

Developmental trajectories of emotional disengagement from schoolwork and their longitudinal associations in England

Jennifer Symonds^{a*}, Ingrid Schoon^b and
Katariina Salmela-Aro^{c,d}

^a*School of Education, University College Dublin, Dublin, Republic of Ireland;* ^b*Institute of Education, University of London, London, United Kingdom;* ^c*Faculty of Behavioural Sciences, University of Helsinki, Helsinki, Finland;* ^d*Department of Psychology, University of Jyväskylä, Jyväskylä, Finland*

This study identified the varied ways in which emotional disengagement from schoolwork typically developed between 14 and 16 years of age, in the Longitudinal Study of Young People in England. Using growth mixture modelling we found eight main trajectories of (dis)engagement, with four trajectories of either increasing or stable emotional disengagement with schoolwork (41% of the sample). Using propensity score matching to create groups balanced on a wide range of covariates at Wave 1, we compared disengaged students to their engaged counterparts to identify the longitudinal effects of disengagement-trajectory membership on behavioural engagement, psychological wellbeing, substance use, career pathways and achievement. Using linear and binary logistic regressions, we established that students in disengagement trajectories developed lower achievement across compulsory secondary school, and participated less in education and more in employment at age 17 years. In young adulthood (age 19–20 years) they were less likely to attend university and more likely to be unemployed. During secondary schooling, they developed higher levels of substance use and poorer psychological wellbeing, which persisted in the year after compulsory school. However, in young adulthood, the differences in substance use dissipated and students in most of the disengagement trajectories had relatively similar life satisfaction to their counterparts. These findings suggest that students (except perhaps those who became unemployed) were able to develop healthily and happily after leaving the schoolwork environments from which they were emotionally disengaged.

Keywords: achievement; psychological wellbeing; student engagement; substance use

Introduction

In England, and internationally, feelings about schoolwork typically become more negative as students move into, and through secondary schooling (Li & Lerner, 2011; Wang & Eccles, 2012; Symonds & Galton, 2014). Those feelings are represented by students' attitudes to schoolwork, regarding, for example, how boring, enjoyable, interesting and unlikable schoolwork is (Symonds & Hargreaves, 2016). Because emotions are used therein as evaluative criteria, we have termed these 'emotional

*Corresponding author: Department of Education, Trinity College Dublin, 2 Dublin, Republic of Ireland. Tel: +16179593996; E-mail: jennifer.symonds@ucd.ie

attitudes' (Symonds & Hargreaves, 2016). Emotional attitudes can represent situational boredom and interest that students feel in classrooms (Skinner & Pitzer, 2012). In this sense they are indicators of engagement experiences, rather than motives in themselves. Accordingly, in student engagement theory, these emotional attitudes are classified as emotional engagement, which together with cognitive (e.g., attention processes) and behavioural (e.g., daily participation in school activities) engagement make up the engagement meta-construct (Fredricks *et al.*, 2004).

Within emotional engagement and disengagement, feelings towards schoolwork sit alongside other types of emotional attitudes, regarding perceived social support from teachers and peers (Rimm-Kaufman *et al.*, 2015), feelings of belonging to school (Voelkl, 2012) and liking or disliking school (Symonds & Hargreaves, 2016). Developing and managing those feelings is a central aspect of students' social and emotional learning (Elias *et al.*, 1997), which has positive associations with pro-social behaviour and academic achievement, and negative associations with conduct problems and emotional distress (Durlak *et al.*, 2011). Accordingly, although emotional supports are very important for students' wellbeing, this issue was not incorporated into European educational agendas until recently (Downes, 2011). The United Kingdom Government's Social and Emotional Aspects of Learning Programme (SEAL) has units devoted to managing emotions, and has been delivered in secondary schools since 2007. However, in many schools, this programme has not permeated deeper than the occasional classroom instruction, in contrast to its whole school agenda (Humphrey *et al.*, 2010).

Many studies have documented negative associations between emotional disengagement with schooling and positive youth development. Emotionally disengaging with schooling has been associated with more school dropout in Finland (Bask & Salmela-Aro, 2013) and Canada (Janosz *et al.*, 2008), lower educational aspirations and achievement in Finland (Tuominen-Soini & Salmela-Aro, 2014) and the United States (US) (Wang & Peck, 2013), and poorer mental health (Wang & Peck, 2013) and more delinquency and substance use in the US (Li & Lerner, 2011).

Only the Finnish study extended to young adulthood, where emotionally disengaged school students were, in the future, more likely to attend vocational education and less likely to go to university (Tuominen-Soini & Salmela-Aro, 2014). However, taking a vocational route after compulsory schooling has been associated with improved mental health in England (Symonds *et al.*, 2016), raising the question of whether emotional disengagement with schooling can associate with positive outcomes later in the life course. In comparison, several studies have examined the longitudinal associations of emotional engagement with schooling, finding that it consistently predicts greater academic and occupational attainment in young adulthood and adulthood in Australia and England (Schoon, 2008; Duckworth & Schoon, 2012; Abbott-Chapman *et al.*, 2014).

As these studies demonstrate, associations between emotional disengagement and various wellbeing indicators have altered across time, whereas associations between emotional engagement and similar wellbeing indicators have remained more stable longitudinally. It is thus important to consider groups of students who disengage and engage separately (e.g., Skinner & Pitzer, 2012), as other person-oriented research has done (e.g., Janosz *et al.*, 2008; Ross, 2009; Li & Lerner, 2011; Wang & Peck,

2013; Salmela-Aro & Upadaya, 2014), and to assess the relationships between (dis)engagement and other factors longitudinally, especially across educational transition points where the environmental sources of (dis)engagement can alter.

