



## Youth adversity and trajectories of depression and anxiety symptoms in adolescence in the context of intersectionality

Journal:	<i>Journal of Child Psychology and Psychiatry</i>
Manuscript ID	Draft
Manuscript Type:	Original Article
Date Submitted by the Author:	n/a
Complete List of Authors:	Havers, Laura; Birkbeck University of London, Department of Psychological Sciences Shuai, Ruichong; Queen Mary University of London Faculty of Medicine and Dentistry, Centre for Psychiatry and Mental Health Fonagy, Peter; University College London, Division of Psychology and Language Sciences Fazel, Mina; University of Oxford, Psychiatry; Oxford University Hospitals NHS Foundation Trust, Centre for Psychological Medicine Morgan, Craig; King's College London, Health Service & Population Research Fancourt, Daisy; University College London, Behavioural Science and Health Smuk, Melanie; Barts and the London School of Medicine and Dentistry, Centre for Psychiatry Bhui, Kamaldeep ; University of Oxford, Department of Psychiatry Shakoor, Sania; Queen Mary University of London, Centre for Psychiatry, Wolfson Institute of Preventive Medicine Hosang, G; Wolfson Institute of Preventive Medicine, Centre for Psychiatry
Key Words:	Adolescence, Adversity, Anxiety, Depression, Longitudinal studies

1  
2  
3 Journal submission: The Journal of Child Psychology and Psychiatry  
4

5  
6 Word count including abstract: 4,908 (max 5000)  
7

8 Word count abstract: 294 (max 300)  
9

10 Tables: 3 (max 5)  
11

12  
13 Figures: 2 (max 5)  
14

15 Style: APA 5<sup>th</sup>  
16  
17  
18  
19

20 **Title:** Youth adversity and trajectories of depression and anxiety symptoms in adolescence in  
21  
22 the context of intersectionality  
23  
24  
25

26  
27 **Running head:** Intersectionality, youth adversity, and trajectories of adolescent depression  
28  
29 and anxiety symptoms  
30  
31  
32

33  
34 **Authors:** Laura Havers<sup>1\*</sup>, Ruichong Shuai<sup>1</sup>, Peter Fonagy<sup>2,3</sup>, Mina Fazel<sup>4</sup>, Craig Morgan<sup>5,6</sup>,  
35  
36 Daisy Fancourt<sup>7</sup>, Paul McCrone<sup>8</sup>, Melanie Smuk<sup>9</sup>, Kamaldeep Bhui<sup>10,11,12</sup>, Sania Shakoor<sup>1+</sup> and  
37  
38 Georgina M. Hosang<sup>1+</sup>  
39  
40  
41  
42  
43  
44  
45

46 **Affiliations:**  
47  
48

49 <sup>1</sup> Centre for Psychiatry and Mental Health, Wolfson Institute of Population Health, Queen  
50  
51 Mary, University of London, London, UK  
52  
53

54  
55 <sup>2</sup> Anna Freud National Centre for Children and Families, London, UK  
56  
57  
58  
59  
60

1  
2  
3 <sup>3</sup> Research Department of Clinical, Educational and Health Psychology, University College  
4  
5  
6 London, London, UK  
7

8  
9 <sup>4</sup> Department of Psychiatry, University of Oxford, Oxford, UK  
10

11  
12  
13 <sup>5</sup> Health Service and Population Research, Institute of Psychology, Psychiatry &  
14  
15 Neuroscience, King's College London, London, UK  
16  
17

18  
19 <sup>6</sup> ESRC Centre for Society and Mental Health, King's College London, London, UK  
20  
21

22  
23 <sup>7</sup> Department of Behavioural Science and Health, University College London, London, UK  
24  
25

26  
27 <sup>8</sup> Institute for Lifecourse Development, University of Greenwich, London, UK  
28  
29

30  
31 <sup>9</sup> Centre for Genomics and Child Health, Blizard Institute, Queen Mary, University of London,  
32 London, UK  
33  
34

35  
36 <sup>10</sup> Department of Psychiatry, Nuffield Department of Primary Care Health Sciences, and  
37  
38 Wadham College, University of Oxford, Oxford, UK  
39  
40

41  
42 <sup>11</sup> Oxford Health and East London NHS Foundation Trusts, UK  
43  
44

45  
46 <sup>12</sup> World Psychiatric Association Collaborating Centre, Oxford, UK  
47  
48  
49  
50  
51

52  
53 \*Corresponding author  
54  
55  
56

57  
58 †Joint last authors  
59  
60

## Abstract

**Background:** Youth adversity is associated with persistence of depression and anxiety symptoms over time. Evidence suggests that this association may be greater for disadvantaged societal groups (such as females) compared with advantaged groups (e.g., males). However, given that persistent symptoms are observed across a range of disadvantaged groups (e.g., low compared with high socio-economic status [SES]), the intersection of individual characteristics may be an important moderator of inequality.

**Methods:** Data from HeadStart Cornwall (N=5,336) was used to assess the effect of youth adversity on symptoms of depression and anxiety, measured using the Strengths and Difficulties Questionnaire emotional problems subscale, at three time-points in 11-14-year-olds. Latent trajectories and regression coefficients were estimated for eight intersectionality profiles (based on gender, SES, and hyperactivity/inattention) within a multiple group structural equation model. Compound parameters were specified to estimate the moderating effects of the individual characteristics and their intersections.

**Results:** Youth adversity, compared with an absence of such, was associated with higher average depression and anxiety symptoms at baseline (11-12-years), across all intersectionality profiles. The magnitude of the effect of youth adversity differed across profiles, and there was weak evidence to suggest that the effect of youth adversity on the

1  
2  
3 average rate of change in depression and anxiety symptoms was moderated by the  
4  
5 intersection of, i) gender and SES, and ii) gender, SES, and hyperactivity/inattention.  
6  
7  
8  
9  
10  
11  
12

13 **Conclusions:** Youth adversity has detrimental effects on the development of depression and  
14  
15 anxiety symptoms that pervade across intersectionality profiles: The extent to which these  
16  
17 effects are moderated by intersectionality are discussed in terms of operational factors and  
18  
19 sample size. The current results provide a platform for further research, which is needed to  
20  
21 determine whether intersectionality is important in moderating the effect of youth  
22  
23 adversity on the development of depression and anxiety symptoms in adolescence.  
24  
25  
26  
27  
28  
29  
30  
31

32 **Keywords:** Adversity, depression, anxiety, longitudinal studies, adolescence  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Introduction

Symptoms of depression (e.g., low mood, loss of enjoyment) and anxiety (e.g., nervousness, worry) are among the most common mental health problems in adolescence (Michaud & Fombonne, 2005). A global prevalence rate of ~35% has been estimated for elevated depressive symptoms (Shorey et al., 2022) and ~10% for elevated anxiety symptoms (Biswas et al., 2020). In clinical populations, prevalence rates of depressive and anxiety disorders are estimated at ~3.5% and ~4.5%, respectively (World Health Organization, 2017), and these disorders are associated with a range of maladies, including cardiovascular disease (Tully et al., 2016) and poor quality of life (Hohls et al., 2021).

It has been estimated that one third to half of lifelong mental health disorders are evident by the age of 15-years (Caspi et al., 2020; Kessler et al., 2005), highlighting the importance of early to mid-adolescence when considering the emergence of mental health problems. To understand the pathways from symptoms to disorder, it is critical to consider the development of these symptoms over time, and the risk factors associated with this development.

Experiencing persistently high or increasing symptoms of depression and/or anxiety across adolescence is associated with negative outcomes, such as substance use, and school dropout (Morin et al., 2011; Schubert et al., 2017). Importantly, research shows that some groups in society are more likely to experience a trajectory of elevated (i.e., high, or increasing) depression and/or anxiety symptoms. These include individuals with neurodivergent conditions (e.g., attention deficit hyperactivity disorder [ADHD]) compared with neurotypical individuals, those from low compared with high socio-economic status [SES] backgrounds, and females compared with males (Leban, 2021; Schubert et al., 2017). These findings suggest that minoritized, disadvantaged, and neurodivergent groups, are at

1  
2  
3 heightened risk of experiencing trajectories of more elevated depression and anxiety  
4 symptoms compared to their counterparts.  
5  
6  
7  
8  
9

### 10 **Youth adversity and adolescent depression/anxiety symptoms**

11  
12  
13 In addition to the risk conferred by individual characteristics, research consistently  
14 shows an association between youth adversity and trajectories of elevated depression  
15 and/or anxiety symptoms (Bevilacqua et al., 2021; Desch et al., 2023; Leban, 2021). Youth  
16 adversity encompasses stressful and potentially traumatic experiences that occur inside the  
17 home (e.g., abuse and parental separation), often referred to as adverse childhood  
18 experiences [ACEs] (Felitti et al., 1998; Kalmakis & Chandler, 2014), as well as outside the  
19 home (e.g., bullying victimisation). Youth adversity is also found to be more prevalent in  
20 disadvantaged, minoritized, and neurodivergent groups, which may contribute to why  
21 trajectories of elevated depression and anxiety symptoms are common in these groups  
22 (Assini-Meytin et al., 2022; Craig et al., 2020; Walsh et al., 2019).  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36

37 Of the studies that have investigated the association between youth adversity and  
38 mental health problems in young people, few have evaluated whether this association is  
39 *moderated* by (dependent on) individual characteristics, such as gender. One such study  
40 found a moderating effect of gender, observing a stronger effect of youth adversity on  
41 depression symptoms for females compared with males, but there were no moderating  
42 effects of race and ethnicity (Assini-Meytin et al., 2022). Another study did not detect  
43 moderation by gender in the association between youth adversity and trajectories of  
44 depression and anxiety symptoms (Leban, 2021). However, an individual can hold multiple  
45 forms of minority or disadvantaged statuses (e.g., being a neurodivergent female from a low  
46 SES background), which may lead to greater vulnerability to mental health problems in the  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 face of adversity (Ghavami et al., 2016), although this has yet to be systematically  
4 investigated.  
5  
6  
7  
8  
9

### 10 **Intersectionality and the youth adversity-depression/anxiety association**

11  
12  
13 The broad analytic framework of intersectionality posits that the *intersection*,  
14 reflecting an interaction, of an individual's characteristics (e.g., gender, ethnicity, SES) has  
15 importance beyond the additive effects of these characteristics (Bowleg, 2012; Crenshaw,  
16 1990). Intersectional identities are considered within a complex system of societal and social  
17 hierarchies, in the context of power, oppression, and privilege (Crenshaw, 1990).  
18 Investigating the extent to which the effects of youth adversity on the development of  
19 depression and anxiety symptoms may depend on intersections of individual characteristics  
20 reflective of exclusion and marginalisation may offer a more comprehensive and better  
21 account of how adversity leads to poor mental health.  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

### 40 **Current study**

41 To our knowledge, this is the first study to investigate the association between youth  
42 adversity and trajectories of depression and anxiety symptoms in adolescence, in the context  
43 of intersectionality (indexed by gender, SES, and hyperactivity/inattention). This study will  
44 address two main research questions:  
45  
46  
47  
48  
49  
50  
51

- 52 1) Is youth adversity *associated* with baseline and change over time in depression  
53 and anxiety symptoms across intersectionality profiles? It was hypothesised that  
54 across intersectionality profiles, youth adversity would be associated with higher  
55  
56  
57  
58  
59  
60



1  
2  
3 baseline depression and anxiety symptoms that would remain higher over time,  
4  
5 compared to an absence of youth adversity.  
6  
7  
8  
9

10  
11 2i) Does the association between youth adversity and depression and anxiety  
12 symptoms (at baseline and their change over time) *differ* across intersectionality  
13 profiles; and if so, ii) to what extent is the association *moderated* by gender, SES, and  
14 hyperactivity/inattention, and their intersections? It was hypothesised i) that the  
15 association between youth adversity and depression and anxiety symptoms (at  
16 baseline and their change over time) would differ across intersectionality profiles; and  
17 ii) that these associations would be moderated by gender, SES, and  
18 hyperactivity/inattention, and their intersections. No directional predictions were  
19 made regarding the moderating effects.  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Methods

### *Participants*

A total of 5,336 individuals aged between 11 and 14 years were included in the current investigation (Supplementary Table 1) and were drawn from the HeadStart Cornwall study (Deighton et al., 2019; Hosang et al., 2023). In this study, pupils from all 31 state-maintained secondary schools in Cornwall in the United Kingdom (UK) were invited to take part in 2017 when they were in school Year 7 (age 11-12-years,  $N = 4,575$ ), and were followed up annually in Year 8 (age 12-13-years,  $N = 4,600$ ), and Year 9 (13-14-years,  $N = 3,604$ ) (see Deighton et al., 2019 for a detailed description of HeadStart). School identification data and individual-age data was not available for this sample (reported ages reflect UK average ranges). Parental consent was assumed unless parents opted their child out, and pupils assented prior to online participation at their school. Ethical approval for HeadStart was obtained from the University College London Ethics Committee (reference: 8097/003).

