairs of 8 year old twins (261 boys, 337 girls, and two children with unknown gender)	Self- and peer-reported perceptions of social support; Self-reported social behaviour (CESBQ)	Assessment of depressive symptoms with CDI and anxiety symptoms with the screen for childhood anxiety-related emotional disorders	boys with ADHD Interpersonal cognitions were more strongly correlated with depression than with anxiety
Gresham et al. (1998)	To assess peer problems in children with inattention and/or hyperactivity symptoms and comorbid conduct problems	Prospective	231 students (133 boys, 98 girls) in the third grade including children with symptoms of hyperactivity and/or inattention plus comorbid conduct problems (n=25), internalising or externalising problems (n=105), and controls (n=101)	Peer nominated measures of friendship, social preference and social impact; teacher rated social skills and behaviours; self-reported loneliness; self-perceived social standing	Participant groups (with hyperactivity or inattention) were defined based on the problem behaviour subscale of the SSRS-teacher reports	Children with symptoms of inattention and/or hyperactivity along with comorbid conduct problems faced worse peer problems than children with other internalising or externalising symptoms
Hankin et al. (2007)	To determine sex differences in adolescent depression	Prospective	538 children (245 boys, 293 girls) aged 13-18 years	Self-reported social functioning and stressful peer interactions	Assessment of depressive symptoms with self (CDI) and parent reports (CES-D)	Girls showed higher depressive symptoms than boys. Gender differences in depression were due to higher stressful peer interactions in girls than in boys
Hanley and Gibb	To assess the impact	Prospective	448 children (188	Self-reported	Self-reported	Verbal

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
(2011)	of verbal victimisation on feelings of hopelessness		boys, 260 girls) with a mean age of 9.77 years at baseline	victimisation (Emotional abuse subscale of the childhood trauma questionnaire)	symptoms of depression (CDI) and feelings of hopelessness (Children's hopelessness scale)	victimisation predicted feelings of hopelessness independent of concurrent depression
Hill et al. (2014)	To determine factors that predict escalation of subthreshold depressive symptoms to major depressive disorders (MDD)	Prospective	424 adolescents (178 boys, 246 girls) aged 14-18 years at baseline	Self-reported peer support	Self-reported symptoms of depression (BDI) and DSM-III-R or DSM-IV diagnoses of depression with self-reports (K-SADS; SCID)	Poor friend support predicted the development of MDD. Amongst children with fewer friends, those with added anxiety were more likely to progress to MDD
Hinshaw and Melnick (1995)	To assess the mechanisms underlying peer problems in clinic-referred boys with ADHD	Short-term prospective with follow-up between 1 to 6 weeks	181 boys aged 6-12 years including clinic-referred participants with ADHD (n=101) and a population-drawn comparison sample without (n=80) ADHD	Sociometric assessments of peer acceptance and rejection; parent and teacher reports of peer status; observations of children's (social) behaviour	DSM-III-R diagnoses of ADHD based on parent reports (CBCL; CASQ) and interviews	Boys with ADHD were more likely to accept other children with ADHD as their peers. Amongst those with ADHD, aggressive behaviours predicted worse social outcomes
Hinshaw (2002)	To assess and compare peer problems in girls with ADHD-C, ADHD-I, and no ADHD	Short-term prospective with follow-up at 1, 3 and 5 weeks	228 girls aged 6-12 years with ADHD-C (n=93), ADHD-I (n=47) and no ADHD (n=88)	Sociometric measures of peer acceptance and rejection; investigator ratings of social	DSM-IV diagnoses of ADHD based on parent and teacher reports (SNAP; CBCL; TRF; DISC)	Girls with ADHD-I faced more social isolation but less rejection than those with ADHD-C

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Hinshaw et al. (2006)	To assess long term impairments in adolescent girls with a childhood diagnosis of ADHD	Prospective	228 girls with (n=140) or without (n=88) ADHD aged 6-12 years at baseline	behaviours; behaviour observations Parent and teacher reported social skills (SSRS; SRQ; DSPS) and self-reports of social relationships and social standing	DSM-IV diagnoses of ADHD based on parent and teacher reports (DISC; SNAP-IV; CBCL, TRF)	Girls with a childhood diagnosis of ADHD showed worse social functioning in adolescence than those without a childhood diagnosis of ADHD
Hodges et al. (1999)	To determine the relationships between victimisation, friendship and internalising or externalising behaviours	Prospective	393 children (188 boys, 205 girls) with a mean age of 11 years at baseline	Sociometric measures of victimisation and friendship	Teacher reported internalising and externalising problems (Rutter's children's behavioural questionnaire)	Victimisation predicted increases in internalising behaviours but only for children without a mutual best friendship
Hodgens et al. (2000)	To assess peer functioning differences among boys with ADHD-I, ADHD-C, and nonclinical controls	Cross-sectional	85 boys aged 8-11.5 years including clinic referred participants with ADHD-I (n=15), ADHD-C (n=15) and population drawn controls (n=55)	Sociometric measures of peer interactions; behaviour observations of play groups	DSM-III-R based assessments of ADHD symptoms using teacher reports (CBCL)	Boys with ADHD-I showed social withdrawal whereas boys with ADHD-C showed aggressive behaviours
Hoglund and	To assess the	Prospective	461 children (226	Sociometric	Self-reports of	Socially aggression

