Growing Up in Ireland
National Longitudinal Study of Children

Externalising behaviour, internalising problems and academic attainment: Developmental cascades in the Growing Up In Ireland Study

Elizabeth de Forge, William Kinsella, Jennifer Symonds
School of Education, University College Dublin

11th Annual Research Conference 2019

ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

Trinity College Dublin
The University of Dublin

An Roinn Leanaí agus Gnóthaí Óige
Department of Children and Youth Affairs

Background

Mental health difficulties are the leading cause of disability amongst children and young people (Gore et al., 2011)

Estimated prevalence:

worldwide = 13.4% (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015)

Ireland: 20% (Dooley & Fitzgerald, 2012) to 25% (Coughlan et al., 2014) between the ages of 11 and 19 experience a mental health disorder.

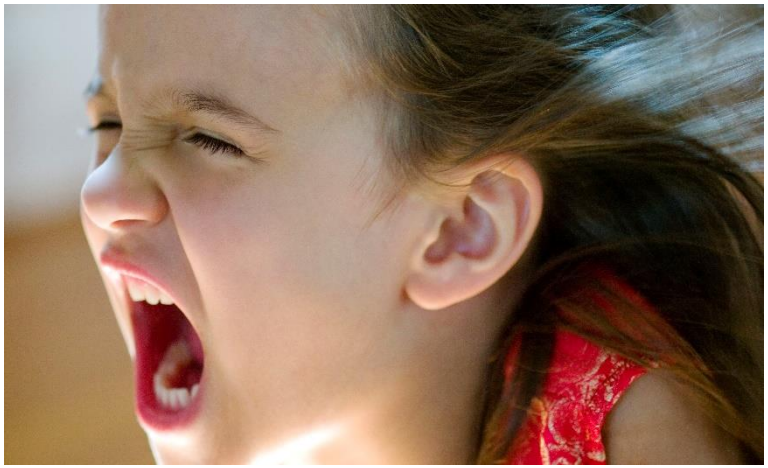
Highly predictive of continued mental health problems in adult life (Bevilacqua, Hale, Barker, & Viner, 2018; Copeland, Wolke, Shanahan, & Costello, 2015)

Strong associations with academic difficulties and poorer school outcomes in childhood and adolescence (McLeod & Fettes, 2007)

"promoting wellbeing in school communities to support success in school and life" key objective in the Action Plan for Education 2016-2019 (Department of Education and Skills, 2016).

Childhood Mental Health

Externalising problems



"conflicts with the environment"

(Achenbach, 1982, p. 35)

hyperactivity, impulsivity, non-compliance, temper tantrums, aggression, and delinquency