### *Measures*

*Depression and anxiety symptoms* were measured at each school year using the five-item emotional problems subscale of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). Items were self-rated on a 3-point Likert scale (“Not true”, “Somewhat true”, “Certainly true”). A prorated total score (0-10) was calculated where at least three items had response data, which was true for all observations at each school year.

*Youth adversity* was measured in two ways. First, using the bullying-victimisation item from the SDQ peer problems subscale: “Other children or young people pick on me or bully me” (Goodman, 1997). Second, using data collected from the local government Supporting Families programme, where individuals were coded “On Family List” if they experienced any

1  
2  
3 of the adversities listed in Supplementary Materials 1 (including risk of sexual exploitation,  
4 homelessness, exposure to domestic violence). Data were combined to create a binary  
5 variable indicating presence/absence of bullying (in any school year) and/or “On Family List”.  
6  
7  
8  
9

10 Data regarding the number and type of adversity was not available for this sample.  
11  
12

13 *Gender* and *SES* data were drawn from School Census records. Gender was recorded  
14 as “female” or “male”, and receipt/non-receipt of free school meals was used to index “lower  
15 *SES*” and “higher *SES*”, respectively. *Hyperactivity/inattention* was measured using the five  
16 items of the SDQ hyperactivity/inattention subscale (Goodman, 1997). Individuals were  
17 classified as “low” with scores of 0-6, and “high” with scores above 6, in line with scoring  
18 recommendations (Goodman, 1997). *Intersectionality profiles* were created based on the  
19 combination of gender, *SES*, and hyperactivity/inattention. Individuals were assigned to one  
20 of eight intersectionality profiles (e.g., male, higher *SES*, low hyperactivity/inattention  
21 profile).  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

#### 40 *Statistical analyses*

41 To address research question one, trajectories of depression and anxiety symptoms  
42 were estimated by specifying a latent growth model within a structural equation modelling  
43 framework (Supplementary Materials 2). Depression and anxiety symptoms at each school  
44 year were modelled as observed variables, specified as indicators of a latent intercept factor  
45 and a latent slope factor. The latent intercept was positioned at school Year 7 (age 11-12-  
46 years), reflecting estimated initial/baseline scores. The latent slope reflects the annual rate  
47 of change in symptoms across school Years 7-9 (herein referred to as *change over time*).  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57 School year-specific (residual) variances were freely estimated.  
58  
59  
60

1  
2  
3 An unconditional model was first run, followed by a conditional model with the latent  
4 growth factors regressed on youth adversity. A multiple group conditional model was then  
5 run, where parameters were freely estimated for each intersectionality profile  
6 (Supplementary Materials 3: *Mplus* script; Supplementary Figure 1: path diagram). A  
7 schematic diagram of the final model is shown in **Figure 1**. Incremental better fit of these  
8 models would figuratively indicate that trajectories of depression and anxiety symptoms vary  
9 with the presence/absence of youth adversity, and that at an omnibus level, the relations  
10 between youth adversity and the latent growth factors vary across intersectionality profiles.  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22

23 Model fit was assessed using the comparative fit index (CFI), root mean square error  
24 of approximation (RMSEA), and standardised root mean square residual (SRMR). CFI >.95,  
25 RMSEA <.08, and SRMR <.06 were broadly considered indicative of acceptable fit (Hu &  
26 Bentler, 1999; Marsh et al., 2004). Bayesian information criteria (BIC) was also used, with  
27 lower values indicative of better relative fit. Depression and anxiety symptoms were treated  
28 as continuous data. Full information maximum likelihood estimation was used to  
29 accommodate missing data across school years under the assumption that data was missing  
30 at random. Robust estimation was used to accommodate multivariate nonnormality of  
31 residuals, with adjustment to *SE* and test statistics. As a sensitivity analysis, the final analysis  
32 model was rerun with multiply imputed youth adversity data from 10 datasets.  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

47 To address research question two, a parameter moderation approach was used (e.g.,  
48 Bauer, 2017). The maximum likelihood regression estimates from the final analysis model  
49 were specified to approximate the extent to which the effect of youth adversity on the latent  
50 growth factors is moderated by the individual characteristics (gender, SES,  
51 hyperactivity/inattention), and interactions between these characteristics (reflecting  
52 intersectional effects). Using this approach, the derived compound parameters reflect the  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 extent to which *the regression coefficients* from the final analysis model are moderated by  
4 the characteristics and their intersections (**Figure 1**). Standard errors and confidence intervals  
5 of the compound parameters were estimated from 1,000 bootstrapped draws.  
6  
7  
8  
9

10 Prior to the main analyses (detailed above), the five depression and anxiety items  
11 were specified as indicators of a common latent factor in a confirmatory factor analysis, and  
12 measurement properties of the model were assessed at each school year. This provides  
13 model-based information regarding the extent to which modelling depression and anxiety as  
14 a unitary construct provides an adequate representation of the sample data, although testing  
15 models with more than one factor was beyond the scope of the current study. Longitudinal  
16 measurement invariance of depression and anxiety across school years was also assessed.  
17 This provides model-based information regarding the extent to which the measurement of  
18 depression and anxiety can be considered equivalent across time (van de Schoot et al., 2012)  
19 (Supplementary Materials 4). Model specifications recommended by Liu et al. (2017) for  
20 ordered categorical response data were used. For the models described in this paragraph,  
21 diagonally weighted least squares estimation was used, using pairwise present data.  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

40 Measurement invariance in depression and anxiety across intersectionality profiles at  
41 age 13-14-years was observed in this sample (pooled with two other Year 9 cohorts from the  
42 HeadStart Cornwall study) (Havers et al., in preparation).  
43  
44  
45  
46

47 Descriptive statistics were calculated using R (version 4.2). Structural equation  
48 modelling was conducted using *Mplus* (version 8.8).  
49  
50  
51  
52  
53

54 < Figure 1 about here >  
55  
56  
57  
58  
59  
60

## Results

1  
2  
3 A description of the sample is presented in **Table 1**. Mean depression and anxiety  
4 symptoms were 3.82 (*SD* 2.54) at age 11-12-years, 3.89 (*SD* 2.64) at age 12-13-years, and 4.32  
5  
6 (*SD* 2.75) at age 13-14-years. A total of 52.94% of individuals experienced youth adversity  
7  
8 across the study period. Descriptive results for youth adversity and depression and anxiety  
9  
10 symptoms for each intersectionality profile are reported in **Table 2**. At each age, proportions  
11  
12 experiencing youth adversity and mean levels of depression and anxiety symptoms were  
13  
14 *highest* for the intersectionality profile of female, lower SES, and high  
15  
16 hyperactivity/inattention. Depression and anxiety symptoms were *lowest* for the  
17  
18 intersectionality profile of male, higher SES, and low hyperactivity/inattention. The rate of  
19  
20 youth adversity was *lowest* for the intersectionality profile of female, higher SES, and low  
21  
22 hyperactivity/inattention. The rate of  
23  
24 youth adversity was *lowest* for the intersectionality profile of female, higher SES, and low  
25  
26 hyperactivity/inattention.  
27  
28  
29  
30  
31

32 < Table 1 and Table 2 about here >  
33  
34  
35  
36

37 The depression and anxiety items were adequately represented by a common factor  
38  
39 model at each school year. Model fit statistics and reliability estimates ( $\omega = 0.80-0.85$ ) derived  
40  
41 from the models are reported in Supplementary Table 2. Longitudinal measurement  
42  
43 invariance at the scalar level (a model with constrained thresholds and loadings) was  
44  
45 supported (Supplementary Table 3).  
46  
47  
48  
49  
50

51  
52 **Is youth adversity *associated* with baseline and change over time in depression and anxiety**  
53  
54 **symptoms across intersectionality profiles?**  
55  
56  
57  
58  
59  
60

1  
2  
3 The fit of the conditional multiple group model was acceptable (Supplementary Table  
4  
5 4). **Figure 2** shows the estimated average latent trajectories for each intersectionality profile  
6  
7 in the presence of youth adversity, compared to an absence of youth adversity.  
8  
9

10 For all intersectionality profiles, the presence of youth adversity compared to an  
11  
12 absence of such, was associated with higher mean depression and anxiety symptoms at  
13  
14 baseline (age 11-12-years). Youth adversity was only marginally associated with a different  
15  
16 rate of change over time in these symptoms, except for in two profiles, where there was a  
17  
18 more moderate effect (Supplementary Table 5): In these profiles, there was weak evidence  
19  
20 to suggest that youth adversity, compared to an absence of youth adversity, was associated  
21  
22 with a decrease in change over time for the male, lower SES, high hyperactivity/inattention  
23  
24 profile, and with an increase in change over time for the female, lower SES, high  
25  
26 hyperactivity/inattention profile.  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

40 < Figure 2 about here >  
41  
42  
43  
44

45 **Does the association between youth adversity and depression and anxiety symptoms (at  
46  
47 baseline and their change over time) differ across intersectionality profiles?**  
48  
49

50 The conditional multiple group model showed an improvement in terms of BIC  
51  
52 compared to the conditional single group models (Supplementary Table 4). This provides  
53  
54 model-based information to suggest that the association between youth adversity and the  
55  
56 latent growth factors differ across intersectionality profiles at an omnibus level.  
57  
58

59 Parameter estimates of the conditional multiple group model are reported in  
60  
61 Supplementary Tables 5 and 6. The effect of youth adversity on baseline symptoms was  
62  
63 highest for the male, lower SES, high hyperactivity/inattention intersectionality profile ( $B =$   
64  
65  
66

1  
2  
3 2.318,  $SE = 0.521$ ), and was lowest for the female, low SES, low hyperactivity/inattention  
4  
5 intersectionality profile ( $B = 1.106$ ,  $SE = 0.329$ ). As noted for research question one,  
6  
7 although the evidence is notably weak, the results suggest that the effects of youth  
8  
9 adversity on the rate of change over time may differ across intersectionality profiles; being  
10  
11 associated with an increase in the rate of change over time for most, but not all, profiles.  
12  
13  
14  
15  
16  
17