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Chisholm (2014)	pathways from peer relationship problems and socially aggressive behaviours to internalising problems		boys, 235 girls) with a mean age of 6.87 years	measures of peer rejection, socially aggressive behaviours; self-reported victimisation	depressive and anxious symptoms (Behaviour assessment system)	led to anxious and depressed symptoms through the development of peer exclusion. Depression and
Hoza et al. (1993)	To compare self-perceptions of social functioning between boys with and without ADHD	Cross-sectional	Clinic referred boys with (n=27) ADHD and non-referred boys without ADHD (n=25) aged 8.5-13 years (N=52).	Self-reports of perceived social competence (HSPPC; Peer social attribution questionnaire)	DSM-III-R diagnoses of ADHD based on parent and teacher interviews (CRS; DBDRS)	Boys with ADHD had positive perceptions of their social functioning
Hoza et al. (2005a)	To assess and compare peer functioning in children receiving treatments for ADHD	Prospective	285 children with ADHD (226 boys, 59 girls) aged 7-10 years at baseline and 2232 classmates without ADHD (1771 boys, 461 girls)	Sociometric measures of peer preference, dislike, and friendship	DSM-IV based diagnoses of ADHD-combined type	No differences in social functioning were found among groups of children receiving medications, behavioral therapy, a combination of the two treatments, and community care
Hoza et al. (2005b)	To compare peers preferences and relationships of children with and without ADHD	Cross-sectional	165 children with ADHD (130 boys, 35 girls) aged 7-10 years and 1298 classmates (1026 boys, 272 girls) without ADHD. Total N=1463	Sociometric measures of peer preference, dislike and friendship	DSM-IV based diagnoses of ADHD-combined type	Those with ADHD disliked other children with ADHD while preferring popular classmates

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Hoza et al. (2010)	To assess self-perceptions of social standing in children with ADHD	Prospective	513 children with ADHD aged 8-13 years and 284 comparison peers (including both genders)	Self and teacher-reports of peer acceptance (HSPPC)	DSM-IV based diagnoses of ADHD-combined type	Children without ADHD showed a greater decrease in social perception biases with age than children with ADHD.
Hubbard and Newcomb (1991)	To assess behaviours of medicated children with ADHD during initial interactions with a peer without ADHD	Cross-sectional	32 clinic referred boys with (n=8) and without (n=24) ADHD aged	Behaviour observations of children with ADHD and without ADHD in free play settings. Interactions of ADHD-normal and normal-normal pairs were assessed	DSM-III-R based assessments of ADHD using teacher and parent versions of the Conner's behaviours checklist	Interactions of ADHD-normal pairs were more solitary and less communicative than normal/normal pairs
Ismail et al. (2014)	To determine correlates of bullying behaviours	Cross-sectional	410 children (200 boys, 210 girls) aged 12 years	Self-reports of bullying behaviours	Symptoms of ADHD assessed with parent and teacher reports based on DSM-IV criteria (CRS)	Children with hyperactive and inattentive symptoms but not combined symptoms showed bullying behaviours
Juvonen et al. (2003)	To determine the psychological problems of bullies, victims and bully-victims	Cross-sectional	1985 children (893 boys, 1092 girls) with a mean age of 11.5 years	Sociometric measures of bullying and victimisation; teacher reports of peer popularity	Self-reported depression (CDI-short form), anxiety (SASA) and loneliness; Teacher reported internalising and externalising	Victimised children were more likely to be depressed, anxious and lonely than bullies. Of all three groups, bully-

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
					problems	victims showed worst adjustment
Kaltiala-Heino et al. (2010)	To understand if bullying predicts depression or vice-versa in adolescents	Prospective	2070 children (903 boys, 1167 girls) aged 15 years	Self-reports of bullying, victimisation and peer neglect	Assessment of depression with self-reports (BDI-short form)	Peer victimisation predicted depression in adolescents.
Kamper and Ostrov (2013)	To determine associations between social behaviours, friendships and depression	Prospective	776 children (391 boys, 385 girls) with a mean age of 10.42 years	Teacher reported behaviours of relational and physical bullying; self-reported friendship quality	Self-reports of depressive symptoms (CDI)	Negative friendship quality mediated the associations between peer aggression and depression
Kistner et al. (2006)	To assess the relationships between perceived peer acceptance and depressive symptoms	Prospective	667 children (304 boys, 363 girls) with a mean age of 9.42 years	Sociometric and self-reported measures of peer acceptance and social status; self-reports of perceived social competence (HSPPC)	Self-reported depressive symptoms (CDI)	Inaccurate perceptions of peer acceptance predicted depressive symptoms
Kochel et al. (2012)	To understand the associations between peer difficulties and depressive problems	Prospective	486 children (244 boys, 242 girls) with a mean age of 9.93 years	Sociometric measures of peer acceptance, rejection and victimisation; self and teacher reports of victimisation	Assessment of depressive symptoms with parent (CBCL) and teacher reports (TRF)	No evidence was found to suggest that peer difficulties increase risk for depression. Victimization mediated the associations between depression and subsequent peer rejection

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Kochenderfer-Ladd and Skinner (2002)	To assess the moderating effects of coping strategy on depressive outcomes in victimised children	Cross-sectional	356 children (179 boys, 177 girls) aged 9-10 years	Sociometric measures of peer acceptance and rejection; teacher-reported social problems (TRF)	Assessment of anxious-depressed symptoms with teacher reports (TRF); self-reported loneliness (LSDQ)	Victimisation was associated with anxious-depressed problems. Seeking social support protected victimised girls, but not boys, from peer problems
Kolko and Pardini (2010)	To assess the effects of pre-treatment ADHD symptoms on outcomes in children with CD and ODD	Prospective	177 children aged 6-12 years including both genders	Parent and teacher reported social problems (CBCL; TRF)	DSM-IV based assessments of ADHD symptoms and diagnoses using parent and child interviews (K-SADS)	Pre-treatment ADHD predicted ODD symptoms and social problems in children
Kornienko and Santos (2014)	To determine moderators of the relationship between friendship networks and depression	Prospective	367 children (189 boys, 178 girls) with a mean age of 11.9 years	Sociometric measures of friendship and popularity	Self-reported depressive symptoms (CDI)	In pathways from peer popularity to depression, fear of negative evaluation was a moderator for boys and a mediator for girls
Kumpulainen et al. (1999)	To assess the relationship between bullying and psychological problems	Prospective	1268 children (646 boys, 622 girls) with a mean age of 8.5 years at baseline	Parent and teacher reports of bullying and victimisation	Self-reported depressive symptoms (CDI)	Involvement in bullying declined with age. Victims had higher depressive problems than bullies or bully-victims
Lacourse et al. (2006)	To determine the childhood	Prospective	1037 kindergarten aged boys from low	Self-reports of peer group	Teacher rated hyperactivity	Hyperactivity in kindergarten boys