Accordingly, the current study seeks to examine emotional disengagement with schoolwork in the nationally representative Longitudinal Study of Young People in England (LSYPE) using a person-oriented approach, which allows us to isolate the prospective effects of disengaging on a range of developmental outcomes. We have organised this analysis into the developmental periods of early, mid and late adolescence, and young adulthood, in line with the LSYPE data which begins at 13–14 years, then covers the end of compulsory secondary schooling (15–16 years), the transition from compulsory schooling to employment, more education, training or alternative pathways (16–17 years), and a 3-year period thereafter (19–21 years).

Emotional disengagement from schoolwork

This study is concerned with a particular aspect of emotional (dis)engagement: students' emotional experiences of doing schoolwork. Schoolwork-related emotions and their representative attitudes are distinct from other types of emotional engagement in school, as discussed earlier. Schoolwork emotions can be conceptualised as being nested alongside feelings about peers and teachers within classrooms. In turn, those classroom-oriented feelings are nested alongside emotional engagement with other aspects of school experience such as extracurricular activities and student councils, in the larger school context (Skinner & Pitzer, 2012).

Although we take students' emotional attitudes to represent their emotional experiences, there is a degree of bidirectional influence between the two factors. Hidi and Renninger's (2006) Four-Phase Model of Interest Development outlines how trait emotions (felt in the moment, such as situational boredom), and state emotions (tendency for an emotion, such as dispositional boredom) inform each other developmentally through time. They propose that state emotions are *triggered* by an activity, then are *maintained* to some extent throughout it. Over time, individuals develop *emerging* trait emotions based on their emotional states. Then, those traits become *well-established*. Over time, trait emotions can drive further state emotions (Linnenbrink-Garcia *et al.*, 2010) which again become internalised within a person's self-schema. Accordingly, it is critical that researchers use carefully worded items in order to capture the subtleties of these different phenomena, as we demonstrate in the following example statements:

- I had an enjoyable learning experience in my lesson (triggered state emotion)
- My lesson was enjoyable (maintained state emotion)
- I tend to enjoy my lessons (emergent emotional trait)
- Lessons are enjoyable (well-established emotional trait)

However, as our final example shows, although lessons are the attitudinal object it is actually the individual's tendency that is being expressed. Therefore, researchers should be wary of evaluating the school environment with emotional attitudinal statements as these can reflect trait emotions (Symonds, 2014).

In this study, we focus on two primary indicators of emotional disengagement from schoolwork: boredom and interest. Although students have many different

schoolwork emotions, including anxiety, frustration, pride, joy and disappointment (Pekrun & Linnenbrink-Garcia, 2012), boredom and interest are fundamental to the concept of engagement as deep and sustained involvement in an activity (Csikszentmihalyi, 1990; Schneider *et al.*, 2016). As affective states, they mirror each other in many ways; with boredom often being accompanied by feelings of emotional pain and displeasure, and interest typically coinciding with enjoyment and satisfaction (Pekrun *et al.*, 2002). When people are intensely interested in what they are doing, they can experience cognitive absorption (Salmela-Aro & Upadaya, 2013) and flow (Csikszentmihalyi, 1990). In contrast, boredom can signal emotional disaffection (Skinner & Pitzer, 2012).

Boredom and interest, therefore, can be perceived as opposite ends of a certain type of measurable engagement continuum. This continuum should have good internal validity, as boredom and interest associate with opposite motivational variables (e.g., lower versus higher activity value) and outcomes (e.g., lower versus higher mastery motivation), as a range of studies demonstrate (Pekrun *et al.*, 2010; Linnenbrink-Garcia *et al.* 2013; O’Keeffe & Linnenbrink-Garcia, 2014). Likewise, in line with Heckhausen *et al.*’s (2010) *A Motivational Theory of Life-Span Development*, boredom and interest predict opposite types of engaged behaviour, with boredom driving people to disengage from an activity, and interest motivating people to engage with it.

Emotional disengagement, motivational theory and students’ developmental outcomes

Emotional attitudes are part of a larger self-system of motivation and engagement (Skinner & Pitzer, 2012). Therein, emotional attitudes have mediated the connections between behavioural engagement and motivational resources such as goals and self-concept (Green *et al.*, 2012). Using Heckhausen *et al.*’s (2010) perspective, this mediation can be protective, with students using emotional attitudes to dismiss or reinforce feedback between behaviour and motivation. For example, disliking mathematics can support students’ decisions to attribute their failures to pedagogy and curriculum, rather than to personal ability, which would impact their mathematics’ self-concepts. Likewise, being emotionally disengaged from an activity may justify students’ decisions to value it less, with the end goal of avoiding engaged behaviour. Accordingly, lower emotional engagement has predicted lower effort in learning in Finland (Pietarinen *et al.*, 2014), and greater off-task behaviour, truancy and absenteeism in the US (Li & Lerner, 2013).

In turn, disengaging behaviourally from schoolwork can have feed-forward effects on emotional disengagement (Skinner *et al.*, 2008) as students limit their opportunities to obtain environmental rewards and supports available for that activity. For example, trying less hard may result in more negative feedback from teachers, thus creating negative state emotions that develop into negative trait emotions over time. These types of feedback loops can sustain students’ emotional disengagement from schoolwork, and increase it when students’ negative thoughts and actions, and a lack of environmental support, amplify each other over time (Skinner *et al.*, 2008).