18 **To what extent is the association between youth adversity and depression and anxiety**  
19  
20 **symptoms (at baseline and their change over time) moderated by gender, SES, and**  
21  
22 **hyperactivity/inattention, and their intersections?**  
23  
24

25 Compound parameter estimates for assessing the moderating effects of the individual  
26  
27 characteristics and their intersections are shown in **Table 3**. There was weak evidence for  
28  
29 moderation effects in the association between youth adversity and change over time in  
30  
31 depression and anxiety symptoms (discussed here for effect sizes greater than half a standard  
32  
33 deviation): The first was for a gender by SES interaction. The difference between the  
34  
35 estimates for lower SES females ( $B = 0.169$ ,  $SE = 0.196$ ) and males ( $B = -0.307$ ,  $SE = 0.200$ ),  
36  
37 was 0.543  $SD$  greater ( $SE = 0.311$ , 95% CI -0.042, 1.153) compared to the difference between  
38  
39 the estimates for higher SES females ( $B = -0.008$ ,  $SE = 0.069$ ) and males ( $B = 0.209$ ,  $SE = 0.067$ ).  
40  
41 This reflects a greater moderating effect of gender at a lower level of SES than at a higher  
42  
43 level of SES.  
44  
45  
46  
47  
48

49 The second was for a gender by SES by hyperactivity/inattention interaction. The  
50  
51 difference between the estimates for lower SES females ( $B = 0.507$ ,  $SE = 0.437$ ) and males ( $B$   
52  
53  $= -0.626$ ,  $SE = 0.372$ ) compared to higher SES females ( $B = -0.163$ ,  $SE = 0.171$ ) and males ( $B =$   
54  
55  $0.028$ ,  $SE = 0.028$ ), was 1.254  $SD$  greater ( $SE = 0.737$ , 95% CI -2.189, 0.134) for high  
56  
57 hyperactivity/inattention, than it was for the difference between the estimates for lower SES  
58  
59  
60



1  
2  
3 females ( $B = 0.036$ ,  $SE = 0.198$ ) and males ( $B = -0.104$ ,  $SE = 0.029$ ), compared to higher SES  
4  
5 females ( $B = 0.029$ ,  $SE = 0.077$ ) and males ( $B = 0.029$ ,  $SE = 0.077$ ) for low  
6  
7 hyperactivity/inattention. This reflects a greater moderating effect of gender and SES at a  
8  
9 high compared to a low level of hyperactivity/inattention.  
10  
11

12  
13 We did not observe any other potentially notable moderating effects of youth  
14  
15 adversity on baseline depression and anxiety symptoms, or change over time in these  
16  
17 symptoms, either for the individual characteristics as main effects or for their interactions  
18  
19 (reflecting intersectional effects).  
20  
21

22  
23  
24  
25 < Table 3 about here >  
26  
27  
28  
29  
30

## 31 Discussion

32  
33 To our knowledge, this is the first study to investigate, a) the effect of youth adversity  
34  
35 on the trajectories of depression and anxiety symptoms in adolescence separately for  
36  
37 different intersectionality profiles (based on gender, SES, and hyperactivity/inattention), and  
38  
39 b) the role of intersectionality in differentiating the effect of youth adversity on these  
40  
41 trajectories. This investigation provides a novel contribution by finding evidence to suggest  
42  
43 that the effect of youth adversity on depression and anxiety symptoms at age 11-12-years is  
44  
45 most detrimental for males from lower SES backgrounds with high levels of  
46  
47 hyperactivity/inattention. We found evidence to suggest variability in the association  
48  
49 between youth adversity and the trajectories of depression and anxiety symptoms across  
50  
51 intersectionality profiles. Moderation effects attributable to the intersection of i) gender and  
52  
53 SES, and ii) gender, SES, and hyperactivity/inattention, were notable, albeit confidence  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 intervals were wide, indicating uncertainty in the estimated effects and therefore a need for  
4  
5 caution when interpreting the results.  
6  
7

8 The findings from this study supported the hypothesis that youth adversity would be  
9  
10 associated with trajectories of elevated depression and anxiety symptoms across  
11  
12 intersectionality profiles. These findings are broadly in line with previous research that  
13  
14 reported that youth adversity was associated with an increased risk of being in a  
15  
16 high/increasing latent trajectory group for adolescent depression and anxiety symptoms  
17  
18 compared to a low scoring latent trajectory group (Leban, 2021). The current results extend  
19  
20 these findings by demonstrating that the detrimental effects of youth adversity are evident  
21  
22 across intersections of society indexed by gender, SES, and hyperactivity/inattention. Youth  
23  
24 adversity did not alter the rate of change over time in depression and anxiety symptoms with  
25  
26 any certainty, however, importantly – average depression and anxiety symptoms started  
27  
28 higher and remained higher in the presence of youth adversity, compared to an absence of  
29  
30 youth adversity, for all intersectionality profiles.  
31  
32  
33  
34  
35  
36

37 Findings related to the second hypothesis that gender, SES, and  
38  
39 hyperactivity/inattention, and the intersections of these characteristics, would moderate the  
40  
41 relation between youth adversity and the latent growth factors were less clear. While a *broad*  
42  
43 level of moderation attributable to between group differences in intersectionality profiles can  
44  
45 be inferred through model comparison, moderation attributable to the characteristics that  
46  
47 were used to classify individuals into intersectionality profiles was only weakly evident for  
48  
49 two intersectional effects: i) for gender by SES, suggesting a greater moderating effect of  
50  
51 gender at a lower compared to a higher level of SES; and ii) for gender by SES by  
52  
53 hyperactivity/inattention interaction, suggesting a greater moderating effect of gender and  
54  
55 SES at a high compared to a low level of hyperactivity/inattention. It is possible that the broad,  
56  
57  
58  
59  
60

1  
2  
3 group-level differences may be reflective of some unmodelled characteristics in the data  
4  
5 between the groups. As a hypothetical example, differences between the intersectionality  
6  
7 profile groups could reflect characteristics at the school level that correlate with the  
8  
9 characteristics of the groups. For instance, neurotypical individuals from higher SES  
10  
11 backgrounds are more likely to attend grammar schools compared to nonselective schools  
12  
13 than neurodivergent individuals from lower SES backgrounds (Burgess et al., 2018). While  
14  
15 speculative, since school information is not available, this example serves to illustrate why  
16  
17 there could be moderation at the group-level that is not due to the variables that were  
18  
19 modelled.  
20  
21  
22  
23  
24

25 In terms of moderation attributable to intersectionality, the uncertainty in the  
26  
27 estimates prompts caution in interpreting the observed effects. The interaction  
28  
29 (intersectional) effects in the current study were specified as compound parameters. While  
30  
31 these estimates cannot be used in the same way that maximum likelihood estimates could be  
32  
33 utilised, for example, to estimate sample size requirements for estimating the effects with  
34  
35 greater certainty in future studies (Hancock & French, 2013), it was nonetheless of interest to  
36  
37 investigate the effects of increasing the current sample size. The results of post-hoc analyses  
38  
39 suggested that doubling the sample size would result in greater certainty in the two specific  
40  
41 interaction effects that were discussed above. These pseudo power analyses give a crude  
42  
43 estimate of the extent to which sample sizes may need to be increased in future studies, in  
44  
45 samples with similar characteristics, in order to observe more certainty of the moderating  
46  
47 effects of intersectionality as they were conceptualised in the current study.  
48  
49  
50  
51  
52  
53

54 Despite the lack of certainty regarding *moderation* attributable to intersectionality,  
55  
56 the results allude to an intersectional profile characterised by male gender, low SES, and high  
57  
58 hyperactivity/inattention as being most vulnerable to experiencing an increase in depression  
59  
60

1  
2  
3 and anxiety symptoms at age 11-12-years in the face of youth adversity, compared to an  
4 absence of such. From a clinical perspective, while this may be motivation to pay particular  
5 attention to adversity-exposed individuals meeting these profile characteristics, the current  
6 findings invite further research to test the robustness of this result in other samples and using  
7 other measures. Further, the results highlight the negative effects of youth adversity *across*  
8 intersectionality profiles.  
9

10  
11 In addition to the effects of sample size, there are several other factors to consider  
12 when interpreting the findings of uncertainty in terms of moderation due to intersectionality.  
13 The current results only pertain to *specific* societal/social identities reflected by the  
14 intersection of gender, SES, and hyperactivity/inattention, from many possible  
15 characteristics. Of note, trans, nonbinary, and gender diverse identification was not measured  
16 in this sample, but may be an important component of an individual's intersectional identity  
17 (e.g., Kidd et al., 2021). Other individual characteristics, such as, sexual orientation (Jonas et  
18 al., 2022), immigration status (Kern et al., 2020), and ethnicity (Mersky et al., 2021) may  
19 further be important factors to consider in the context of youth adversity and mental health.  
20 These could not be considered in the current study due to absence of or insufficient data.  
21 Specifically regarding ethnicity, intersectionality theory was developed in the context of black  
22 feminism (Crenshaw, 1990). Thus, ethnicity is important theoretically, and as well,  
23 preliminary empirical findings suggest that ethnicity may contribute to intersectional  
24 differences in the development of depression symptoms in young people (Chen & Tung,  
25 2023). Future work planned in our group will build on these findings by investigating the  
26 effects of youth adversity in addition to including ethnicity as an intersectional characteristic  
27 (Hosang et al., 2023).  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Of note, other recent work in our group found evidence to suggest that the *cross-*  
4 *sectional* association between youth adversity and depression and anxiety at age 13-14-years  
5  
6 in the current sample (pooled with two other Year 9 cohorts from the HeadStart Cornwall  
7  
8 study) was moderated by gender, and SES, as individual (non-interacting) characteristics  
9  
10 (Havers et al., in preparation). This pattern of results was not observed at age 11-12-years  
11  
12 (baseline) in the current study. Collectively, these results could suggest that age 13-14-years  
13  
14 but not age 11-12-years (where the latent intercept factor was positioned in the current  
15  
16 study), represents a specific developmental window of vulnerability for differentiating the  
17  
18 effect of youth adversity on depression and anxiety symptoms in terms of gender and SES.  
19  
20 However, in repositioning the latent intercept factor to 13-14-years in post-hoc analysis of  
21  
22 the current data, moderating effects of gender and SES were not detected. Several factors  
23  
24 could be contributing to this divergence in findings. For example, youth adversity in the  
25  
26 current study included bullying victimisation across the study period, rather than solely at age  
27  
28 13-14-years as was the case in the cross-sectional study. More work in this area is required to  
29  
30 facilitate an in-depth evaluation of and discussion around the source/s of these discrepant  
31  
32 findings.  
33  
34  
35  
36  
37  
38  
39  
40  
41

42 The results of this study have implications for research and practice since they expand  
43  
44 our understanding of the association between youth adversity and the development of  
45  
46 depression and anxiety symptoms in adolescence. The current findings should spur future  
47  
48 research in this area to explore the intersectionality of individual characteristics, which can  
49  
50 contribute towards a stratified approach to investigating mechanisms linking youth adversity  
51  
52 and mental health problems. In turn, this can inform theory development, with the ultimate  
53  
54 goal of informing clinical and/or community-level interventions that aim to reduce and  
55  
56 mitigate the negative impacts of youth adversity.  
57  
58  
59  
60

### *Methodological considerations*

The current study has a number of strengths including the use of both self-report and objective (i.e., from local government, and School Census records) youth adversity data from a large sample of adolescents. Utilising repeated measures of depression and anxiety symptoms, this study was able to explore trajectories of mental health in the face of youth adversity. However, there are several limitations that need to be considered when interpreting the findings. First, the temporal impact of youth adversity on the trajectories of depression and anxiety symptoms could not be ascertained, since adversities were those reported across the study period, not prior to the reporting of symptoms at baseline. It is important for future studies on this topic to adopt prospective longitudinal data collection so that temporal relations between adversity and the development of mental health problems can be delineated. Notwithstanding, our results show that individuals exposed to youth adversity experience higher levels of depression and anxiety symptoms that remain higher across ages 11-14-years compared to those that have not experienced adversity. Second, information about the experience of specific forms of adversity was not available in this study. Instead, the presence or absence of a range of different adversities was provided. More granular detail would allow for the identification of specific youth adversities that may pose a greater risk for the development of depression and anxiety symptoms. For example, neglect and emotional abuse have been found to have an especially strong association with mental health problems in adolescence and adulthood (Kisely et al., 2018; Mills et al., 2013). Future research should expand on existing findings to explore the impact of specific types of youth adversity on trajectories of depression and anxiety symptoms in young people in the context of intersectionality.