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	behaviours that predict deviant peer group affiliations		socioeconomic neighbourhoods	characteristics and teacher-rated social behaviours (SBQ; prosocial behaviour questionnaire)	symptoms using the SBQ	predicted deviant peer group affiliations
Ladd (2006)	To assess relationships among peer difficulties, behaviour problems and psychological maladjustment	Prospective	399 children (206 boys, 193 girls) with a mean age of 5.62 years at baseline	Teacher (TRF, CBS) and self-reported measures of social behaviours; peer nominations and teacher reports of peer acceptance and rejection	Assessment of anxious-depressed symptoms with teacher reports (TRF, CBS)	Both social behaviour problems and peer difficulties increase risk for psychological maladjustment
Lee et al. (2008)	To assess long term adjustments in children with ADHD	Prospective	222 children with (n=96) and without (n=126) ADHD aged 4-6 years at baseline, including both boys (n=176) and girls (n=46)	Teacher-reported peer acceptance, peer rejection, neglect and social skills (DSPS; SSRS)	DSM-III-R diagnoses of ADHD based on parent reports (DISC)	Children with ADHD had a poor social adjustment at adolescence irrespective of improvements in ADHD symptomatology
Lee et al. (2010)	To assess the relationship of social interactions, social competence and cognitive styles with depression in adolescence	Prospective	350 adolescents (159 boys, 191 girls) with a mean age of 14.5 years	Self-reports of perceived social competence (HSPPC); self-reported peer relationships (Network of relationships inventory)	Assessment of depressive symptoms with self-reports (CDI)	The relationship between perceived social competence and depression was mediated by parent, but not peer, interaction problems
Lin et al. (2008)	To determine factors	Cross-sectional	9586 adolescents	Self-reports of peer	Assessment of	Poor peer

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	associated with depression in adolescents		(4673 boys, 4913 girls) with a mean age of 14.7 years	relationships (Adolescent family and social life questionnaire)	depressive symptoms with self-reports (CES-D)	relationships were associated with depression
Lin et al. (2012)	To assess social adjustments in adolescents with ADHD and comorbid tic disorders	Cross-sectional	80 clinic referred children between the ages of 8 and 16 years with ADHD (n=40) and with ADHD plus comorbid tic disorders (n=40), and 40 typically developing age matched controls. Sample included both boys (n=114) and girls (n=6)	Self or parent reports of social functioning (SAICA)	DSM-IV diagnoses of ADHD	The presence of additional tic disorders in children with ADHD did not exacerbate social functioning difficulties
MacPhee and Andrews (2006)	To identify risk factors of early adolescent depression	Cross-sectional	2014 children aged 12-13 years and including both boys and girls	Self-reports of peer acceptance and rejection (Self-description questionnaire)	Assessment of depressive symptoms with self-reports (CES-D)	Poor peer relationships were associated with depressive symptoms
Maedgen and Carlson (2000)	To compare social functioning associated with the ADHD subtypes	Cross-sectional	A total of 47 children (33 boys, 14 girls) aged 8-11 years including those with ADHD-C (n=16), ADHD-I (n=14) and no ADHD (n=17)	Parent, teacher and self-rated social status, functioning, social knowledge (Children's assertiveness behaviour scale; DSPPS) and	DSM-IV diagnoses of ADHD based on parent interviews	Children with ADHD-C showed aggressive behaviours whereas those with ADHD-I showed social passivity

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Marshal et al. (2003)	To assess the effects of deviant peer group affiliations on the risk for substance abuse in adolescents with childhood-diagnosed ADHD	Prospective	242 children with (n=142)and without (n=100) ADHD aged 13-18 years, including both genders	behaviour observations Self-reports of peer group characteristics	DSM-III-R or DSM-IV diagnoses of ADHD based on teacher and parent reports (DBDRS; IOWA Conners; SNAP)	Children with ADHD were more likely to affiliate with deviant peers than those without ADHD.
Martin et al. (2003)	To determine moderators of the relationship between peer popularity and depression	Prospective	63 children (39 boys, 24 girls) between the third and sixth grade of school, including subgroups of unpopular (n=25) and popular (n=38) participants	Sociometric measures of friendship and social competence	Assessment of depressive symptoms with self-reports (CDI)	Placing higher valuations on friendships predicted depressive symptoms in unpopular but not popular children
McLaughlin et al. (2009)	To assess if emotion dysregulation mediates the relationship of victimisation with depression	Prospective	1065 (545 boys, 520 girls) children aged 11-14 years	Self-reported victimisation	Self-reported measures of depressive (CDI) and anxiety symptoms (Multidimensional anxiety scale for children)	Emotional dysregulation mediated the relationship between victimisation (reputational and relational) and anxious-depressed symptoms
Meland et al. (2010)	To understand emotional characteristics and social integration of bullies and victims	Cross-sectional	1237 children (597 boys, 627 girls) aged 11-15 years	Self-reports of bullying and victimisation	Assessment of depressive and anxious symptoms with self-reports based on the WHO-	Victims reported greater depressive and anxiety problems than bullies and children