Internalising problems

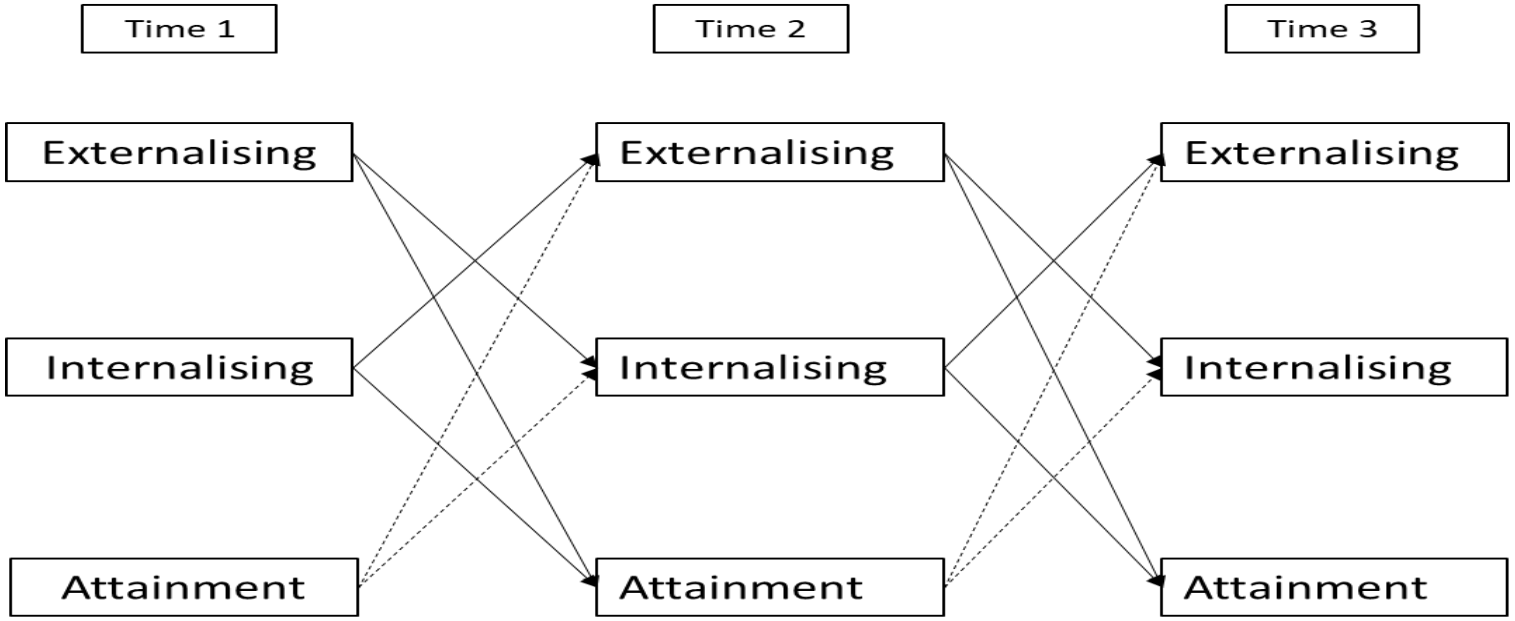
"problems within the self"

(Achenbach, 1982, p. 35)

fears, social withdrawal, somatic complaints, anxiety and depression

Developmental Cascades

- "the cumulative consequences for development of the many interactions and transactions occurring in developing systems that result in spreading effects across levels, among domains at the same level, and across different systems or generations" (Masten & Cichetti, 2010, p 491).



Key Hypotheses

Academic incompetence (AI) hypothesis

- Academic difficulties impact the development of externalising and internalising problems over time

Adjustment erosion (AE) hypothesis

- Externalising or internalising problems impact the development of academic competencies over time
- Externalising problems impact the development of internalising problems over time and vice versa

Shared risk hypothesis

- Common risk factors associated with poorer emotional, behavioural and academic outcomes are responsible for the development of cross-domain difficulties over time

(Moilanen, Shaw & Maxwell, 2010)

Literature

- Systematic Literature review (N= 12 studies; 2005-2019)
- Largely North American with a number of more recent British and European studies
- Evidence supporting both AI and AE hypotheses
  - AI (att-int 11 studies; att-ext 8 studies)
  - AE (ext-att 7 studies; int-att 2 studies; ext-int 6 studies; int-ext 3 studies negative association
- Somewhat diverse findings but methodological differences in studies may account for this
- Influence of shared risk factors typically small
- Inconsistent findings with respect to gender differences
  - 4/12 reported gender differences

Research Aims

- Replicate and extend existing research
- Explore whether cascade effects as predicted by the AI or AE hypotheses are evident in the GUI data
- Identify whether these cascade pathways vary by gender
- Explore the influence of common risk factors (SES & SEN) on the cascade pathways as outlined in the shared risk hypothesis
- Explore diagnosed special educational needs as risk factors for the emergence of these cascade effects

Research Design

Secondary data analysis using 3 waves of the GUI child cohort at age 9, 13 and 17 (N= 8,568, 48.7% male, 51.2% female).