## Conclusion

In summary, our results indicate that youth adversity has detrimental effects on the development of depression and anxiety symptoms across ages 11-14-years, and that these effects pervade across intersectionality profiles. Our findings add to a growing body of literature that point to the negative impact of youth adversity on adolescent mental health and underscore the pervasiveness of these effects across the societal intersections under consideration in the current study. Although the certainty around intersectional moderation was limited, our findings indicate that the intersectionality profile characterised by male gender, lower SES, and high hyperactivity/inattention may be at a heightened risk of elevated levels of depression and anxiety symptoms at age 11-12-years in the face of youth adversity. An accumulation of research in this area is fundamental for drawing conclusions regarding the extent to which intersectional identity is, or is not, an important contextual condition for differentiating the effects of youth adversity on trajectories of depression and anxiety symptoms in adolescence.

### Financial disclosures and acknowledgements

The ATTUNE project is funded by a cross council UK Research and Innovation [UKRI] award (MR/W002183/1). The HeadStart Cornwall data was collected as part of the HeadStart learning programme and supported by funding from The National Lottery Community Fund. The content is solely the responsibility of the authors, and it does not reflect the views of The National Lottery Community Fund. LH thanks Gregory Hancock for providing such valuable guidance and support with the statistical modelling used in this study. The authors are grateful to all the research teams and participants who have contributed to the data that was analysed in this paper.

### Competing interests

The authors have declared that no competing interests exist.

### Correspondence

Dr Laura Havers. **Address:** Centre for Psychiatry & Mental Health, Wolfson Institute of Population Health, Queen Mary, University of London, Yvonne Carter Building, 58 Turner Street, London E1 2AB. **Tel:** 0207 882 2017. **Email:** [l.havers@qmul.ac.uk](mailto:l.havers@qmul.ac.uk)



## Key points

- Youth adversity is associated with persistent/increasing symptoms of depression and anxiety over time in adolescence. This association may be greater for minoritized, or disadvantaged groups
- The intersection of individual characteristics may be important for moderating the association between youth adversity and trajectories of depression and anxiety symptoms, but this has not yet been tested
- The current study found that youth adversity, compared to an absence, was associated with higher depression and anxiety symptoms at baseline that remained higher across ages 11-14-years, across intersectionality profiles (defined by gender, socio-economic status, and hyperactivity/inattention). Weak evidence suggested some degree of moderation attributable to the intersection between, i) gender and SES, and ii) gender, SES, and hyperactivity/inattention
- Future research should seek to assess the extent to which different operationalisations of intersectionality may impact on detecting moderation
- An accumulation of results from across studies is necessary to determine the extent to which individuals' intersectional profiles may provide a meaningful basis on which to focus prevention and intervention efforts

## References

- 1  
2  
3  
4  
5  
6  
7  
8  
9  
10 Assini-Meytin, L. C., Fix, R. L., Green, K. M., Nair, R., & Letourneau, E. J. (2022). Adverse  
11  
12 Childhood Experiences, Mental Health, and Risk Behaviors in Adulthood: Exploring  
13  
14 Sex, Racial, and Ethnic Group Differences in a Nationally Representative Sample.  
15  
16 *Journal of Child & Adolescent Trauma*, 15(3), 833–845.  
17  
18 <https://doi.org/10.1007/s40653-021-00424-3>  
19  
20  
21  
22  
23 Bauer, D. J. (2017). A more general model for testing measurement invariance and  
24  
25 differential item functioning. *Psychological Methods*, 22, 507–526.  
26  
27 <https://doi.org/10.1037/met0000077>  
28  
29  
30 Bevilacqua, L., Kelly, Y., Heilmann, A., Priest, N., & Lacey, R. E. (2021). Adverse childhood  
31  
32 experiences and trajectories of internalizing, externalizing, and prosocial behaviors  
33  
34 from childhood to adolescence. *Child Abuse & Neglect*, 112, 104890.  
35  
36 <https://doi.org/10.1016/j.chiabu.2020.104890>  
37  
38  
39  
40 Biswas, T., Scott, J. G., Munir, K., Renzaho, A. M. N., Rawal, L. B., Baxter, J., & Mamun, A. A.  
41  
42 (2020). Global variation in the prevalence of suicidal ideation, anxiety and their  
43  
44 correlates among adolescents: A population based study of 82 countries.  
45  
46 *eClinicalMedicine*, 24, 100395. <https://doi.org/10.1016/j.eclinm.2020.100395>  
47  
48  
49  
50 Bowleg, L. (2012). The Problem With the Phrase Women and Minorities: Intersectionality—  
51  
52 an Important Theoretical Framework for Public Health. *American Journal of Public*  
53  
54 *Health*, 102(7), 1267–1273. <https://doi.org/10.2105/AJPH.2012.300750>  
55  
56  
57  
58  
59  
60

- 1  
2  
3 Burgess, S., Crawford, C., & Macmillan, L. (2018). Access to grammar schools by socio-  
4  
5 economic status. *Environment and Planning A: Economy and Space*, 50(7), 1381–  
6  
7 1385.  
8  
9
- 10 Caspi, A., Houts, R. M., Ambler, A., Danese, A., Elliott, M. L., Hariri, A., Harrington, H., Hogan,  
11  
12 S., Poulton, R., Ramrakha, S., Rasmussen, L. J. H., Reuben, A., Richmond-Rakerd, L.,  
13  
14 Sugden, K., Wertz, J., Williams, B. S., & Moffitt, T. E. (2020). Longitudinal Assessment  
15  
16 of Mental Health Disorders and Comorbidities Across 4 Decades Among Participants  
17  
18 in the Dunedin Birth Cohort Study. *JAMA Network Open*, 3(4), e203221.  
19  
20  
21 <https://doi.org/10.1001/jamanetworkopen.2020.3221>  
22  
23  
24
- 25 Chen, E. Y.-J., & Tung, E. Y.-L. (2023). Similarities and Differences in the Longitudinal  
26  
27 Trajectories of Depressive Symptoms from Mid-Adolescence to Young Adulthood:  
28  
29 The Intersectionality of Gender, Race/Ethnicity, and Levels of Depressive Symptoms.  
30  
31 *Journal of Racial and Ethnic Health Disparities*, 1–16.  
32  
33  
34
- 35 Craig, S. G., Bondi, B. C., O'Donnell, K. A., Pepler, D. J., & Weiss, M. D. (2020). ADHD and  
36  
37 Exposure to Maltreatment in Children and Youth: A Systematic Review of the Past  
38  
39 10 Years. *Current Psychiatry Reports*, 22(12), 79. [https://doi.org/10.1007/s11920-](https://doi.org/10.1007/s11920-020-01193-w)  
40  
41 [020-01193-w](https://doi.org/10.1007/s11920-020-01193-w)  
42  
43  
44
- 45 Crenshaw, K. (1990). Mapping the Margins: Intersectionality, Identity Politics, and Violence  
46  
47 against Women of Color. *Stanford Law Review*, 43(6), 1241–1300.  
48  
49
- 50 Deighton, J., Lereya, S. T., Casey, P., Patalay, P., Humphrey, N., & Wolpert, M. (2019).  
51  
52 Prevalence of mental health problems in schools: Poverty and other risk factors  
53  
54 among 28 000 adolescents in England. *The British Journal of Psychiatry*, 215(3), 565–  
55  
56 567. <https://doi.org/10.1192/bjp.2019.19>  
57  
58  
59  
60

- 1  
2  
3 Desch, J., Mansuri, F., Tran, D., Schwartz, S. W., & Bakour, C. (2023). The association  
4  
5 between adverse childhood experiences and depression trajectories in the Add  
6  
7 Health study. *Child Abuse & Neglect*, *137*, 106034.  
8  
9 <https://doi.org/10.1016/j.chiabu.2023.106034>  
10  
11  
12  
13 Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M.  
14  
15 P., & Marks, J. S. (1998). Relationship of Childhood Abuse and Household  
16  
17 Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse  
18  
19 Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, *14*(4),  
20  
21 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)  
22  
23  
24  
25 Ghavami, N., Katsiaficas, D., & Rogers, L. O. (2016). Chapter Two - Toward an Intersectional  
26  
27 Approach in Developmental Science: The Role of Race, Gender, Sexual Orientation,  
28  
29 and Immigrant Status. In S. S. Horn, M. D. Ruck, & L. S. Liben (Eds.), *Advances in Child*  
30  
31 *Development and Behavior* (Vol. 50, pp. 31–73). JAI.  
32  
33 <https://doi.org/10.1016/bs.acdb.2015.12.001>  
34  
35  
36  
37 Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal*  
38  
39 *of Child Psychology and Psychiatry*, *38*(5), 581–586. [https://doi.org/10.1111/j.1469-](https://doi.org/10.1111/j.1469-7610.1997.tb01545.x)  
40  
41 [7610.1997.tb01545.x](https://doi.org/10.1111/j.1469-7610.1997.tb01545.x)  
42  
43  
44  
45 Hancock, G. R., & French, B. F. (2013). Power analysis in structural equation modeling. In  
46  
47 *Structural equation modeling: A second course, 2nd ed* (pp. 117–159). IAP  
48  
49 Information Age Publishing.  
50  
51  
52 Hohls, J. K., König, H.-H., Quirke, E., & Hajek, A. (2021). Anxiety, depression and quality of  
53  
54 life—A systematic review of evidence from longitudinal observational studies.  
55  
56 *International Journal of Environmental Research and Public Health*, *18*(22), 12022.  
57  
58  
59  
60