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Mercer and DeRosier (2008)	To assess the influences of teacher preference, peer rejection and aggressive behaviours on emotional adjustment in childhood	Prospective	1193 children (586 boys, 607 girls) in the third grade of school	Sociometric measures of peer acceptance, dislike and social aggression	Health behaviour in school aged children Self-reports of loneliness (LSDQ), depressive (SMFQ), and anxiety symptoms (Social anxiety scale for children-revised)	not involved in bullying Peer rejection predicted difficult relationships with teachers. Problematic student-teacher relationships were associated with loneliness and depression
Moksnes et al. (2013)	To determine the association of social stress with depression assess gender differences	Cross-sectional	1209 adolescents (586 boys, 617 girls, 6 gender unknown) aged 13-18 years	Self-reports of social relationships and peer status (adolescent stress questionnaire)	Self-reported symptoms of depression	Peer pressure related to school performance in boys and inter-personal relationship problems in girls led to depression
Moore et al. (2014)	To determine the concurrent and prospective associations of aggressive peer behaviours with mental health	Prospective	1590 adolescents aged 14 years at baseline and including both genders	Self-reports of bullying and victimisation	Self-reported depression (BDI) and anxious-depressed symptoms (YSR)	Boys were more likely to be perpetrators of peer aggression while girls were more likely to be victimised. Victimisation predicted anxious and depressive symptoms
Morgan et al.	To determine the	Prospective	160 boys aged 9-12	Observations of	Self-reported	Early social

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
(2013)	associations between peer interactions and depressive symptoms in boys		years	social behaviours; sociometric measures of peer acceptance and dislike; teacher-reported social behaviour (TRF)	depressive symptoms (CDI, K-SADS)	withdrawal in boys predicted depressive symptoms at pre-adolescence
Mikami and Hinshaw (2006)	To assess risk and protective factors of adjustments in girls with ADHD	Prospective	228 girls with (n=140) and without (n=88) ADHD, aged 6-13 years at baseline	Sociometric measures of peer rejection and liking; Teacher reports of social functioning (DSPS); parent reported popularity	DSM-IV diagnoses of ADHD based on teacher and parent reports (CBCL; TRF; SNAP-IV; DISC-IV)	Peer rejection in girls with ADHD predicted poor long term adjustments
Mrug et al. (2004)	To assess the relationship of social behaviours with internalising and externalising problems	Prospective	236 children (105 boys, 131 girls) between third and fifth grade of school	Sociometric and self-reported measures of friendship; peer nominations of social behaviour (Revised class play)	Self-reports of depressive symptoms (CDI) and loneliness (AWLS)	Self-reported friendships with aggressive peers was associated with depressive symptoms
Mrug et al. (2007)	To determine social behaviours of children with ADHD and their effects on peer status	Short term prospective with follow-up at 2, 5 and 8 weeks	268 children with ADHD aged 5-13 years (233 boys, 35 girls)	Sociometric measures of peer rejection and acceptance; observations of social behaviours	DSM-IV- diagnoses of ADHD based on parent and teacher reports and parent interviews (Disruptive behaviour disorder structured parent interview)	Increasing helpful behaviours and following activity rules improves peer status of children with ADHD
Murray-Close et al. (2010)	To understand the developmental processes leading to	Prospective	536 children with ADHD and 284 age matched population	Teacher and self-reported social competence; parent	DSM-IV based diagnoses of ADHD-combined type	Peer problems in children without ADHD may result

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	peer problems in children with ADHD		controls (231 boys, 53 girls) aged 7-10 years at baseline. Total N=820	reports of social behaviour; teacher-reported social skills (SSRS) and peer status (DSAS)		from difficulties in negotiating developmental stages
Nolan et al. (2003)	To assess the relationship between peer rejection and depression in adolescents	Prospective	240 children (110 boys, 130 girls) with a mean age of 11.46 years at baseline	Assessments of peer rejection with self- (YSR, school hassles questionnaire), parent- (CBCL), and teacher-reports (TRF)	Assessment of depressive symptoms with self-reports (revised children's depression rating scale; CDI) and parent reports (CDI)	Rejection predicted depression in adolescents. No evidence was found to suggest that depression predicted rejection.
Normand et al. (2011)	To compare friendship relations of children with and without ADHD	Cross-sectional	133 clinic-referred participants (101 boys, 32 girls) aged 7-13 years including 87 children with ADHD and 46 children with no ADHD and 133 invited friends of the clinic-referred participants	Observations of social behaviours; peer and self-rated dyadic friendships; self-rated friendship satisfaction (FQM)	Parent and teacher reported symptoms of ADHD based on DSM-IV criteria (CARS)	Children with ADHD were likely to be friends with those who had oppositional symptoms or ADHD. Children with ADHD were more likely to be dissatisfied with their peer relationships more dominant in their interactions than other children
Normand et al. (2013)	To assess friendships of children with ADHD prospectively	Prospective	266 participants (101 boys, 165 girls) aged 7-13 years, including 133 clinic-referred	Sociometric assessments of friendships; Self-rated friendship	Parent and teacher reported symptoms of ADHD based on DSM-IV criteria	Symptoms of ADHD predicted poor friendship quality and