This dynamic system of disengagement from schoolwork and schooling has been associated with a range of emotional, personal and social factors. In the US, spending less time at school has related to elevated substance use which is often a key feature of

adolescent peer socialisation (Henry *et al.*, 2012). Also in the US, emotionally disengaged students have reported poorer mental health and more negative growth in mental health across schooling, than engaged students (Wang & Peck, 2013), perhaps due to their alienation from important resources for mental health in the school context (Salmela-Aro & Upadaya, 2013). In Finland, emotional disengagement from schoolwork has been associated with lowered educational aspirations (Tuominen-Soini & Salmela-Aro, 2014) perhaps as feeling little emotional connection to schoolwork does not inspire further study goals. Emotional disengagement has also associated with lower achievement outcomes in one US sample (Li & Lerner, 2011) although this link was not present in another sample, when modelled with cognitive and behavioural engagement (Wang & Eccles, 2012).

Disengagement trajectories and their characteristics

Several person-oriented studies have identified different patterns of emotional (dis)engagement growth, although none have focused solely on emotional attitudes towards schoolwork as we have defined them. In latent-profile models, students have remained in disengaged profiles, or moved in and out of those, across time in England (Ross, 2009) and Finland (Tuominen-Soini & Salmela-Aro, 2014). In growth-mixture models, students have been classified into multiple disengagement trajectories, where they disengaged at different rates from different baselines in the US (Li & Lerner, 2011), and had stable disengagement, disengaged then rebounded, or disengaged continually, in Canada (Janosz *et al.*, 2008). Together, these studies indicate the presence of multiple disengagement trajectories in secondary schooling.

Those trajectories have been marked by individual differences in ethnicity, socio-economic status (SES), gender and achievement. In the US, more African-American students were classified into trajectories of emotional, cognitive and behavioural disengagement from schooling that began from a lower level of engagement (Li & Lerner, 2011), whereas in England, more students of South-Asian, Black-African and Black-Caribbean descent fitted into profiles of emotional disengagement with schooling (Ross, 2009), in line with the high aspirations for educational attainment typically transmitted to them by their first generation immigrant parents (Strand, 2007).

The findings for SES in these studies have been reasonably consistent, with lower SES predicting greater and increasing emotional disengagement in the US (Li & Lerner, 2011) and the UK (Ross, 2009) where around 2.6 million children lived in low-income households during our study period (HM Treasury, 2004). Studies from both countries have documented that children of parents with lower levels of formal education and fewer economic resources, tend to have lower achievement and educational aspirations (Schoon 2010, 2014; Ermisch *et al.*, 2012), although there is less research on SES and emotional attitudes to schoolwork as we have defined them here. In another study of the LSYPE data, Chowdry *et al.* (2011) found a weak positive association between SES and students' enjoyment and valuing of schooling (2-items) and stronger relationships between SES and students' educational aspirations, however they did not test the associations between SES and students' interest and boredom in lessons.

In the US and England, being male has predicted greater disengagement in secondary schooling (Ross, 2009; Li & Lerner, 2011), whereas in Finland, more males have fitted into a profile of high cynicism towards school (Tuominen-Soini & Salmela-Aro, 2014). These gender differences in emotional engagement with schooling have been attributed to many factors including male students' desire to obtain popularity through publicly dismissing schoolwork and their lack of enjoyment of subjects without a practical component (Symonds *et al.*, 2014).

Regarding achievement, students in Finland who were cynical and exhausted also had lower achievement, however there was one profile of engaged-exhausted students who were higher achievers (Tuominen-Soini & Salmela-Aro, 2014). Similarly, in Canada, trajectories of engaging and disengaging have both been predicted by lower initial achievement (Janosz *et al.*, 2008); demonstrating that lower achievement does not uniformly predict disengagement.

The present study

Drawing on the evidence reviewed earlier, we made the following seven assumptions:

- a. There will be multiple trajectories of schoolwork emotional disengagement and engagement in the LSYPE.
- b. The disengagement trajectories will be characterised by lower SES, being white and male, with those individual differences being more prevalent in trajectories of greater disengagement.
- c. After accounting for those individual differences, the disengagement trajectories will not necessarily associate with prior achievement, as for example, higher achievers can become burned out and lower achievers can retain emotional engagement with schoolwork.
- d. However, the disengagement trajectories will associate with lower achievement by the end of school, as students' achievement wanes in response to the broader dynamic system of emotional and behavioural disengagement.
- e. The disengagement trajectories will also associate with greater behavioural disengagement, poorer psychological wellbeing and more risk behaviour at school, as school avoidance tactics are played out and environmental supports at school decrease in a continuous feedback loop.
- f. After comprehensive secondary school, the disengagement trajectories will associate with reduced participation in upper secondary, further and higher education, and more participation in employment, as students strive to avoid further experiences of activity boredom and disinterest generated in a highly structured educational environment.
- g. After school completion, the disengagement trajectories will no longer associate with poorer psychological wellbeing and greater risk behaviour, as students are released from the negative person–environment interactions they experienced at school, and enter a more self-directed and positive phase of development.

To test these assumptions, we conducted a person-oriented analysis of the development of emotional disengagement from schoolwork in the LSYPE. We compared students in the main disengagement trajectories to their counterparts who remained

stably engaged or disengaged across compulsory secondary schooling, to ascertain whether there were between-group differences in gender, ethnicity, SES, achievement, psychological wellbeing, risk behavior, and career pathways. The analyses were completed for four different time periods: (1) early adolescence at the start of the study, (2) mid adolescence at the end of compulsory secondary school, (3) late adolescence after the transition out of compulsory secondary schooling, and (4) young adulthood.