- 1  
2  
3 Hosang, G. M., Havers, L., Shuai, R., Fonagy, P., Fazel, M., Morgan, C., Karamanos, A.,  
4  
5 Fancourt, D., McCrone, P., Smuk, M., Bhui, K., & Shakoor, S. (2023). Protocol for  
6  
7 secondary data analysis of 4 UK cohorts examining youth adversity and mental  
8  
9 health in the context of intersectionality. *PLOS ONE*, *18*(8), e0289438.  
10  
11 <https://doi.org/10.1371/journal.pone.0289438>  
12  
13  
14  
15 Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis:  
16  
17 Conventional criteria versus new alternatives. *Structural Equation Modeling: A*  
18  
19 *Multidisciplinary Journal*, *6*(1), 1–55.  
20  
21  
22  
23 Jonas, L., Salazar de Pablo, G., Shum, M., Nosarti, C., Abbott, C., & Vaquerizo-Serrano, J.  
24  
25 (2022). A systematic review and meta-analysis investigating the impact of childhood  
26  
27 adversities on the mental health of LGBT+ youth. *JCPP Advances*, *2*(2), e12079.  
28  
29 <https://doi.org/10.1002/jcv2.12079>  
30  
31  
32  
33 Kalmakis, K. A., & Chandler, G. E. (2014). Adverse childhood experiences: Towards a clear  
34  
35 conceptual meaning. *Journal of Advanced Nursing*, *70*(7), 1489–1501.  
36  
37 <https://doi.org/10.1111/jan.12329>  
38  
39  
40 Kern, M. R., Duinhof, E. L., Walsh, S. D., Cosma, A., Moreno-Maldonado, C., Molcho, M.,  
41  
42 Currie, C., & Stevens, G. W. J. M. (2020). Intersectionality and Adolescent Mental  
43  
44 Well-being: A Cross-Nationally Comparative Analysis of the Interplay Between  
45  
46 Immigration Background, Socioeconomic Status and Gender. *Journal of Adolescent*  
47  
48 *Health*, *66*(6, Supplement), S12–S20.  
49  
50 <https://doi.org/10.1016/j.jadohealth.2020.02.013>  
51  
52  
53  
54 Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005).  
55  
56 Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the  
57  
58  
59  
60

- 1  
2  
3 National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 593–  
4  
5 602. <https://doi.org/10.1001/archpsyc.62.6.593>  
6  
7
- 8 Kidd, K. M., Sequeira, G. M., Douglas, C., Paglisotti, T., Inwards-Breland, D. J., Miller, E., &  
9  
10 Coulter, R. W. S. (2021). Prevalence of Gender-Diverse Youth in an Urban School  
11  
12 District. *Pediatrics*, 147(6), e2020049823. <https://doi.org/10.1542/peds.2020->  
13  
14 049823  
15  
16
- 17  
18 Kisely, S., Abajobir, A. A., Mills, R., Strathearn, L., Clavarino, A., & Najman, J. M. (2018). Child  
19  
20 maltreatment and mental health problems in adulthood: Birth cohort study. *The*  
21  
22 *British Journal of Psychiatry*, 213(6), 698–703. <https://doi.org/10.1192/bjp.2018.207>  
23  
24
- 25 Leban, L. (2021). The effects of adverse childhood experiences and gender on  
26  
27 developmental trajectories of internalizing and externalizing outcomes. *Crime &*  
28  
29 *Delinquency*, 67(5), 631–661.  
30  
31
- 32 Liu, Y., Millsap, R. E., West, S. G., Tein, J.-Y., Tanaka, R., & Grimm, K. J. (2017). Testing  
33  
34 measurement invariance in longitudinal data with ordered-categorical measures.  
35  
36 *Psychological Methods*, 22(3), 486.  
37  
38
- 39  
40 Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on  
41  
42 hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in  
43  
44 overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*,  
45  
46 11(3), 320–341.  
47  
48
- 49 Mersky, J. P., Choi, C., Plummer Lee, C., & Janczewski, C. E. (2021). Disparities in adverse  
50  
51 childhood experiences by race/ethnicity, gender, and economic status: Intersectional  
52  
53 analysis of a nationally representative sample. *Child Abuse & Neglect*, 117, 105066.  
54  
55  
56  
57 <https://doi.org/10.1016/j.chiabu.2021.105066>  
58  
59  
60

- 1  
2  
3 Michaud, P.-A., & Fombonne, E. (2005). Common mental health problems. *BMJ*, *330*(7495),  
4  
5 835–838. <https://doi.org/10.1136/bmj.330.7495.835>  
6  
7  
8 Mills, R., Scott, J., Alati, R., O’Callaghan, M., Najman, J. M., & Strathearn, L. (2013). Child  
9  
10 maltreatment and adolescent mental health problems in a large birth cohort. *Child*  
11  
12 *Abuse & Neglect*, *37*(5), 292–302. <https://doi.org/10.1016/j.chiabu.2012.11.008>  
13  
14  
15 Morin, A. J. S., Maïano, C., Nagengast, B., Marsh, H. W., Morizot, J., & Janosz, M. (2011).  
16  
17 General Growth Mixture Analysis of Adolescents’ Developmental Trajectories of  
18  
19 Anxiety: The Impact of Untested Invariance Assumptions on Substantive  
20  
21 Interpretations. *Structural Equation Modeling: A Multidisciplinary Journal*, *18*(4),  
22  
23 613–648. <https://doi.org/10.1080/10705511.2011.607714>  
24  
25  
26  
27 Schubert, K. O., Clark, S. R., Van, L. K., Collinson, J. L., & Baune, B. T. (2017). Depressive  
28  
29 symptom trajectories in late adolescence and early adulthood: A systematic review.  
30  
31 *Australian & New Zealand Journal of Psychiatry*, *51*(5), 477–499.  
32  
33  
34  
35 Shorey, S., Ng, E. D., & Wong, C. H. J. (2022). Global prevalence of depression and elevated  
36  
37 depressive symptoms among adolescents: A systematic review and meta-analysis.  
38  
39 *British Journal of Clinical Psychology*, *61*(2), 287–305.  
40  
41  
42 <https://doi.org/10.1111/bjc.12333>  
43  
44  
45 Tully, P. J., Harrison, N. J., Cheung, P., & Cosh, S. (2016). Anxiety and Cardiovascular Disease  
46  
47 Risk: A Review. *Current Cardiology Reports*, *18*(12), 120.  
48  
49  
50 <https://doi.org/10.1007/s11886-016-0800-3>  
51  
52  
53 van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement  
54  
55 invariance. *European Journal of Developmental Psychology*, *9*(4), 486–492.  
56  
57  
58 <https://doi.org/10.1080/17405629.2012.686740>  
59  
60

1  
2  
3 Walsh, D., McCartney, G., Smith, M., & Armour, G. (2019). Relationship between childhood  
4 socioeconomic position and adverse childhood experiences (ACEs): A systematic  
5 review. *J Epidemiol Community Health*, 73(12), 1087–1093.  
6  
7  
8  
9  
10 <https://doi.org/10.1136/jech-2019-212738>  
11

12  
13 World Health Organization. (2017). *Depression and Other Common Mental Disorders: Global*  
14  
15 *Health Estimates*.  
16

17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For Peer Review



**Table 1.** Sample Description

Variable	Year 7	Year 8	Year 9
	(11-12-years)	(12-13-years)	(13-14-years)
	<i>N</i> = 4,575	<i>N</i> = 4,600	<i>N</i> = 3,604
Gender			
Female	2,270 (49.62%)	2,335 (49.24%)	1,785 (49.53%)
Male	2,303 (50.34%)	2,265 (51.76%)	1,819 (50.47%)
No data	2 (< 1%)	0 (0%)	0 (0%)
SES			
Lower	674 (14.73%)	668 (14.52%)	555 (15.40%)
Higher	3,901 (85.27%)	3,932 (85.48%)	3,048 (84.57%)
No data	0 (0%)	0 (0%)	1 (<1%)
Hyperactivity/inattention			
High	1,170 (25.57%)	1,199 (26.07%)	1,002 (27.80%)
Low	3,280 (71.69%)	3,291 (71.54%)	2,529 (70.17%)
No data	125 (2.73%)	110 (2.39%)	73 (2.03%)
Youth adversity			
Yes	2,444 (53.42%)	2,435 (52.93%)	1,958 (54.33%)

1	No	2,108 (46.08%)	2,151 (46.76%)	1,637 (45.42%)
2	No data	23 (<1%)	14 (<1%)	9 (<1%)
3				
4	Depression and anxiety symptoms (0-10)			
5				
6	<i>N</i> with total score data	4,462	4,500	3,537
7				
8	Mean ( <i>SD</i> )	3.82 (2.54)	3.89 (2.63)	4.32 (2.75)
9				
10	Range	0-10	0-10	0-10
11				
12	Median	4	4	4
13				
14				

Note. *N*: number of individuals. SES: socio-economic status

For Peer Review

**Table 2.** Youth Adversity and Depression and Anxiety Symptoms by Intersectionality Profiles

Intersectionality profile	N (%) in intersectionality profile <sup>a</sup>	N (%) of intersectionality profile reporting youth adversity <sup>b</sup>	Depression and anxiety symptoms by school year		
			Mean (SD) <sup>c</sup>	Year 7 (age 11-12-years)	Year 8 (age 12-13-years)
Males, Higher SES, Low Hyperactivity/inattention	1,327 (29.84%)	623 (47.02%)	2.86 (2.21), N = 1,327	2.77 (2.24), N = 1,185	2.92 (2.39), N = 883
Females, Higher SES, Low Hyperactivity/inattention	1,519 (34.18%)	692 (45.59%)	4.01 (2.45), N = 1,519	4.43 (2.59), N = 1,364	5.06 (2.56), N = 1,024
Males, Lower SES, Low Hyperactivity/inattention	188 (4.23%)	143 (76.06%)	3.42 (2.49), N = 188	3.26 (2.38), N = 144	3.20 (2.55), N = 128
Females, Lower SES, Low Hyperactivity/inattention	245 (5.47%)	167 (68.72%)	4.39 (2.53), N = 245	4.88 (2.55), N = 203	5.84 (2.51), N = 162
Males, Higher SES, High Hyperactivity/inattention	591 (13.29%)	356 (60.34%)	3.93 (2.47), N = 591	3.69 (2.58), N = 507	3.63 (2.55), N = 383
Females, Higher SES, High Hyperactivity/inattention	362 (8.15%)	226 (62.43%)	5.34 (2.59), N = 362	5.14 (2.68), N = 296	5.88 (2.59), N = 235
Males, Lower SES, High Hyperactivity/inattention	121 (2.70%)	98 (81.67%)	4.52 (2.51), N = 121	3.60 (2.59), N = 99	3.50 (2.56), N = 68
Females, Lower SES, High Hyperactivity/inattention	95 (2.14%)	82 (86.32%)	6.11 (2.50), N = 95	6.24 (2.71), N = 69	6.31 (2.31), N = 54

Note. N: number of individuals. SES: socio-economic status

<sup>a</sup> N = 4,448 with intersectionality profile data

<sup>b</sup> percentage of individuals in intersectionality profile with youth adversity data across the study period (N = 4,441)

<sup>c</sup> individuals in intersectionality profile with depression and anxiety symptoms data at each time-point

**Table 3.** Compound Parameter Estimates of Youth Adversity as a Predictor of the Latent Growth Factors of Depression and Anxiety Symptoms