<u>Analysis – Cross lagged panel analysis</u>

1. Primary cascade analysis
2. Gender analysis
3. Shared risk analysis
4. SEN diagnoses (ASD, ADHD, dyslexia, dyspraxia, speech and language disorder) as risk factors

Measures

Key variables in the cascade model

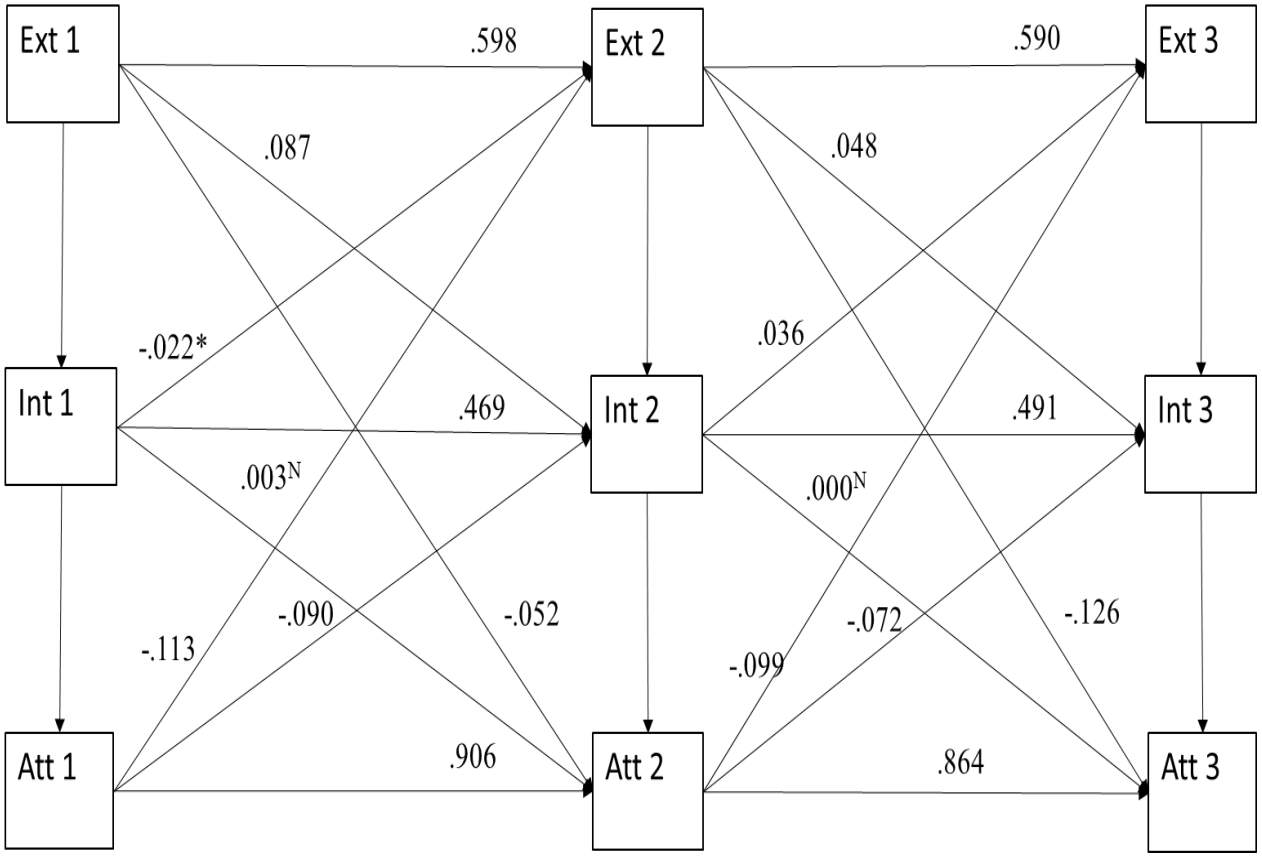
	Wave 1	Wave 2	Wave 3
Externalising behaviour	Strengths and Difficulties Questionnaire Externalising (conduct & inattention/hyperactivity)	Strengths and Difficulties Questionnaire Externalising (conduct & inattention/hyperactivity)	Strengths and Difficulties Questionnaire Externalising (conduct & inattention/hyperactivity)
Internalising problems	Strengths and Difficulties Questionnaire Internalising (emotional & peer problems)	Strengths and Difficulties Questionnaire Internalising (emotional & peer problems)	Strengths and Difficulties Questionnaire Internalising (emotional & peer problems)
Academic attainment	Drumcondra Primary maths and reading tests	Drumcondra numerical ability and verbal reasoning tests	Junior Certificate English and Maths

Additional variables

	Wave 1
Socio economic status	Equivalised household income; household social class, medical card
Special educational needs	Parent reported ASD, ADHD, dyslexia, dyspraxia, speech and language disorder (individually and coded as a binary variable SEN/no SEN)