Method

Participants and procedures

Data from Waves 1 to 7 of the nationally representative LSYPE,¹ were used in the current research. In the LSYPE, participants were surveyed annually from age 13–14 years (in 2004) to 20–21 years (in 2011). Schools were used as the primary sampling unit with 646 maintained and 28 independent schools involved. The study aimed to achieve target numbers of at least 1,000 students in each of five major minority ethnic groups (Indian, Pakistani, Bangladeshi, Black African, Black Caribbean and Mixed) to facilitate research on ethnic minorities, and to oversample deprived schools also for analytic purposes. Accordingly, state-funded schools were stratified by deprivation status based on free school meals data. From within each deprivation stratum, schools were selected according to the number of Year 9 ethnic minority students enrolled. Schools in the top quintile of the deprivation distribution were oversampled by 50%. Students attending schools in the maintained sector were sampled using data from the Pupil Level Annual School Census (PLASC), according to their gender, ethnicity and probability of being in a sampled school. In the independent sector, schools and students were sampled based on measures of academic performance and gender.

Weights used in the study were calculated by the LSYPE administration, who used logistic regression models to calibrate the sample to population totals for ethnicity, gender and region drawn from the National Pupil Database at Wave 1. At each subsequent wave, a non-response weight was calculated using either regression models or cell weighting, and was based on design weights from previous waves where applicable, and on a range of data drawn from that wave. More detailed information on weighting can be found in the LSYPE user guide online.²

Study participants were in comprehensive or independent schools between 14 and 16 years of age, before transferring to education, employment or training or following alternative pathways at age 17–18. Of the 16,122 participants involved across the seven waves, only those with emotional disengagement data from 2 or more time points during the 3 years of compulsory secondary school were included in this study (total $N = 13,734$). This selection procedure guaranteed that no cases would be arbitrarily fitted using Growth Mixture Modelling (GMM). As described in our analysis and results sections, we used this technique to uncover multiple trajectories of disengagement that could overlap at different time points as they descended, ascended or remained stable. Therefore, cases needed at least 2 time points of data in order to classify them accurately into a specific growth pattern.

Compared to those in the analytic sample, participants with missing data were equally balanced in gender, but had slightly lower SES ($t = 5.978$, $df = 2,721$, $p = .000$, $d = .14$), childhood achievement ($t = 9.658$, $df = 2,608$, $p = .000$, $d = .23$) and were more likely to be white ($t = 7.043$, $df = 3,262$, $p = .000$, $d = .16$). Calculation of Cohen's d revealed that those effects were negligible or small. The present study used data from Waves 1, 2 and 3 to represent compulsory secondary school, Wave 4 to represent the school transition period, and Waves 6 and 7 to represent young adulthood.

Measures

Emotional disengagement from schoolwork. Two items from a 12-item school motivation scale, tapped into emotional attitudes regarding schoolwork and lessons: *I am bored in lessons* and *the work I do in lessons is interesting to me* (reversed) at Waves 1 ($\alpha = .61$), 2 ($\alpha = .61$), and 3 ($\alpha = .64$). The boredom item reflects a state emotion, whereas the interest item could be interpreted both as state and trait interest. Here we take both items to represent students' emotional experiences of doing schoolwork. Even so, as discussed, trait and state emotions can be interrelated developmentally, and as Steyer and Schmitt (1990) advise, using both in studies will give a fuller picture, as neither trait nor state emotions are created in a 'situational vacuum' (p. 427).

Effort. This aspect of behavioural disengagement was represented by the item *I work as hard as I can in school* (reversed) from the school motivation scale.

Truancy. The second aspect of behavioural disengagement was whether students played truant in the last 12-months (yes/no) combined with an item measuring the *longest period of truancy in the last 12 months* into a 5-point scale (1 = have not truanted, 5 = for weeks at a time).

University expectations. At each wave, participants rated their likelihood of applying for university (1 = not at all likely, to 4 = very likely).

Psychological wellbeing. Two factors that emerged in prior exploratory factor analysis of the LSYPE general health questionnaire (GHQ) data (Symonds *et al.*, 2016) indicated how psychologically well participants were. The first measured subjective ill-being with items regarding *how much have you been feeling unhappy and depressed recently*, *how much have you been feeling reasonably happy recently* (reversed), and *how much have you been losing confidence in yourself recently*. The second represented anxiety by asking *how much have you feeling constantly under strain recently*, *whether you have recently lost much sleep over worry*, and *how much have you recently felt that you couldn't overcome your difficulties*. All items used a 4-point scale (1 = not at all, to 4 = much more than usual) and were administered at Waves 2 (ill-being $\alpha = .84$, anxiety $\alpha = .76$) and 4 (ill-being $\alpha = .82$, anxiety $\alpha = .75$).

Life satisfaction. One item measuring students' satisfaction with their lives (1 = very dissatisfied, to 5 = very satisfied) was administered in Wave 7.

Peer victimisation. Students reported whether they had been bullied in the past 12 months (1 = yes, 0 = not mentioned) at Waves 1–3.

Parental relationship. Students' reports of how well they got on with their (step)-mother, and (step)father (1 = very badly, 4 = very well) were averaged across Waves 1–3. One percent of students reported not seeing either of those people, and were coded as missing data.

Drinking alcohol. Two items measuring the prevalence and frequency of drinking alcohol were combined into a 7-point scale with anchors of never having tried alcohol, and having drunk alcohol most days (Waves 1–3) or almost every day (Waves 6–7). The Wave 6 and 7 scores were averaged to represent the young adulthood period.

Smoking cigarettes. Two items measured at Waves 1–3 were combined into a scale of 1 = *I have never smoked*, to 6 = *I usually smoke more than six cigarettes per week*.

Cannabis use. Students reported whether they had ever tried Cannabis (1 = yes, 0 = not mentioned) at Waves 1–4 and 6–7. We averaged the Wave 6 and 7 scores to represent cannabis use in young adulthood.

Achievement. Students' achievement on standardised national tests at ages 11, 14 and 16 years was linked to the LSYPE from National Pupil Data (NPD).