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
			children with and 133 children with no ADHD	quality and satisfaction (FQM)	(CARS)	dissatisfaction with friends
Oldehinkel et al. (2007)	To determine associations between social status and depressive problems	Cross-sectional	1046 adolescents (498 boys, 548 girls) with a mean age of 13.52 years	Sociometric measures of peer status (peer affection and achievement)	Assessment of depressive symptoms with self- (YSR) and parent-reports (CBCL) based on the DSM-IV criteria	Low achievement related peer status in boys and affection related peer status in girls was associated with depressive symptoms
Owens et al. (2009)	To assess social adjustments in adolescent girls with a childhood diagnosis of ADHD	Prospective	228 girls with (n=140) and without (n=88) ADHD aged 6-12 years at baseline	Teacher reports of social functioning (SSRS) and peer status (DSAS)	DSM-IV-TR diagnoses of ADHD based on parent interviews (DISC-IV)	Social functioning is poorer in adolescent girls with childhood diagnoses of ADHD than those without ADHD
Panak and Garber (1992)	To determine the associations between aggression, peer rejection and depression in children	Prospective	521 children between the third and fifth grade of school, and including both boys and girls	Sociometric and self-reported measures of peer acceptance and rejection (based on HSPPC); teacher reports of social behaviours (TRF)	Self-reports of depressive symptoms (CDI)	Peer rejection mediated the relationship between aggressive behaviours and depression
Pardini and Fite (2010)	To determine associations between symptoms of ADHD and psychosocial adjustment	Prospective	Population based sample of 1517 boys with a mean age of 10.7 years (SD=2.7)	Parent (CBCL) and teacher (TRF) reported social problems	Symptoms of ADHD assessed with parent interviews (DISC) based on DSM-III and DSM-III-R criteria	Symptoms of ADHD in boys predicted oppositional defiant behaviours, conduct problems

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Paquette and Underwood (1999)	To explore gender differences in social behaviours	Cross-sectional	76 children (39 boys, 37 girls) with a mean age of 13.8 years	Self-reports of social competence (HSPPC) and social behaviours (SEQ)	Self-reported feelings of sadness	and social difficulties Girls with peer problems were more likely than boys to report low global self-worth
Patterson and Stoolmiller (1991)	To assess factors associated with depression in preadolescent boys	Cross-sectional	317 boys in either the fourth grade of school or aged 9-12 years	Teacher reports of peer relationships	Assessment of depressive symptoms with parent, teacher, observer and self-reports	Poor peer relations were associated with depressed mood in preadolescent boys
Pedersen et al. (2007)	To assess relationships between behaviours, peer rejection, friendships, loneliness and depression	Prospective	551 children (301 boys, 250 girls) aged 6-13 years	Sociometric measures of peer rejection and friendships; Parent reports of social withdrawal	Self-reports of depressive symptoms (CDI) and loneliness (LSDQ)	Behaviour problems in childhood led to peer rejection, a lack of friendships and ultimately depressive symptoms by adolescence
Pelkonen et al. (2003)	To assess factors in mid-adolescence that predict depression	Prospective	1648 adolescents (761 boys, 887 girls) aged 16 years at baseline	Self-reports of peer relationships and friendships	Assessment of depressive symptoms with self-reports (BDI-short version)	A lack of close friends predicted depression in late adolescence
Prinstein and Aikins (2004)	To assess the effects of peer rejection on depressive outcomes	Prospective	158 adolescents (61 boys, 97 girls) aged 15-17 years	Sociometric measures of peer acceptance and rejection; self-reported importance of peer status	Assessment of depressive symptoms with self-reports (CDI)	Peer rejected adolescents showed depressive symptoms; especially those who ascribed importance to peer

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Qualter et al. (2010)	To assess the effects of loneliness and social satisfaction with depression	Prospective	296 children (146 boys, 150 girls) aged 5 years at baseline	Sociometric measures of peer acceptance and rejection	Self-reports of depressive symptoms (DDPCA)	status or had depressogenic attributional styles Peer -related loneliness but not peer acceptance predicted depression
Qualter et al. (2013)	To determine the trajectories of loneliness and their predictors and outcomes	Prospective	586 children aged 7-17 years and including both boys and girls	Sociometric measures of peer acceptance and rejection; observations of social behaviours	Self-reported symptoms of depression (CES-D), loneliness (Loneliness and aloneness scale for children and adolescents), and depressogenic cognitive styles	Low peer acceptance and negative cognitive styles were associated with high stable trajectories of loneliness. Both increasing and high stable trajectories of loneliness predicted depression
Reijntjes et al. (2006)	To determine coping and emotional functioning in peer rejected children	Cross-sectional	234 children (123 boys, 111 girls) aged 10-13 years	Assessment of responses to hypothetical peer rejection scenarios	Self-reported depressive symptoms (CDI); Self-reported sadness	Girls reported higher sadness in response to peer rejection than boys
Riley et al. (2008)	To assess functioning differences between children with ADHD-C and ADHD-H/I subtypes	Cross-sectional	102 clinic-referred participants (75 boys, 27 girls) aged 3-5 years, including children with ADHD-C (n=71) and ADHD-H/I	Parent and teacher reported social skills (SSRS); behaviour observations	DSM-IV diagnoses of ADHD by parent and teacher reports (CARS)	Social skills did not differ between the two ADHD subtypes

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Rinsky and Hinshaw (2011)	To determine associations between executive and social functioning in girls with ADHD	Prospective	(n=31) 228 girls with (n=140) and without (n=88) ADHD aged 6-12 years at baseline	Teacher (Dishion social preference scale, TRF) and parent reports of social functioning (SSRS, CBCL, SRQ)	DSM-IV diagnoses of ADHD based on parent and teacher reports (SNAP – parent & teacher; CBCL; TRF; DISC)	Development of comorbidities mediated the relationship between executive functioning and social functioning problems in girls with ADHD
Rosen et al. (2014)	To determine the mediating effects of externalising behaviours on the relationships between social self-control and peer dislike in children with ADHD-combined type	Cross-sectional	1470 participants (1162 boys, 308 girls) aged 7-10 years including 172 children with ADHD-combined type and 1298 same-sex classmates without ADHD	Sociometric measures of peer acceptance and dislike; teacher reported social skills (SSRS)	DSM-IV based diagnoses of ADHD-combined type	Oppositional and defiant behaviours mediated pathways from poor social skills to peer problems in children with ADHD-combined type
Ross et al. (2010)	To determine the impact of social skills and school connectedness on depressive symptoms at preadolescence	Cross-sectional	127 children (43 boys, 84 girls) aged 10-13 years	Self-reported social skills	Self-reported depressive symptoms (CDI)	Both social skills and school connectedness explained the variance in depressive symptoms
Rothon et al. (2011)	To assess the effects of bullying on mental health	Prospective	2790 (1356 boys, 1434 girls) children aged 11-14 years at baseline	Self-reports of victimisation and social support (Multidimensional scale of perceived	Self-reported depressive symptoms (SMFQ)	Family support but not peer support protected victims from depressive symptoms