Results – Primary Cascade Model

Primary Cascade Model



Academic Incompetence

Att1-Ext2 -.113

Att2-Ext3 -.099

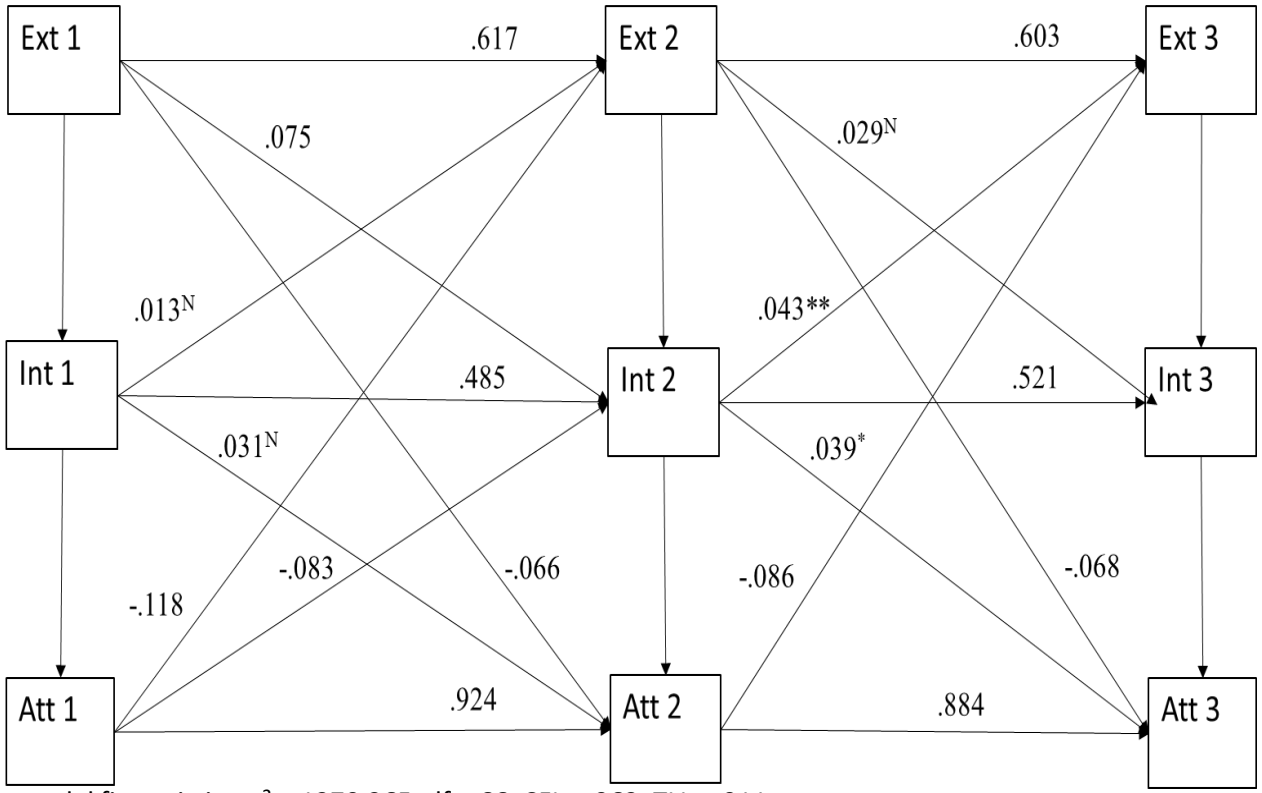
Adjustment Erosion

Ext2-Att3 -.126

Ext =externalising, Int = internalising, Att = attainment, numbers denote data collection waves 1, 2 & 3; model fit statistics: χ^2 = 1338.958, df = 33, CFI = .960, TLI = .905, RMSEA = .068 (.065-.071); beta values are standardised. ^{N} non-significant, * p <.05, ** p <.01, all other paths p <.001.