Gender. The rounded, average score across waves of being female (1) or male (0) was used in this study.

Socio-economic status (SES). The LSYPE administration coded parents' open ended reports of occupation, supervisory status and number of employees into eight ordinal categories (professional occupations = 8, to long term unemployed = 1) using the National Statistics Socioeconomic Status Classification method. Here we recoded SES into dummy variables representing 3 distinct occupational states: professional occupations, routine occupations, and unemployment (1 = within category, 0 = not in category).

Ethnicity. Students reported whether they were white, mixed, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African or of another ethnicity. We dichotomised these responses into white (1) versus ethnic minority (0) to preserve larger group sizes for analysis.

Late adolescent career pathways. One year after compulsory secondary school (Wave 5), students reported whether they were *in full time education*, *in full time work*, were on an *apprenticeship training scheme* or were *not in education, work or employment (NEET)* (4 items coded as 1 = on that pathway, 0 = not on that pathway).

Young adult career pathways. In Waves 6 and 7, students reported whether they were *doing a course at university*, *in education*, *in paid work*, *on a training course or scheme*,

doing an apprenticeship, engaged in another type of activity or were *not in education, employment or training (NEET)*. Cases were given a positive score (1, versus 0) if they mentioned that pathway in Wave 6 or 7.

Analysis and results

Disengagement trajectories in compulsory secondary school

Growth mixture modelling (GMM) in Mplus version 7.3³ was used to determine the most common (dis)engagement trajectories in secondary school. GMM assumes that distinct trajectories exist within a dataset, and seeks to classify participants into trajectories that have good internal homogeneity, for the number of trajectories that the researcher specifies (Muthén & Muthén, 2000). We ran unconditional models using full-information maximum likelihood estimation, which uses all available data (Little & Rubin, 2014) and assumes that data are missing at random or completely at random (Schafer & Graham, 2002). Multiple starting values were used to avoid localised solutions.

Different models, containing an increasing number of trajectories, were evaluated for their best fit to the data, and compared to each other. We evaluated the classification accuracy of each model overall (entropy of .7 or above) and for each class (average posterior probabilities of group membership at .7 or above). Successive solutions were deemed to fit better than the former when they returned a lower statistic for the Akaike information criterion (AIC), Bayesian information criterion (BIC) and sample size adjusted BIC; and significant values for the Vuong-Lo-Mendell-Rubin (VLMR) and Lo-Mendell-Rubin (LMR) likelihood ratio tests (Nagin & Odgers, 2010).

Of the 10 models evaluated, the model containing 8 trajectories emerged as the best fit (Table 1), with the highest entropy (0.89), a notably lowered BIC (44,164) and significant VLMR and LMR *p* values (both at 0.000). We named each trajectory according to the steepness of its slope (stable, mild, rapidly, Figure 1), and as to whether its intercept was above or below the middle score in the disengagement scale (disengaged versus engaged). The largest trajectory had relatively stable, moderate levels of engagement (*stable engaged*, *N* = 5,840, 42.5%; Table 2). There, its slope

Table 1. Information criteria values

Number of trajectories	BIC	VLMR <i>p</i>	LMR <i>p</i>	Entropy
1	62,178			
2	61,693	.000	.000	.63
3	61,387	.029	.032	.67
4	61,108	.000	.000	.72
5	61,114	.187	.195	.73
6	60,968	.004	.005	.75
7	60,456	.000	.000	.76
8	44,164	.000	.000	.89
9	43,915	.000	.000	.88
10	43,789	.000	.000	.88

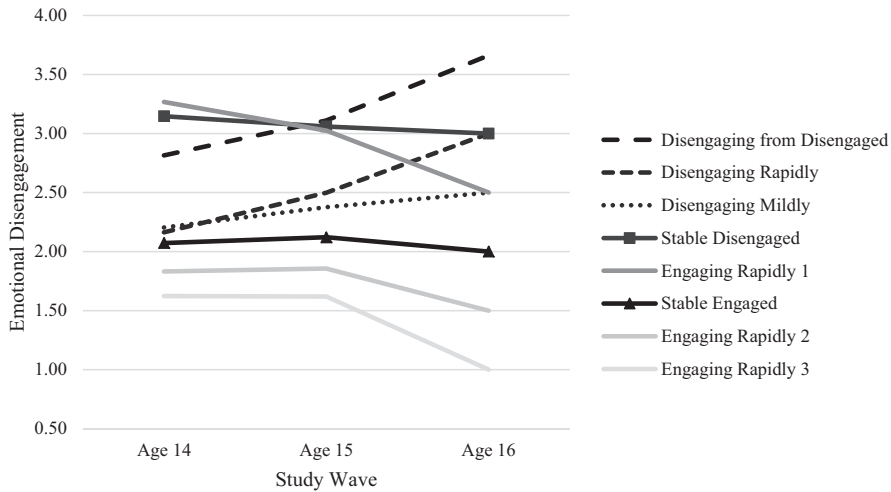


Figure 1. Emotional disengagement profiles

Table 2. Emotional disengagement trajectories

	N	%	Intercept		Slope	
			Est.	SE	Est.	SE
<i>Engaged/engaging trajectories</i>	8,104	59.00				
stable engaged	5,840	42.52	2.11	.01	-.05***	.00
engaging rapidly 1 (from moderately engaged)	1,492	10.86	1.91	.02	-.20***	.01
engaging rapidly 2 (from highly engaged)	485	3.53	1.77	.03	-.38***	.01
engaging rapidly 3 (from disengaged)	287	2.09	3.10	.08	-.30***	.04
<i>Disengaged/disengaging trajectories</i>	5,630	41.00				
disengaging mildly (from moderately engaged)	2,558	18.63	2.21	.02	.15***	.01
disengaging rapidly (from moderately engaged)	1,306	9.51	2.17	.03	.42***	.02
disengaging disengaged	898	6.54	2.76	.02	.45***	.01
stable disengaged	868	6.32	2.93	.04	.03***	.02