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Rubin et al. (1989)	To assess long-term outcomes of social interactions and withdrawal	Prospective	111 children (55 boys, 56 girls) in kindergarten at baseline	social support) Observations of social behaviours and peer interactions; Self-reported social competence (HSPPC); Teacher-reported social skills (TCRS)	Self-reported depressive symptoms (CDI) and loneliness (LSDQ)	Social withdrawal predicted symptoms of depression and loneliness
Rudolph et al. (2011)	To determine of peer victimisation predicts mental health problems	Prospective	433 children (195 boys, 238 girls) in second grade at baseline	Self- and teacher-reported victimisation (SEQ); teacher-reported social behaviours (CSBS)	Self-reports of depressive symptoms (SMFQ)	Victimisation predicted aggressive behaviours and symptoms of depression, especially in girls
Rueger et al. (2010)	To assess relationships between perceived parental, peer, and teacher support and psychological adjustment	Prospective	636 children (311 boys, 325 girls) between seventh and eighth grade of school	Self-reports of peer support (Child and adolescents social support scale)	Assessment of depressive symptoms with self-reports (Behavioural assessment scale for children)	Low social support on parent-, self- and peer-reports predicted depressive symptoms
Runions (2014)	To determine the associations of hyperactive symptoms and aggressive behaviours with victimisation	Prospective	1167 children (607 boys, 560 girls) aged 4-5 years at baseline	Teacher reported victimisation (SBQ)	Teacher ratings of hyperactive and impulsive symptoms (SBQ)	Poor teacher-child relationships mediated the association of hyperactive-aggressive behaviours with victimisation

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
St. Pourcain et al. (2011)	To determine the associations between social-communication deficits and hyperactive-inattentive symptoms	Prospective	Population based sample of 5383 children (2669 boys, 2714 girls) aged 4-17 years	Parent reported social-communication problems (Social communication disorder checklist)	Symptoms of ADHD assessed using parent reports (SDQ)	Children with persistent hyperactive-inattentive symptoms are likely to have social-communication deficits
Saluja et al. (2004)	To assess risk factors of depressive symptoms in young adolescents	Cross-sectional	9863 children (4715 boys, 5148 girls) aged 11-15 years	Self-reports of bullying and victimisation	Assessment of depression based on DSM-III-R criteria	Both bullies and victims showed depression than children not involved in bullying
Sapouna and Wolke (2013)	To determine moderators of the association between victimisation and depression	Prospective	3136 children (1521 boys, 1615 girls) aged 12-14 year	Self-reported measures of social support, friendships and victimisation	Self-reported symptoms of depression	The association between victimisation and depression was moderated by gender (male), high self-esteem, peer support, and friendships
Schwartz et al. (1999)	To assess relationships between hyperactive-impulsive behaviours and peer victimisation	Prospective	389 children aged 5-6 years including both boys and girls	Sociometric measures of peer acceptance, rejection and victimisation; teacher reported social problems (TRF)	Teacher reports of hyperactive impulsive behaviours (TRF)	Peer rejection mediated while friendship moderated the associations between behaviour problems and victimisation

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Schwartz and Gorman (2008)	To assess the influence of social difficulties on depressive outcomes	Prospective	199 children (105 boys, 94 girls) with a mean age of 9.1 years	Sociometric measures of peer preference and friendships	Self-reported depressive symptoms (CDI)	The relationship between a lack of friends and depression was moderated by academic competence
Sciberras et al. (2014)	To determine peer functioning of children with ADHD and comorbid anxiety	Cross-sectional	370 clinic-referred (317 boys, 53 girls) children with ADHD aged 5-12 years	Parent and teacher reported peer problems (SDQ)	DSM-IV diagnoses of ADHD based on clinician and parent reports (ARS- IV)	Children with ADHD and comorbid anxiety showed greater peer problems than those without anxiety
Semrud-Clikeman et al. (2010)	To assess social perceptions and behaviours in children with neurodevelopmental disorders	Cross-sectional	342 participants (240 boys, 102 girls) including children with non-verbal learning disability or NLD (n=24), Asperger's syndrome or AS (n=52), ADHD-C (n=76), ADHD-I (n=77) and controls (n=113) aged 9-16.5 years	Parent reports of social skills (SSRS); self-perceived descriptions of social interactions (CASP)	DSM-IV diagnoses of ADHD by parent interviews	Children with ADHD had fewer social perception problems than those with AS or NLD. Attention problems predicted difficulties in understanding emotional cues
Shochet et al. (2011)	To assess the impact of school belonging on affective problems in adolescence	Prospective	504 children (277 boys, 227 girls) with a mean age of 13.3 years	Self-reported peer acceptance and rejection	Self-reported depressive symptoms (CDI)	Peer rejection was associated with depressive symptoms. In girls, rejection predicted