Results – Gender Analysis

Cascade model for boys



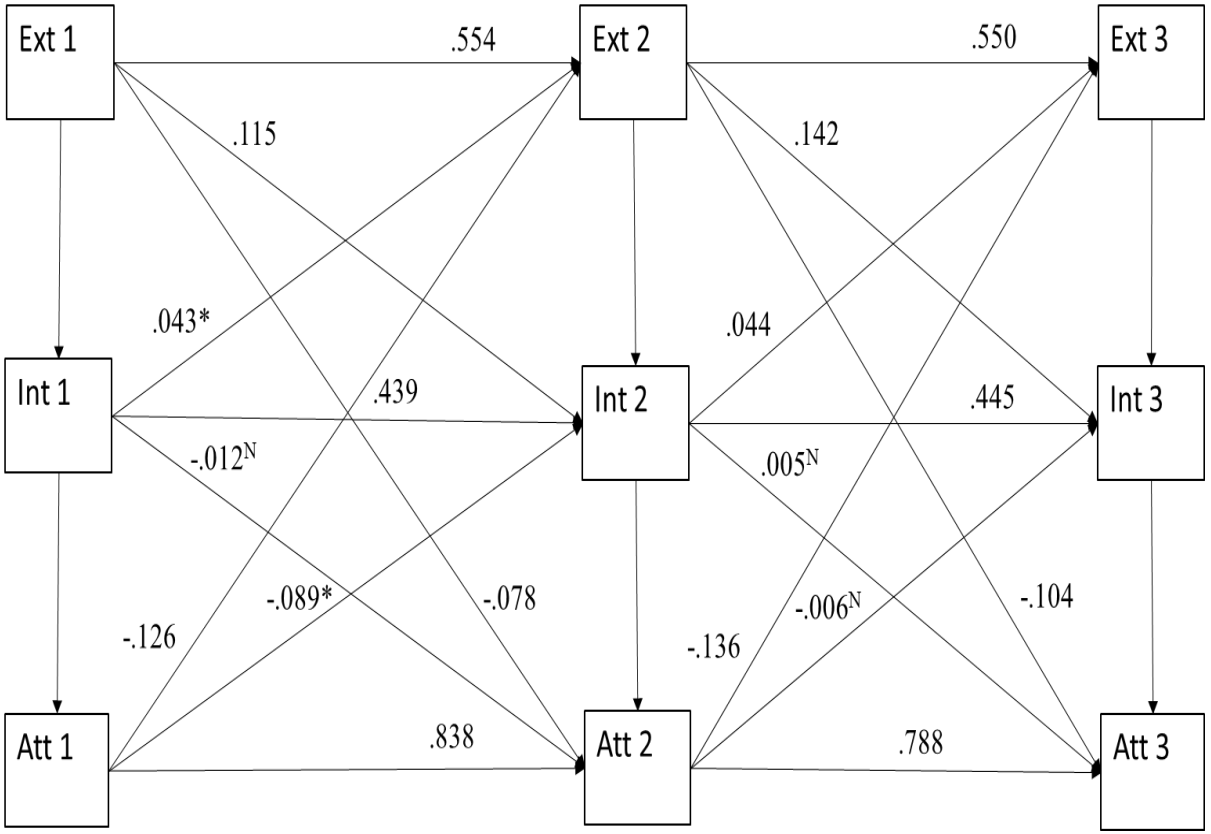
model fit statistics: χ^2 = 1270.265, df = 66, CFI = .962, TLI = .911, RMSEA = .047 (.045-.049).

Academic Incompetence

Att1-Ext2 -.118

Results – Gender Analysis

Cascade model for girls



Academic Incompetence

Att1-Ext2 -.126

Att2-Ext3 -.136

Adjustment Erosion

Ext2-Att3 -.104

Ext1-Int2 .115

Ext2-Int3 .142

model fit statistics: χ^2 = 1270.265, df = 66, CFI = .962, TLI = .911, RMSEA = .047 (.045-.049).

Results – Shared Risk Analysis

- SES and SEN included as covariates in the models
- Inclusion of shared risk variables resulted in a small improvement in overall model fit for both constrained and unconstrained models but did not significantly impact the cascade pathways identified in either model.