Notes: *** = $p < .000$

reached significance probably only because of the large number of cases. The next three largest trajectories had similar, moderate levels of engagement at baseline but then disengaged gradually (*disengaging mildly*, $N = 2,558$, 18.6%) or rapidly (*disengaging rapidly*, $N = 1,306$, 9.5%), or had a rapid increase in engagement (*engaging rapidly 1*, $N = 1,492$, 10.9%). The two next largest trajectories were disengaged at baseline, and either remained stable (*stable disengaged*, $N = 868$, 6.3%) or became more disengaged (*disengaging disengaged*, $N = 898$, 6.5%). Finally, two smaller trajectories increased in engagement from an engaged baseline (*engaging rapidly 2*, $N = 485$, 3.5%) or disengaged baseline (*engaging rapidly 3*, $N = 287$, 2.1%). These findings fitted our first assumption, that there would be different trajectories of (dis)engagement. Across trajectories, the broader pattern was of being stable engaged or engaging (59%), or stable disengaged or disengaging (41%).

Disengaging/disengaged students in early adolescence

In order to study the effects of the different disengagement trajectories, we allocated each with a comparison trajectory (see Table 7). Specifically, we compared the *disengaging mildly*, *disengaging rapidly* and *disengaging disengaged* trajectories to their stable counterparts with the closest disengagement intercept, to identify the effects of differently positioned disengagement slopes. Then, we paired the *stable disengaged* trajectory with the *stable engaged* trajectory to identify the effects of stable disengagement.

Using stepwise multiple linear regression, we tested the effects of individual differences and age 11 achievement on trajectory membership. For the first 3 comparison groups, we controlled for Wave 1 disengagement in the first step to control for slight differences in intercept and reveal the effect of slope, then entered the individual differences and achievement in the second step. We removed this control when comparing the two stable groups, in order to focus on level of disengagement. The regressions tested assumption b that the trajectories would be predicted by being male, having lower SES and being white, and assumption c that there would be no difference in age 11 achievement once controlling for individual differences. Hereon we use Cohen's (1992) terminology for reporting the effect sizes of mean differences (small = .20, medium = .50, large = .80), which are indicated by the Beta weights in the multiple regression models.

Disengaging mildly and rapidly. After controlling for Wave 1 disengagement, there were small and moderate effects of being white [*disengaging mildly*: $d = .41$, (Table 3) *disengaging rapidly*: $d = .58$ (Table 4)] and a moderate effect of having fewer unemployed parents ($d = .50$) for the *disengaging rapidly* trajectory. Both models were significant but accounted for a minimal percentage of the variance [*disengaging mildly*: $F(7,7840) = 22.768$, $p < .000$, $R^2 = .02$; *disengaging rapidly*: $F(7,6406) = 11.482$, $p < .000$, $R^2 = .01$]. Together, the individual differences and achievement added less than .01% to the variance explained.

Stable disengaged. Even without controlling for Wave 1 disengagement, the only notable predictor here was being white ($d = .35$; Table 5) and there were no SES

Table 3. Descriptive statistics and regression coefficients for pre-matched groups at Baseline 1

Variable	<u>Disengaging mildly</u>		<u>Stable engaged</u>		Δ	B	SE	b	t	d
	M	SD	M	SD						
Disengagement W1	2.20	.44	2.07	.50	.13	.35	.03	.12	1.69***	.78
Female	.50	.50	.49	.50	.01	.04	.03	.01	1.15	.07
White	.73	.45	.66	.47	.06	.19	.04	.06	5.22***	.41
SES high	.20	.40	.20	.40	.00	.02	.05	.01	.50	.06
SES low	.31	.46	.32	.47	-.01	-.03	.04	-.01	-.81	-.07
Unemployed	.10	.30	.10	.30	.00	.00	.06	.00	.02	.00
Achievement	27.14	4.00	27.35	3.97	-.21	-.01	.00	-.02	-2.02*	.00

Notes: *** = $p < .000$, * = $p < .05$

Table 4. Descriptive statistics and regression coefficients for pre-matched groups at Baseline 2

Variable	<u>Disengaging rapidly</u>		<u>Stable engaged</u>		Δ	B	SE	b	t	d
	M	SD	M	SD						
Disengagement W1	2.16	.40	2.07	.50	.09	.21	.04	.06	5.08***	.44
Female	.46	.50	.49	.50	-.04	-.08	.04	-.02	-1.93	-.15
White	.76	.43	.66	.47	.10	.26	.04	.08	5.93***	.58
SES high	.20	.10	.20	.40	.00	.00	.06	.00	.00	.00
SES low	.31	.46	.32	.47	-.01	-.04	.05	-.01	-.87	-.09
Unemployed	.08	.28	.10	.30	-.02	-.14	.07	-.03	-2.04*	-.50
Achievement	27.06	3.76	27.35	3.97	-.29	-.01	.01	-.03	-2.12*	.00

Notes: *** = $p < .000$, * = $p < .05$

Table 5. Descriptive statistics and regression coefficients for pre-matched groups at Baseline 3

Variable	<u>Stable disengaged</u>		<u>Stable engaged</u>		Δ	B	SE	b	t	d
	M	SD	M	SD						
Disengagement W1	3.15	.36	2.07	.50	1.07	—	—	—	—	—
Female	.50	.50	.49	.50	.01	.02	.02	.01	.93	.03
White	.80	.40	.66	.47	.14	.16	.02	.11	8.31***	.35
SES high	.20	.40	.20	.40	.00	.00	.02	.00	.09	.01
SES low	.32	.47	.32	.47	.00	.00	.02	.00	-.19	-.01
Unemployed	.09	.28	.10	.30	-.02	-.03	.03	-.01	-1.04	-.11
Achievement	26.81	3.80	27.35	3.97	-.54	-.01	.00	-.06	-4.39***	.00

Notes: *** = $p < .000$

differences. Similarly, this model [$F(6,6120) = 14.058$, $p < .000$] accounted for under 1% of the variance in trajectory membership.