Parameter description	Latent intercept factor regressed on youth adversity <sup>a</sup>				Latent slope factor regressed on youth adversity <sup>b</sup>			
	Parameter estimate (SE)	95% CI	Standardised estimate (SE)	95% CI	Parameter estimate (SE)	95% CI	Standardised estimate (SE)	95% CI
<b>Weighted averages</b>								
Males	1.635 (0.093)	1.445, 1.816	0.928 (0.065)	0.794, 1.054	-0.018 (0.063)	-0.144, 0.111	-0.020 (0.073)	-0.165, 0.130
Females	1.518 (0.105)	1.298, 1.716	0.746 (0.060)	0.630, 0.860	0.019 (0.066)	-0.115, 0.142	0.019 (0.069)	-0.119, 0.146
Higher SES	1.564 (0.072)	1.424, 1.718	0.823 (0.044)	0.742, 0.915	0.010 (0.048)	-0.095, 0.104	0.011 (0.051)	-0.099, 0.110
Lower SES	1.647 (0.211)	1.185, 2.075	0.858 (0.141)	0.574, 1.107	-0.058 (0.135)	-0.329, 0.227	-0.066 (0.200)	-0.427, 0.273
Low hyperactivity/inattention	1.521 (0.077)	1.372, 1.676	0.825 (0.050)	0.737, 0.925	0.022 (0.051)	-0.081, 0.124	0.024 (0.056)	-0.088, 0.133
High hyperactivity/inattention	1.730 (0.151)	1.426, 2.022	0.840 (0.085)	0.674, 1.006	-0.059 (0.099)	-0.259, 0.138	-0.057 (0.101)	-0.247, 0.144
<b>Weighted main effects</b>								
Gender (male - female)	0.117 (0.145)	-0.165, 0.396	0.061 (0.067)	-0.084, 0.208	-0.037 (0.091)	-0.208, 0.155	-0.039 (0.100)	-0.223, 0.166
SES (higher - lower)	-0.083 (0.230)	-0.517, 0.389	-0.044 (0.122)	-0.269, 0.199	0.068 (0.143)	-0.232, 0.349	0.072 (0.159)	-0.248, 0.380
Hyperactivity/inattention (low - high)	-0.209 (0.170)	-0.564, 0.126	-0.110 (0.090)	-0.296, 0.068	0.081 (0.111)	-0.122, 0.297	0.086 (0.119)	-0.137, 0.314
<b>Weighted interaction effects</b>								
Gender x SES	-0.606 (0.461)	-1.523, 0.261	-0.319 (0.243)	-0.820, 0.121	0.512 (0.291)	-0.038, 1.068	0.543 (0.311)	-0.042, 1.153
Gender x hyperactivity/inattention	0.298 (0.352)	-0.358, 0.997	0.157 (0.186)	-0.187, 0.533	0.041 (0.232)	-0.422, 0.492	0.043 (0.248)	-0.449, 0.532

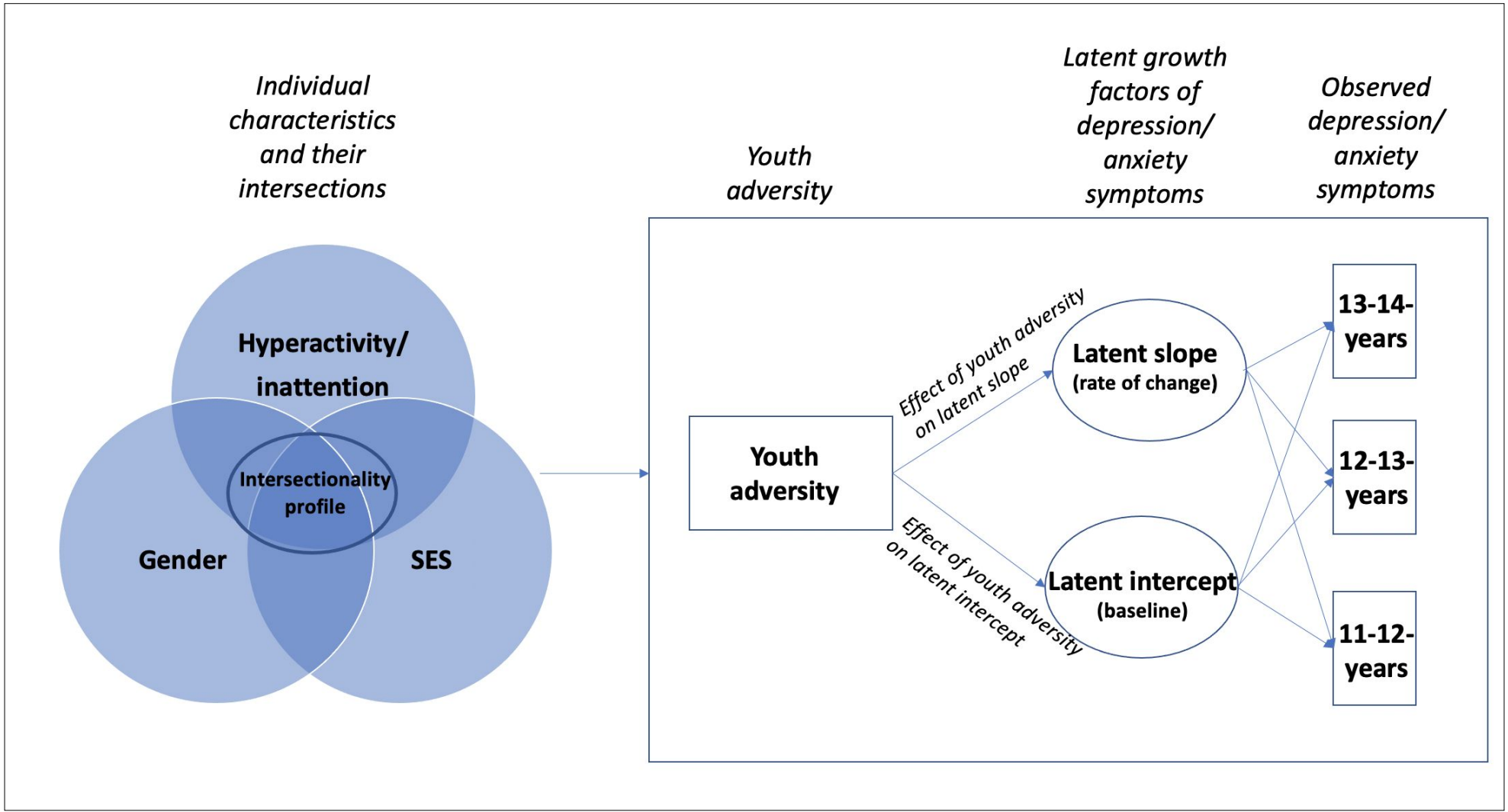
SES x hyperactivity/inattention	0.670 (0.524)	-0.367, 1.731	0.352 (0.277)	-0.190, 0.920	-0.025 (0.350)	-0.711, 0.627	-0.027 (0.374)	-0.772, 0.659
Gender x SES x hyperactivity/inattention	0.015 (1.052)	-1.902, 2.155	0.008 (0.556)	-1.026, 1.115	-1.183 (0.687)	-2.655, 0.127	-1.254 (0.737)	-2.819, 0.134

Note.  $N = 4,441$  (with intersectionality profile and youth adversity data).  $N$ : number of individuals. SES: socio-economic status. Parameter estimates from maximum likelihood estimation, with SE and bias-corrected bootstrapped CI from 1,000 draws. Weighted pooled standard deviations used for calculation of standardised estimates. Compound parameter estimates specified using the maximum likelihood estimates derived from the multiple group model of youth adversity as a predictor of the latent growth factors of depression and anxiety symptoms, weighted by intersectionality profile sample size. Results were substantively unchanged where missing youth adversity data was imputed (10 datasets,  $N = 4,448$ )

<sup>a</sup> average effect of youth adversity on depression and anxiety symptoms at baseline (age 11-12-years)

<sup>b</sup> average effect of youth adversity on change over time in depression and anxiety symptoms

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46



**Figure 1.** Schematic Diagram of the Multiple Group Conditional Latent Growth Model

1 *Note.* SES: socio-economic status. Intersectional profile (depicted at the centre of the Venn diagram, above left) is used as the grouping variable in a multiple group model, where everything  
2 inside of the box (above right) is estimated for each intersectionality profile group. Compound parameters are further estimated, reflecting the extent to which the individual characteristics,  
3 as well as the intersections between them, moderate the paths from youth adversity to the latent growth factors. The observed depression/anxiety symptoms scores are indicators of the  
4 latent growth factors. A non-schematic, labelled path diagram is shown in Supplementary Figure 1  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

For Peer Review

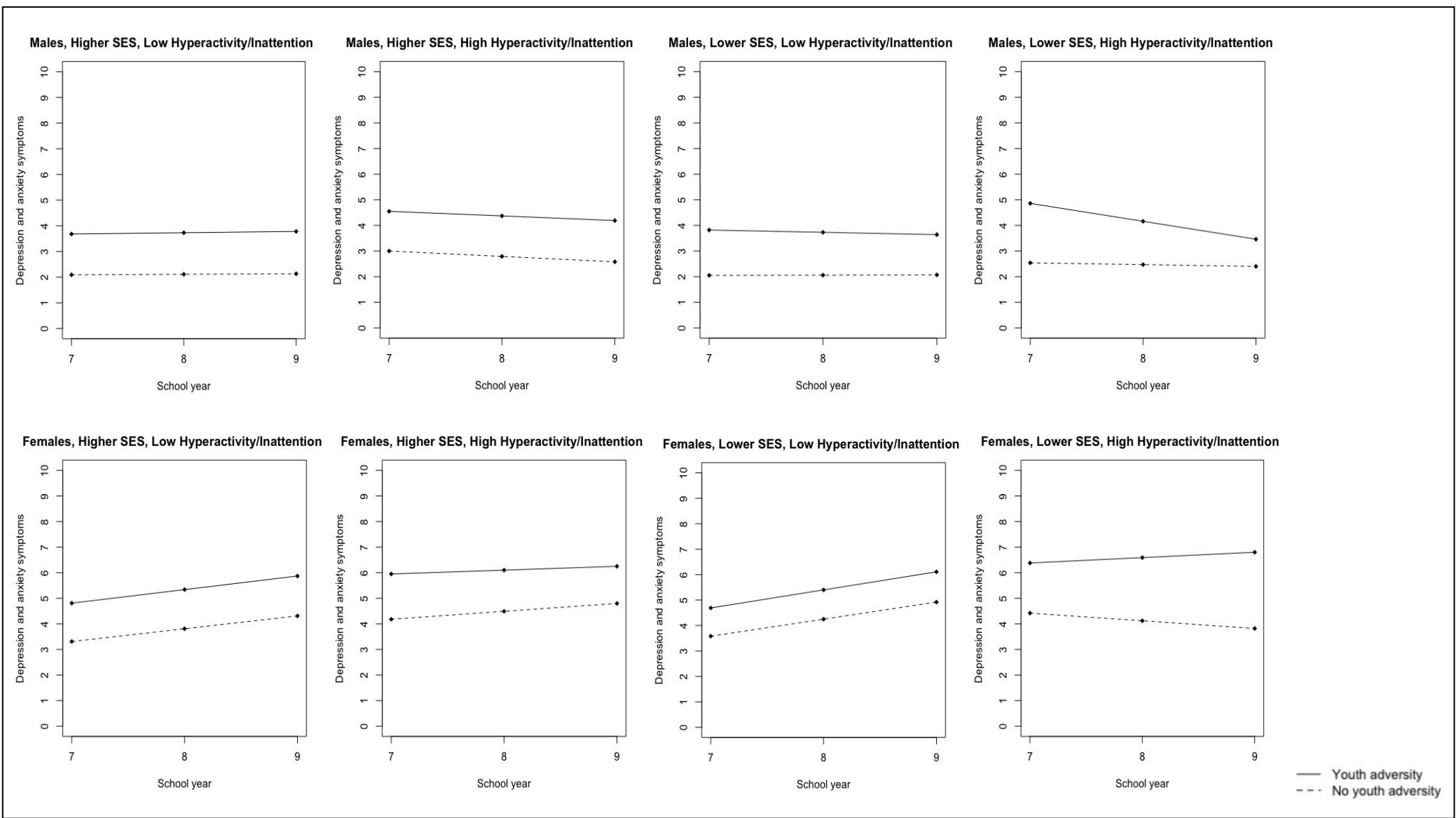


Figure 2. Effect of Youth Adversity on Average Depression and Anxiety Symptoms Trajectories by Intersectionality Profiles