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Sinclair et al. (2012)	To determine effects of victimisation on depressogenic cognitions	Prospective	478 children (237 boys, 241 girls) aged 8-14 years at baseline	Sociometric and self-reported measures of victimisation	Assessment of depressogenic cognitions with self-reports (Cognitive triad inventory for children-CTI-C; Children's automatic thoughts scale-CATS)	future depressive symptoms Victimisation predicted increases in depressogenic cognitions, especially in girls
Sjöwall and Thorell (2014)	To assess mediators of functional impairments in children with ADHD	Cross-sectional	204 participants (92 boys, 112 girls) including 102 clinic-referred children with ADHD and 102 age and gender matched population-based controls	Parent and teacher rated peer preference and friendship (SDQ)	DSM-IV diagnoses of ADHD based on teacher and parent reports (ARS-IV; SDQ)	Problems in regulating emotions, especially anger, mediated the relationship of ADHD with low peer preference and friendship
Smith et al. (2000)	To assess reliability and validity of self-report measures by adolescents with ADHD	Short-term prospective with follow-ups over 8 weeks	36 adolescents with ADHD including both genders and with a mean age of 13.5 years	Behaviour observations; self-reported peer functioning and social behaviours; counsellor and teacher reports of social behaviours	DSM-III-R diagnoses of ADHD based on parent interviews and teacher reports (IOWA Conners; DBD)	Adolescents receiving treatment for ADHD provided valid self-reports of negative social behaviours
Snyder et al. (2003)	To assess effects of victimisation on social behaviour and depressive problems in children	Prospective	266 (134 boys, 132 girls) children aged 5-7 years	Observations of social behaviours and victimisation; parent (CBCL) and teacher (TRF)	Assessment of depressive symptoms with parent (CBCL), teacher (TRF), and self-reports	Victimisation was associated with increases in social behaviour and depressive

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
				reports of social behaviours	(Computer assisted child interview-CACI)	problems
Sontag et al. (2011)	To understand the effects of pubertal timing and peer stress on psychopathology	Cross-sectional	264 children (98 boys, 166 girls) with a mean age 12.4 years	Self-reported social behaviours (PEQ-revised; RPAQ), peer stress (Responses to stress questionnaire), and social desirability (Marlowe-Crowne social desirability scale)	Self-reported symptoms of anxiety and depression (YSR)	Peer stress was associated with symptoms of anxiety and depression. High peer stress in early maturing girls and late maturing boys increased aggressive behaviours
Sourander et al. (2000)	To determine factors associated with bullying and victimisation in childhood and adolescence	Prospective	580 children between 8-16 years of age and including both genders	Self-reported bullying and victimisation	Assessment of depressive symptoms with self-reports (CDI; YSR) and parent reports (CBCL)	Bullies were more likely to show aggressive social behaviours while victims had more depressed-anxious symptoms
Stange et al. (2014)	To assess gender differences in depression and cognitive responses following victimisation	Prospective	256 children (118 boys, 138 girls) with a mean age of 12.32 years	Self-reported peer victimisation (SEQ)	Self-reported symptoms of depression (CDI),	Stange et al. (2014)
Storch and Masia-Warner (2004)	To assess the effects of victimisation on social anxiety and loneliness in adolescent girls	Cross-sectional	561 female adolescents aged 13-17 years	Self-reports of victimisation (SEQ)	Self-reported anxiety (SASA) and loneliness (AWLS)	Victimisation predicted social anxiety and loneliness

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Stormshak et al. (1999)	To assess relationships between behaviour problems and peer status in different classrooms	Cross-sectional	2985 children in the first-grade from 134 classrooms (including both genders)	Sociometric measures of peer acceptance and rejection; teacher ratings of social behaviours (Teacher observation of classroom adaptation-revised)	Teacher and peer rated hyperactive-inattentive behaviours	While acceptability of aggressive or withdrawn behaviours varied across classrooms, peer acceptability of hyperactive-inattentive behaviours was low in all classrooms
Swanson et al. (2012)	To assess self-perceptions of social competence in girls with ADHD	Prospective	228 participants including 140 girls with ADHD and 88 age-matched controls between 6-12 years of age at baseline	Self-reports of perceived social competence (HSPPC); sociometric measures, teacher ratings (DSPS) and parent reports of peer status	DSM-IV-TR diagnoses of ADHD based on parent interviews (DISC-IV)	Girls with ADHD showed 'illusory' and positive self-perceptions; self-ratings of social functions, however, were negative
Sweeting et al. (2006)	To determine the direction of the victimisation-depression relationship and assess possible gender differences	Prospective	2586 children (1339 boys, 1247 girls) aged 11 years at baseline	Self-reported victimisation	Assessment of depressive symptoms with self-reports	At early adolescence, victimisation predicted depression. At mid-adolescence depression increased risk for victimisation
Taanila et al. (2009)	To assess psychosocial functioning in	Cross-sectional	6475 participants (3222 boys, 3253 girls) aged 15-16	Self-reported measures of social functioning and	DSM-IV based assessments of ADHD symptoms by	Self-reported psychosocial wellbeing was poor

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
	adolescents with ADHD		years from a population-cohort, including children with (n=487) and without (n=5988) ADHD	social satisfaction	parent reports (strengths and weakness of ADHD symptoms and normal behaviour)	in adolescents with ADHD. Boys with ADHD reported a lack of friends
Taylor et al. (1996)	To assess the developmental risk associated with hyperactive behaviour	Prospective	98 boys from a community sample aged 6-7 years at baseline, including 18 boys with conduct problems, 30 with hyperactivity, 21 with both hyperactivity and conduct problems, and 29 controls	Parent and adolescent reported social behaviours and functioning	ICD-10 and DSM-III-R based assessments of hyperactivity-inattention using parent reports (Parental account of child and adolescent symptoms); teacher reports of hyperactivity-inattention (Rutter scale B)	Hyperactive behaviours were associated with an increased risk for social impairments
Taylor and Wood (2013)	To determine if discrepancies in self- and parent-appraisals of social functioning predict depression	Cross-sectional	3976 children (1913 boys, 2063 girls) with a mean age of 13.43 years	Parent and self-reports of social skills (SDQ) and social functioning	Diagnoses of anxiety and/or depression based on ICD-10 using parent, teacher, and self-reports (Development and well-being assessment)	Children with a high self-appraised but low parent-appraised social skills were likely to develop anxiety and /or depression
Turner et al. (2010)	To determine effects of victimisation on depressive symptoms in adolescence	Prospective	523 children (246 boys, 277 girls) aged 11-18 years	Self-reported victimisation (Juvenile victimisation questionnaire)	Self-reported depressive symptoms (Trauma symptom checklist for children)	Victimisation increased the risk for depression. Low self-esteem mediated these relationships