Disengaging disengaged. After controlling for Wave 1 disengagement, the only significant predictor was having lower achievement (Table 6), although this effect was minimal ($d = .01$). However, there were a raft of small to large insignificant effects: of being white ($d = .26$), having more parents in professional occupations ($d = .16$), fewer parents in routine occupations ($d = .31$) and fewer parents in unemployment ($d = 1.10$). The model was significant [$F(7,1560) = 26.454$, $p < .000$, $R^2 = .10$] but the second step accounted for only .01% of the variance.

Disengaging/disengaged students in mid adolescence

As observed in the regressions, the disengaging trajectories had slightly different Wave 1 disengagement than their stable counterparts. This raised the possibility that any between-group differences observed in development might be accountable to both this different initial level of disengagement, and the subsequent disengagement

process. Accordingly, we removed this confounding effect by using propensity score matching (PSM) to create similar groups of students who then followed different disengagement trajectories. We did this by balancing each pair of trajectories on Wave 1 disengagement, background factors, and all other longitudinal variables with Wave 1 data (gender, SES, white ethnicity, age 11 achievement, effort, truancy, university aspirations, parental relationship, bullying, smoking, drinking and drug use). Only the *stable disengaged* versus *stable engaged* trajectories were not balanced on Wave 1 disengagement, to free the effect of disengagement level.

The PSM R plugin for SPSS developed by Thoemmes (2012) was used for the matching. First, we replaced the Wave 1 missing values with average scores computed from five multiple imputed datasets created in SPSS version 23.0. Then, we created new data files for each pair of trajectories. Within each file we created a trajectory variable of (1 = disengagement, 0 = comparison). Then, we regressed the matching variables on the trajectory variable to create propensity scores that indicated which comparison case was closest to each disengagement case (nearest neighbour matching). Strict protocols were employed to produce a precise match (one to one matching strategy, calliper of 0.2, and discarding cases outside the common area of support). The final sub-samples for each pair of trajectories are displayed in Table 7.

Table 6. Descriptive statistics and regression coefficients for pre-matched groups at Baseline 4

Variable	<u>Disengaging</u> <u>disengaged</u>		<u>Stable</u> <u>disengaged</u>		Δ	B	SE	b	t	d
	M	SD	M	SD						
Disengagement W1	2.81	.66	3.15	.36	-.33	-.81	.07	-.30	-12.41***	-2.14
Female	.50	.50	.50	.50	-.01	-.04	.07	-.01	-.51	-.07
White	.82	.39	.80	.40	.01	.10	.09	.03	1.09	.26
SES high	.26	.44	.20	.40	.06	.07	.10	.02	.68	.16
SES low	.26	.44	.32	.47	-.06	-.14	.09	-.04	-1.60	-.31
Unemployed	.06	.24	.09	.28	-.03	-.25	.15	-.04	-1.75	-1.10
Achievement	25.94	4.15	26.81	3.80	-.87	-.03	.01	-.09	-3.41**	-.01

Notes: *** = $p < .000$, ** = $p < .01$

Table 7. Propensity score matched group sizes

Treatment group	Total	Matched	Unmatched	Comparison group	Total	Matched	Unmatched
Stable disengaged	868	625	243	Stable engaged	5,840	1,306	4,534
Disengaging rapidly	1,492	1,306	186	Stable engaged	5,840	2,558	3,282
Disengaging mildly	2,558	2,558	0	Stable engaged	868	618	250
Disengaging disengaged	898	618	280	Stable disengaged	5,840	1,306	4,534

The success of each PSM was evaluated as follows. We observed a reduction in between-trajectory variance indicated by the relative multivariate imbalance statistic. Then we imported the matched trajectory variable into the main dataset, and examined the between-group differences in the matching variables using the original, non-imputed data. Levene's tests and independent samples t-tests confirmed that the matched trajectories were equal in their distribution and mean values for the matching variables, with the following exceptions: cannabis use was higher for the *disengaging rapidly* trajectory ($M = .11$, $SD = .31$) versus the *stable engaged* trajectory ($M = .07$, $SD = .25$; $B = .507$, $SE = .142$, $Wald = 12.65$, $df = 1$, $p = .000$, $d = .82$), and smoking was negligibly higher for the *disengaging mildly* trajectory ($M = 1.29$, $SD = 1.03$) versus the *stable engaged* trajectory ($M = 1.23$, $SD = .94$; $B = .061$, $SD = .029$, $t = 4.258$, $p = .039$, $d = .06$).

Using linear and logistic regressions, we then examined the trajectory pairs for differences in the Wave 3 variables, in order to test assumption d, that disengaging students would have lower later achievement to other trajectories, and assumption e, that they would develop greater behavioural disengagement, poorer psychological wellbeing and more risk behaviours at the end of compulsory secondary school.

Disengaging mildly and rapidly. At Wave 3, disengaging either *mildly* or *rapidly*, predicted greater emotional disengagement, lower effort, more truancy, lower university aspirations and GCSE achievement; poorer quality parental relationships; more frequent victimisation; more smoking, drinking and cannabis use; and higher anxiety and subjective ill-being, than being stably engaged (Tables 8 and 9). The effect size average (not including the longitudinal effect for disengaging) was greater for the *disengaging rapidly* trajectory ($d = 0.28$), compared to the *disengaging mildly* trajectory ($d = 0.16$), indicating that the more rapidly students disengaged, the more negative the outcomes were at the end of compulsory secondary schooling.