	χ^2	DF	CFI	TLI	RMSEA
Constrained	1338.958	33	.960	.905	.068
Constrained with shared risk	1575.367	66	.960	.917	.052
Unconstrained	1270.265	66	.962	.911	.047
Unconstrained with shared risk	1532.123	132	.962	.921	.036

Results – SEN Risk Factor Analysis

- Associations between SEN diagnoses and study variables were typically small,
- ADHD and dyslexia diagnoses were associated with higher levels of externalising behaviour (ADHD: β =.189, *p* <.001; Dyslexia: β =.106, *p* <.001).
- Dyslexia was also negatively associated with attainment (β =-.175, *p* <.001) as were Speech and Language difficulties (β = -.109; *p* <.001).
- ASD was associated with internalising problems (β =.130, *p* <.001), as was ADHD, although the strength of this association was weaker (β =.098, *p* <.001).

	ADHD		ASD		Dyslexia		Dyspraxia		Speech and Language	
	β	p	β	p	β	p	β	p	β	p
Externalising W1	.189	<.001	.055	<.001	.106	<.001	.052	<.001	.057	<.001
Internalising W1	.098	<.001	.130	<.001	.055	<.001	.043	<.001	.029	.006
Attainment W1	-.070	<.001	.009	.404	-.175	<.001	-.046	<.001	-.109	<.001

Implications

- Consistent AI pathway 9yrs to 13yrs highlights importance of supporting academics to promote positive behaviour in this time period
- Gender differences suggest girls at greater risk for negative cascade effects, particularly in adolescent years. As well as att-ext, ext-att and ext-int at both time points.
- Given the att-ext cascade from 9-13, children with dyslexia and SLD may be at greater risk due to the negative association with attainment

- Mental health promotion and behavioural interventions in schools should include academic support to interrupt or avoid potential cascade effects
- Future research: expanding the current research with newly published early adult data, also exploring cascade effects in the infant cohort, using cascade models to explore the potential positive cascade effects on intervention and prevention programmes

Thank You For Listening

Also I'd like to thank the GUI team and my research supervisors Dr. Kinsella and Dr. Symmonds for all their help and support with this project.

Any questions, comments or suggestions are very welcome

Contact: elizabeth.deforge@ucdconnect.ie

References -Presentation

Achenbach, T.M. (1982). Developmental psychopathology. New York: Wiley and Sons.

Bevilacqua, L., Hale, D., Barker, E. D., & Viner, R. (2018). Conduct problems trajectories and psychosocial outcomes: a systematic review and meta-analysis. *European Child & Adolescent Psychiatry*, *27*(10), 1239–1260. https://doi.org/10.1007/s00787-017-1053-4

Coughlan, H., Tiedt, L., Clarke, M., Kelleher, I., Tabish, J., Molloy, C., … Cannon, M. (2014). Prevalence of DSM-IV mental disorders, deliberate self-harm and suicidal ideation in early adolescence: An Irish population-based study. *Journal of Adolescence*, *37*(1), 1–9. https://doi.org/10.1016/j.adolescence.2013.10.004

Copeland, W. E., Wolke, D., Shanahan, L., & Costello, E. J. (2015). Adult Functional Outcomes of Common Childhood Psychiatric Problems: A Prospective, Longitudinal Study. *JAMA Psychiatry*, *72*(9), 892. https://doi.org/10.1001/jamapsychiatry.2015.0730

Department of Education and Skills (2016). Action plan for education 2016-2019. Retrieved from the Department of Education and Skills website: https://www.education.ie/en/Publications/Corporate-Reports/Strategy-Statement/Department-of Education-and-Skills-Strategy-Statement-2016-2019.pdf

Dooley, B. A., & Fitzgerald, A. (2012). *My World Survey : National Study of Youth Mental Health in Ireland* [Technical Report]. Retrieved from Headstrong and UCD School of Psychology website: https://researchrepository.ucd.ie/handle/10197/4286

Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., … Mathers, C. D. (2011). Global burden of disease in young people aged 10–24 years: a systematic analysis. *The Lancet*, *377*(9783), 2093–2102. https://doi.org/10.1016/S0140-6736(11)60512-6

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*(03), 491–495. https://doi.org/10.1017/S0954579410000222

McLeod, J. D., & Fettes, D. L. (2007). Trajectories of failure: The educational careers of children with mental health problems. *American Journal of Sociology*, *113*(3), 653–701. https://doi.org/10.1086/521849

Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalising, internalising, and academic competence from middle childhood to early adolescence. *Development and Psychopathology*, *22*(3), 635–653. https://doi.org/10.1017/S0954579410000337

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*,

References –Systematic Review

Burt, K. B., & Roisman, G. I. (2010). Competence and psychopathology: cascade effects in the NICHD Study of Early Child Care and Youth Development. *Development and Psychopathology*, *22*(3), 557–567. https://doi.org/10.1017/S0954579410000271

Deighton, J., Humphrey, N., Belsky, J., Boehnke, J., Vostanis, P., & Patalay, P. (2018). Longitudinal pathways between mental health difficulties and academic performance during middle childhood and early adolescence. *British Journal of Developmental Psychology*, *36*(1), 110–126. https://doi.org/10.1111/bjdp.12218

Englund, M. M., & Siebenbruner, J. (2012). Developmental pathways linking externalising symptoms, internalising symptoms, and academic competence to adolescent substance use. *Journal of Adolescence*, *35*(5), 1123–1140. https://doi.org/10.1016/j.adolescence.2012.03.004

Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., … Tellegen, A. (2005). Developmental Cascades: Linking Academic Achievement and Externalising and Internalising Symptoms Over 20 Years. *Developmental Psychology*, *41*(5), 733–746. https://doi.org/10.1037/0012-1649.41.5.733

Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalising, internalising, and academic competence from middle childhood to early adolescence. *Development and Psychopathology*, *22*(3), 635–653. https://doi.org/10.1017/S0954579410000337

Panayiotou, M., & Humphrey, N. (2018). Mental health difficulties and academic attainment: Evidence for gender-specific developmental cascades in middle childhood. *Development and Psychopathology*, *30*(2), 523–538. https://doi.org/10.1017/S095457941700102X

Poirier, M., Temcheff, C. E., Déry, M., Toupin, J., Verlaan, P., & Lemelin, J.-P. (2019). The Role of Academic Skills in the Evolution of Conduct Problems and Depressive Symptoms Among Children With and Without Early Clinically Significant Conduct Problems. *Journal of Early Adolescence*, *39*(3), 340–370. https://doi.org/10.1177/0272431618757679

Vaillancourt, T., Brittain, H. L., McDougall, P., & Duku, E. (2013). Longitudinal links between childhood peer victimization, internalising and externalising problems, and academic functioning: Developmental cascades. *Journal of Abnormal Child Psychology*, *41*(8), 1203–1215. https://doi.org/10.1007/s10802-013-9781-5

van Lier, P. A. C., & Koot, H. M. (2010). Developmental cascades of peer relations and symptoms of externalising and internalising problems from kindergarten to fourth-grade elementary school. *Development and Psychopathology, 22*(3), 569-582. https://doi.org/10.1017/S0954579410000283

References – Systematic Review

Yong, M., Fleming, C. B., McCarty, C. A., & Catalano, R. F. (2014). Mediators of the associations between externalising behaviors and internalising symptoms in late childhood and early adolescence. *The Journal of Early Adolescence*, *34*(7), 967–1000. https://doi.org/10.1177/0272431613516827

Weeks, M., Ploubidis, G. B., Cairney, J., Wild, T. C., Naicker, K., & Colman, I. (2016). Developmental pathways linking childhood and adolescent internalising, externalising, academic competence, and adolescent depression. *Journal of Adolescence*, *51*, 30–40. https://doi.org/10.1016/j.adolescence. https://doi.org/10.1016/j.adolescence.2016.05.009

Van der Ende, J., Verhulst, F. C., & Tiemeier, H. (2016). The bidirectional pathways between internalising and externalising problems and academic performance from 6 to 18 years. *Development and Psychopathology*, *28*(03), 855–867. https://doi.org/10.1017/S0954579416000353

Vaillancourt, T., Brittain, H. L., McDougall, P., & Duku, E. (2013). Longitudinal links between childhood peer victimization, internalising and externalising problems, and academic functioning: Developmental cascades. *Journal of Abnormal Child Psychology*, *41*(8), 1203–1215. https://doi.org/10.1007/s10802-013-9781-5