1 *Note.* SES: socio-economic status. Y axis: depression and anxiety symptoms total observed score. School year corresponds to the following average ages: 11-12-years (Year 7), 12-13-years  
2 (Year 8), 13-14-years (Year 9)  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

For Peer Review

**Supplementary Materials 1.** Supporting Families Programme Eligibility Criteria (for "On Family List" classification)

- 1.1: An adult or child who has committed a proven offence in the previous 12 months
- 1.2: An adult or child who has received an anti-social behaviour intervention in the previous 12 months
- 1.3: An individual in the household is known to the Anti-Social Behaviour Team for incidents of anti-social behaviour but has not received a formal intervention
- 2.1: A child whose school attendance is <90% across the last 3 terms excluding authorised absences
- 2.2: A child with at least 3 fixed term exclusions in the last 3 terms
- 2.3: A child who has been permanently excluded in the last 3 school terms
- 2.4: A child who is in an alternative education provision to improve their behaviour (not SEN pupils)
- 2.5: A child who is known to the Education Welfare Service as a 'Child Not In School' (CNIS)
- 2.6: A child identified as having a score below threshold in communication skills in the 2-2.5-year-old health check or Primary School assessment (school readiness).
- 3.1: A child with a 'Common Assessment Framework' or 'Early Help Plan' in the previous 12 months
- 3.2: A 'Child In Need' under section 17 of The Children Act 1989 in the previous 12 months
- 3.3: A child which has been listed as missing from home in the previous 12 months
- 3.4: A child is identified as at risk of sexual exploitation
- 3.5: A young person aged under 19 became a parent in the past 12 months
- 3.6: A child who is a young carer
- 4.1: An adult in receipt of out-of-work benefits (or Universal Credit, if relevant), except those claiming carers allowance only, where worklessness is not considered a problem for the family
- 4.2: A young person aged 16 – 19 who is not in employment, education, or training
- 4.3: The family have problematic or unmanageable levels of debt
- 4.4: The family are homeless
- 4.5: The family are threatened with or at risk of homelessness
- 5.1: An individual who has experienced or is currently experiencing domestic abuse and has been engaged with specialist services in the past 12 months
- 5.2: An individual in the household discloses domestic abuse to a key worker or other professional and is not engaged with specialist services
- 6.1: An individual currently undergoing or who has undergone treatment for problem use of alcohol and/or other drugs in the last 12 months
- 6.2: An individual in the household discloses problem use of alcohol and/or other drugs to a key worker or other professional and is not engaged with specialist services
- 6.3: There is unmanaged physical or mental illness or disability within the household
- 6.4: A child on Universal Plus Higher or Universal Partnership Plus pathways

**Supplementary Materials 2.** Additional information on latent growth modelling

1  
2 In a linear growth model, a latent intercept and a latent slope factor are specified to capture the two components of a latent  
3 trajectory (latent growth). With more than three time-points of data, nonlinear models can also be specified. The intercept and  
4 slope factors are *latent* because they are not directly observed but are estimated based on the relations among the variables  
5 that have been observed. The repeated measures are specified as indicators of the latent growth factors. In this modelling  
6 framework, the *average* within-person trajectory is estimated (represented by the *means* of the latent intercept and the latent  
7 slope), as well as the between-person *variability* around the averages (represented by the *variances* of the latent intercept and  
8 the latent slope). Note that in a model where the latent growth factors are regressed on another/other variable/s and are thus  
9 endogenous (dependent), the *averages* are represented as *intercepts*, and the variances are represented as *residual variances*.  
10 Residual variances of the repeated measures are also estimated, reflecting time-specific variance not explained by the  
11 (conditional or unconditional) latent growth factors.  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For Peer Review

**Supplementary Materials 3.** *Mplus* script for conditional multiple group latent growth model

1  
2 TITLE: Conditional multiple group latent growth model  
3

4 VARIABLE:

5 USEVARIABLES =

6 Yr7\_SDQ

7 Yr8\_SDQ

8 Yr9\_SDQ

9 ACES;

10  
11 GROUPING =

12 IS\_profile

13 (0 = 0 1 = 1

14 2 = 2 3 = 3

15 4 = 4 5 = 5

16 6 = 6 7 = 7);

17  
18 ANALYSIS:

19 ESTIMATOR = MLR;

20  
21 MODEL:

22 !! Specify latent intercept (i) and slope (s) factors

23 i s | Yr7\_SDQ@0 Yr8\_SDQ@1 Yr9\_SDQ@2;

24  
25 !! This specification estimates the following:

26 i s; ! residual variances of latent intercept and slope factors

27 i WITH s; ! residual covariance of latent intercept and slope factors

28 Yr7\_SDQ Yr8\_SDQ Yr9\_SDQ; ! residual variances of repeated measures (observed SDQ)

29 [i s]; ! intercepts of latent intercept and slope factors

30  
31 !! Specify structural paths

32 i ON ACES; ! latent intercept factor regressed on observed youth adversity measure

33 s ON ACES; ! latent slope factor regressed on observed youth adversity measure

34  
35  
36 !! All parameters estimated separately for each intersectionality profile group (defined under grouping command)  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Supplementary Materials 4.** Additional information on longitudinal measurement invariance analysis

1  
2 One approach for assessing measurement invariance is to specify a multiple group confirmatory factor analysis. Using this  
3 approach, a series of models are sequentially specified to assess the extent to which different parameters for a measurement  
4 model can be considered sufficiently equivalent (invariant) across measurement occasions. First, a configural model tests for  
5 invariance in the general configuration of items to factors. Second, a metric (or 'weak invariance') model tests for invariance in  
6 the factor loadings. Third, a scalar (or 'strong invariance') model tests for invariance in the item thresholds (for ordered  
7 categorical data, item intercepts for continuous data), in addition to the factor loadings. A unique factor (or 'strict invariance')  
8 model can be used to test for invariance in the time-specific residual variances, though this level of invariance is not typically  
9 assessed  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For Peer Review

Supplementary Table 1. Data Across School Years

	Total	Complete	Year 7 and year 8 only	Year 7 and year 9 only	Year 8 and year 9 only	Year 7 only	Year 8 only	Year 9 only	No data
<i>N</i>	5,336	2,614 (48.99%)	1,262 (23.65%)	330 (6.18%)	366 (6.86%)	256 (4.80%)	258 (4.84%)	227 (4.25%)	23 (< 1%)

Note. *N*: number of individuals. Exact age data is not available for this sample. Based on averages in the United Kingdom, year 7 = age 11-12-years, year 8 = age 12-13-years, and year 9 = age 13-14-years

For Peer Review

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

**Supplementary Table 2.** Model Fit Information for Confirmatory Factor Analysis of Depression and Anxiety as a Common Factor Model at Each School Year

	<b>N</b>	<b>Par.</b>	<b>Test Statistic (df)</b>	<b>CFI</b>	<b>RMSEA [90% CI]</b>	<b>SRMR</b>	<b>Omega [95% CI]</b>
Year 7 (age 11-12-years)	4,262	15	71.096 (5), $p < .001$	0.991	0.054 [0.044, 0.066]	0.020	0.800 [0.791, 0.811]
Year 8 (age 12-13-years)	4,500	15	139.048 (5), $p < .001$	0.986	0.077 [0.066, 0.089]	0.026	0.826 [0.815, 0.835]
Year 9 (age 13-14-years)	3,537	15	98.370 (5), $p < .001$	0.990	0.073 [0.061, 0.086]	0.023	0.850 [0.839, 0.859]

*Note.* N: number of individuals. Par: number of parameters. CFI: comparative fit index. RMSEA: root mean square error of approximation. SRMR: standardised root mean square residual. Diagonally weighted least squares (DWLS) estimation with mean and variance adjustment (WLSMV), using pairwise present data. Omega estimates with bias-corrected bootstrapped CI from 1,000 draws

For Peer Review

**Supplementary Table 3.** Model Fit Information for Longitudinal Measurement Invariance Analysis of Depression and Anxiety as a Common Factor Model

Model		Model fit				Chi-square difference test	Change values		
	Par.	Test statistic ( <i>df</i> )	CFI	RMSEA [90% CI]	SRMR	Test statistic ( <i>difference df</i> )	CFI	RMSEA	SRMR
Configural	63	458.794 (72), <i>p</i> < .001	0.990	0.032 [0.029, 0.035]	0.026	-	-	-	-
Metric (constrained loadings)	55	571.113 (80), <i>p</i> < .001	0.987	0.034 [0.031, 0.037]	0.028	104.101 (8), <i>p</i> < .001	0.003	-0.002	-0.002
Scalar (constrained thresholds and loadings)	47	656.960 (88), <i>p</i> < .001	0.985	0.035 [0.032, 0.0327]	0.028	92.948 (8), <i>p</i> < .001	0.002	-0.001	0.000

Note: *N* = 5,313. *N*: number of individuals. Par: number of parameters. CFI: comparative fit index. RMSEA: root mean square error of approximation. SRMR: standardised root mean square residual. Diagonally weighted least squares (DWLS) estimation with mean and variance adjustment (WLSMV), using pairwise present data

For Peer Review

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46



**Supplementary Table 4.** Model Fit Information for Latent Growth Models of Depression and Anxiety Symptoms

Model	Par.	Test statistic ( <i>df</i> )	CFI	RMSEA [90% CI]	SRMR	BIC	AIC
Unconditional model	8	15.324 (1), $p < .001$	0.994	0.057 [0.034, 0.083]	0.013	50,443.819	50,418.399
Conditional (youth adversity) model	10	15.841 (2), $p < .001$	0.996	0.039 [0.023, 0.059]	0.013	49,838.734	49,774.747
Conditional (youth adversity) multiple group model	80	40.975 (16), $p < .001$	0.992	0.053 [0.033, 0.073]	0.021	49,413.122	48,901.231

*Note.*  $N = 4,441$  (with intersectionality profile and youth adversity data).  $N$ : number of individuals. Par: number of parameters. CFI: comparative fit index. RMSEA: root mean square error of approximation. SRMR: standardised root mean square residual. BIC: Bayesian information criterion. AIC: Akaike information criterion. Full information maximum likelihood estimation, with robust adjustment (MLR). In the conditional model, the latent growth factors are regressed on the observed youth adversity variable. In the multiple group model, separate parameters are estimated for each of the intersectionality profiles

For Peer Review

**Supplementary Table 5.** Parameter Estimates from the Multiple Group Model of Youth Adversity as a Predictor of the Latent Growth Factors of Depression and Anxiety Symptoms