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Wahlstedt et al. (2008)	To assess the relationship of ADHD symptoms and executive dysfunction with socio-emotional impairments	Prospective	87 children from a community sample (42 boys, 45 girls) aged 4-6 years at baseline	Parent and teacher rated social competence (Prosocial orientation scale)	DSM-IV based assessments of ADHD symptoms using teacher ratings	especially in girls Symptoms of ADHD predict poor social competence irrespective of cognitive dysfunction
Yang et al. (2010)	To assess the moderating effects of social support on depressive outcomes	Prospective	143 adolescents (71 boys, 72 girls) aged 14-18 years	Peer-reported social support	Assessment of depression with self-reports (CES-D; K-SADS-E)	Low social support following stressful events led to greater increases in depressive symptoms
Yang et al. (2014)	To determine if academic achievement moderates relationships between social difficulties and depression	Prospective	1171 children (591 boys, 580 girls), with a mean age of 9.33 years at baseline	Sociometric measures of social aggression, peer preference, peer dislike and victimisation; teacher-reported social competence; self-reported social competence and social satisfaction	Self-reported symptoms of depression (CDI) and loneliness	Socially aggressive behaviours predicted victimisation and low popularity. The relationship of social difficulties with depression and loneliness was moderated by academic achievement
Young et al. (2005a)	To assess peer problems in girls with hyperactive behaviours	Prospective	Population-based sample of 74 girls aged 6-7 years at baseline	Child interviews of peer relationships and functioning	Assessment of hyperactivity symptoms with teacher reports (Rutter scale B)	Hyperactive symptoms in childhood predicted poor peer functioning at adolescence

Study	Broad aims	Study design	Participant characteristics	Peer/social variables measured	ADHD/depression measures	Key findings
Young et al. (2005b)	To assess self-reported social functioning at adolescence in girls with ADHD	Prospective	Population cohort of 74 girls aged 6-7 years at baseline	Parent and self-reports of social adjustment, peer relationships and self-perceptions of functioning (SAICA)	Assessment of hyperactivity symptoms with teacher reports (Rutter scale B)	Childhood hyperactivity did not predict self-perceived social functioning difficulties
Zalecki and Hinshaw (2004)	To compare social behaviours and functioning amongst the ADHD subtypes	Short term prospective with follow-up at 1, 3 and 5 weeks	228 girls with ADHD-C (n=93), ADHD-I (n=47) and no ADHD (n=88), aged 6-12 years	Parent and teacher rated social behaviours (CSBS); behaviour observations; sociometric measures of peer acceptance and rejection; self-reports of peer regard	DSM-IV diagnoses of ADHD based on teacher and parent reports (CBCL; TRF; SNAP-IV; DISC-IV)	Girls with ADHD-C showed more socially aggressive behaviours than girls with ADHD-I. Aggressive behaviours were associated with a low peer status
Zimmer-Gembeck et al. (2009)	To assess the relationship between peer relations and depression	Prospective	308 children (145 boys, 163 girls) with a mean age of 11 years	Sociometric measures of peer acceptance and dislike; Self-reported social functioning (HSPPC)	Self-reported depressive symptoms (CDI)	Depression was both a predictor of and predicted by peer dislike

ADHD-C: ADHD-combined subtype; ADHD-HI: ADHD-hyperactive/impulsive subtype; ADHD-I: ADHD-inattentive subtype; ARS: ADHD Rating Scale; ASD: Autism Spectrum Disorders; ASR: Adult Self-Reports; AWLS: Asher and Wheeler Loneliness Scale; BCFPI: Brief Child and Family Phone Interview; BDI: Beck's Depression Inventory; CARS: Conner's ADHD Rating Scale; CASP: Child and Adolescent Social Perception Measure; CASQ: Conners' Abbreviated Symptom Questionnaire; CBCL: Child Behaviour Checklist; CBS: Child Behaviour Scale; CD: Conduct Disorder; CDI: Children's Depression Inventory; CES-D: Centre for Epidemiologic Studies Depression Scale; CESBQ: Children's Expectations of Social Behaviour Questionnaire; CIS: Clinical Interview Schedule; CRS: Conners' Rating Scale; DBDRS: Disruptive Behaviour Disorders Rating Scale; DDPCA: Dimensions of Depression Profile for Children and Adolescents; DISC: Diagnostic Interview Schedule for Children; DSAS: Dishion Social Acceptance Scale; DSPS: Dishion Social Preference Scale; FQM: Friendship Qualities Measure; HSPPC: Harter's self-perceived peer competence; ICS:

interpersonal Competence Scale; K-SADS-E: Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic version; LSDQ: Loneliness and Social Dissatisfaction Questionnaire; ODD: Oppositional Defiant Disorder; PEQ: Peer Experience Questionnaire; RPAQ: Reactive-Proactive Aggression Questionnaire; SAICA: Social Adjustment Inventory for Children and Adolescents; SASA: Social Anxiety Scale for Adolescents; SBO: Social Behaviour Questionnaire; SCID: Structured Clinical Interview for DSM Disorders; SDQ: Strengths and Difficulties Questionnaire; SEQ: Social Experiences Questionnaire; SMFQ: Short Moods and Feelings Questionnaire; SNAP: Swanson, Nolan, and Pelham ADHD rating scales; SRO: Social Relationship Questionnaire; SSRS: Social Skills Rating System; SSSCA: Social Support Scale for Children and Adolescents; TCRS: Teacher-Child Rating Scale; TRF: Teacher Report Form; VADTRS: Vanderbilt ADHD Diagnostic Teacher Rating Scale