Intersectionality profile	N	Intercepts of latent growth factors <sup>a</sup>		Residual variances of latent growth factors <sup>b</sup>		Regression paths of latent growth factors regressed on youth adversity <sup>c</sup>		Latent intercept-slope residual covariance <sup>d</sup>
		Intercept	Slope	Intercept	Slope	Intercept on YA	Slope on YA	
Males, Higher SES, Low Hyperactivity/inattention	1,325	2.093 (0.067), $p < .001$	0.020 (0.020), $p = .647$	2.667 (0.282), $p < .001$	0.718 (0.149), $p < .001$	1.591 (0.113), $p < .001$	0.029 (0.077), $p = .709$	-0.574 (0.173), $p = .001$
Females, Higher SES, Low Hyperactivity/inattention	1,518	3.308 (0.076), $p < .001$	0.504 (0.050), $p < .001$	4.040 (0.274), $p < .001$	0.979 (0.140), $p < .001$	1.496 (0.121), $p < .001$	0.029 (0.077), $p = .705$	-0.878 (0.168), $p < .001$
Males, Lower SES, Low Hyperactivity/inattention	188	2.053 (0.246), $p < .001$	0.005 (0.156), $p = .976$	3.218 (0.818), $p < .001$	0.840 (0.426), $p = .049$	1.766 (0.322), $p < .001$	-0.104 (0.029), $p = .618$	-0.700 (0.501), $p = .162$
Females, Lower SES, Low Hyperactivity/inattention	243	3.577 (0.263), $p < .001$	0.668 (0.154), $p < .001$	3.574 (0.744), $p < .001$	0.368 (0.376), $p = .328$	1.106 (0.329), $p = .001$	0.036 (0.198), $p = .854$	-0.477 (0.440), $p = .278$
Males, Higher SES, High Hyperactivity/inattention	590	2.996 (0.143), $p < .001$	-0.213 (0.092), $p = .021$	4.042 (0.502), $p < .001$	1.057 (0.260), $p < .001$	1.551 (0.192), $p < .001$	0.028 (0.128), $p = .827$	-1.142 (0.316), $p < .001$
Females, Higher SES, High Hyperactivity/inattention	362	4.183 (0.211), $p < .001$	0.313 (0.136), $p = .021$	4.565 (0.633), $p < .001$	1.115 (0.319), $p < .001$	1.770 (0.264), $p < .001$	-0.163 (0.171), $p = .340$	-0.907 (0.367), $p = .013$
Males, Lower SES, High Hyperactivity/inattention	120	2.539 (0.462), $p < .001$	-0.068 (0.338), $p = .840$	3.108 (0.965), $p = .001$	0.600 (0.569), $p = .292$	2.318 (0.521), $p < .001$	-0.626 (0.372), $p = .092$	-0.336 (0.589), $p = .569$
Females, Lower SES, High Hyperactivity/inattention	95	4.422 (0.671), $p < .001$	-0.301 (0.400), $p = .452$	5.655 (1.413), $p < .001$	1.779 (0.594), $p = .003$	1.955 (0.719), $p = .007$	0.507 (0.437), $p = .246$	-2.475 (0.798), $p = .002$

Note.  $N = 4,441$  (with intersectionality profile and youth adversity data).  $N$ : number of individuals. SES: socio-economic status. YA: youth adversity. Par: number of parameters. Full information maximum likelihood estimation, with robust adjustment (MLR).  $SE$  in parentheses. Results were substantively unchanged where missing youth adversity data was imputed (10 datasets,  $N = 4,448$ ). School year-specific residual variances shown in Supplementary Table 6

<sup>a</sup> average level of depression and anxiety symptoms at age 11-12-years, (intercept), and change over time in these symptoms (slope) in the absence of youth adversity

<sup>b</sup> variance of depression and anxiety symptoms at age 11-12-years (intercept) and change over time in these symptoms (slope). Variances are residual because the latent growth factors are regressed on youth adversity

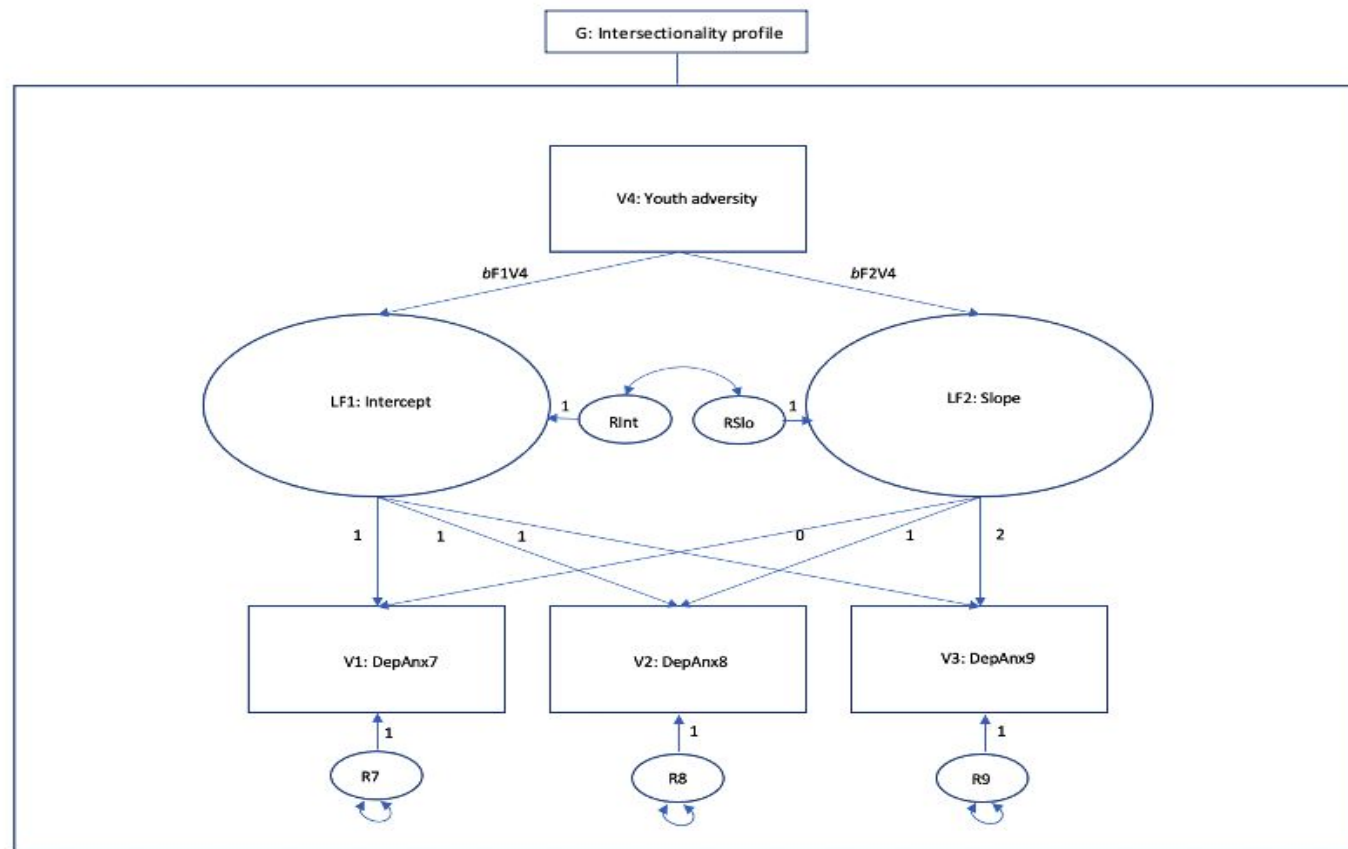
<sup>c</sup> average effect of youth adversity on depression and anxiety symptoms at age 11-12-years (intercept on YA), and on change over time in these symptoms (slope on YA)

<sup>d</sup> covariance between depression and anxiety symptoms at age 11-12-years (intercept) and change over time in these symptoms (slope). The covariance is residual because the latent growth factors are regressed on youth adversity

**Supplementary Table 6.** School Year-Specific Residual Variance Parameter Estimates from the Multiple Group Model of Youth Adversity as a Predictor of the Latent Growth Factors of Depression and Anxiety Symptoms

Intersectionality profile	N	Residual variances	
Males, Higher SES, Low Hyperactivity/inattention	1,325	Year 7 (11-12-years)	1.591 (0.272), $p < .001$
		Year 8 (12-13-years)	2.285 (0.149), $p < .001$
		Year 9 (13-14-years)	1.694 (0.328), $p < .001$
Females, Higher SES, Low Hyperactivity/inattention	1,518	Year 7 (11-12-years)	1.432 (0.254), $p < .001$
		Year 8 (12-13-years)	2.748 (0.138), $p < .001$
		Year 9 (13-14-years)	1.603 (0.288), $p < .001$
Males, Lower SES, Low Hyperactivity/inattention	188	Year 7 (11-12-years)	2.344 (0.744), $p = .002$
		Year 8 (12-13-years)	2.469 (0.434), $p < .001$
		Year 9 (13-14-years)	2.030 (0.426), $p = .049$
Females, Lower SES, Low Hyperactivity/inattention	243	Year 7 (11-12-years)	2.550 (0.755), $p = .001$
		Year 8 (12-13-years)	2.978 (0.409), $p < .001$
		Year 9 (13-14-years)	2.929 (0.853), $p = .001$
Males, Higher SES, High Hyperactivity/inattention	590	Year 7 (11-12-years)	1.464 (0.465), $p = .002$
		Year 8 (12-13-years)	3.189 (0.248), $p < .001$
		Year 9 (13-14-years)	2.181 (0.582), $p < .001$
Females, Higher SES, High Hyperactivity/inattention	362	Year 7 (11-12-years)	1.332 (0.576), $p = .021$
		Year 8 (12-13-years)	3.157 (0.324), $p < .001$
		Year 9 (13-14-years)	0.875 (0.668), $p = .191$
Males, Lower SES, High Hyperactivity/inattention	120	Year 7 (11-12-years)	2.221 (0.998), $p = .026$
		Year 8 (12-13-years)	3.220 (0.548), $p < .001$
		Year 9 (13-14-years)	2.163 (1.401), $p = .123$
Females, Lower SES, High Hyperactivity/inattention	95	Year 7 (11-12-years)	0.093 (1.201), $p = .938$
		Year 8 (12-13-years)	3.724 (0.615), $p < .001$
		Year 9 (13-14-years)	1.094 (1.147), $p = .340$

*Note.*  $N = 4,441$  (with intersectionality profile and youth adversity data).  $N$ : number of individuals. SES: socio-economic status. Full information maximum likelihood estimation, with robust adjustment (MLR).  $SE$  in parentheses. Results were substantively unchanged where missing youth adversity data was imputed (10 datasets,  $N = 4,448$ )



**Supplementary Figure 1.** Path Diagram of the Multiple Group Model of Youth Adversity as a Predictor of the Latent Growth Factors of Depression and Anxiety Symptoms

*Note.* Simplified path diagram of youth adversity predicting the latent growth factors of depression and anxiety symptoms measured at school years 7 (11-12-years), 8 (12-13-years), and 9 (13-14-years). Mean structure omitted for simplification. In this diagram, the repeated measures are labelled as V1-V3, representing depression and anxiety symptoms observed total scores at school years 7-9. The two latent factors of the linear growth trajectory are labelled as LF1 and LF2, representing the latent intercept and latent slope components, respectively. The latent factors are regressed on the observed youth adversity variable (labelled as V4), and the regression paths are labelled as  $bF1V4$  and  $bF2V4$ , for the latent intercept and latent slope, respectively. The residual variance parameters of the repeated measures are not labelled but are depicted in the curved arrows of the residuals, labelled as R7-R9. The residual covariance of the latent growth factors is reflected in the curved arrow between the latent residuals, RInt and RSlo (the residual variance parameters of the latent growth factors are not labelled). The conditional latent growth model within the box is estimated separately for each intersectionality profile, schematically represented by a grouping variable, labelled as G