Stable disengaged. Although they were matched to the *stable engaged* trajectory at Wave 1, the *stable disengaged* group developed more negative scores on all variables by Wave 3. The mean effect size was 0.26, indicating on average a small effect of stable disengagement (Table 10).

Disengaging disengaged. By Wave 3, students who were disengaged at Wave 1 but then disengaged further, had more negative scores on emotional disengagement, effort, truancy and achievement, and were more likely to be bullied, drink alcohol, take drugs and feel depressed (Table 11). Further analyses revealed that both the *disengaging* and *stable disengaged* trajectories developed more negative relationships with parents (*disengaging* $M \Delta = -.08$; $t = -2.689$, $df = 500$, $p = .007$; *stable* $M \Delta = -.08$; $t = -2.689$, $df = 527$, $p = .005$), decreased university aspirations (*disengaging* $M \Delta = -.28$; $t = -5.768$, $df = 479$, $p = .000$; *stable* $M \Delta = -.28$; $t = -5.763$, $df = 527$, $p = .000$), increased levels of smoking (*disengaging* $M \Delta = .91$; $t = 10.028$, $df = 457$, $p = .000$; *stable* $M \Delta = 1.09$; $t = 11.772$, $df = 479$, $p = .000$) and had stable anxiety. The effect size average was 0.15, similar to the *disengaging mildly* trajectory.

Table 8. Matched group outcomes 1 (focus on mild disengagement)

	Disengaging mildly		Stable engaged		Logistic/linear regressions			
	M	SD	M	SD	A	B	SE	OR
<i>End of School</i>								
Disengagement age 16	2.50	.00	2.00	.00	.50	.50***	0	61.82
Effort age 16	2.10	.64	1.91	.57	.19	.19***	.018	.32
Truancy age 16	1.41	.77	1.23	.57	.18	.18***	.020	.26
University aspiration age 16	2.88	1.11	2.98	1.06	-.10	-.10**	.032	-.09
GCSE points age 16	377.04	151.26	393.39	145.21	-16.36	-16.36***	4.172	-.11
Parental relationship age 16	3.68	.52	3.72	.50	-.04	-.04**	.016	-.09
Bullying age 16	.31	.46	.23	.42	.08	.08***	.013	.18
Smoking age 16	1.94	1.75	1.64	1.48	.30	.30***	.048	.18
Alcohol age 16	3.33	1.91	3.04	1.85	.29	.30***	.056	.15
Cannabis age 16	.27	.45	.21	.41	.06	.06***	.013	.15
Anxiety age 15	1.93	.77	1.83	.71	.09	.09***	.021	.13
Depression age 15	1.75	.80	1.68	.75	.08	.08***	.022	.10
<i>Late Adolescence</i>								
Full time education age 17	.78	.41	.82	.38	-.04	-.25**	.079	.78
Work age 17	.10	.30	.08	.26	.03	.31**	.112	1.37
Unemployed age 17	.05	.21	.04	.20	.00	.12	.153	1.12
Anxiety age 17	2.04	.74	1.96	.73	.08	.09***	.023	.11
Depression age 17	1.74	.77	1.64	.74	.09	.10***	.023	.13
<i>Young Adulthood</i>								
University age 19-20	.48	.50	.51	.50	-.03	-.10	.069	.90
Further education age 19-20	.25	.43	.24	.43	.01	.03	.081	1.03
Work age 19-20	.43	.50	.42	.49	.02	.07	.069	1.07
Unemployed age 19-20	.12	.33	.10	.30	.02	.23*	.111	1.26
Salary age 20	2.42	1.16	2.36	1.17	.06	.01	.01	.01
Drinking age 19-20	4.25	1.67	4.20	1.67	.04	.04	.055	.05
Cannabis age 19-20	.96	.20	.97	.18	-.01	-.28	.179	.76
Life satisfaction age 20	3.97	.91	4.02	.87	-.04	-.04	.03	-.05

Notes: OR = odds ratios
Results with odds ratios are binary logistic regressions. Results without odds ratios are linear regressions
*** = $p < .000$, ** = $p < .01$, * = $p < .05$

Table 9. Matched group outcomes 2 (focus on rapid disengagement)

	<u>Disengaging rapidly</u>		<u>Stable engaged</u>		<u>Logistic/linear regressions</u>			
	M	SD	M	SD	A	B	SE	OR
<i>End of School</i>								
Disengagement age 16	3.00	.00	2.00	.00	1.00	1.00***	.00	16.42
Effort age 16	2.35	.67	1.91	.57	.45	.45***	.026	.71
Truancy age 16	1.56	.90	1.23	.57	.33	.33***	.032	.43
University aspiration age 16	2.59	1.12	2.87	1.10	-.28	-.28***	.046	-.25
GCSE points age 16	357.47	15.88	384.54	146.48	-27.08	-27.08***	5.851	-.18
Parental relationship age 16	3.62	.55	3.71	.51	-.09	-.09***	.022	-.16
Bullying age 16	.34	.47	.24	.43	.10	.10***	.019	.22
Smoking age 16	2.29	2.01	1.76	1.63	.53	.53***	.076	-.29
Alcohol age 16	3.59	1.95	3.15	1.87	.44	.44***	.080	.23
Cannabis age 16	.32	.47	.41	.41	.11	.11***	.018	.25
Anxiety age 15	1.96	.81	1.81	.73	.15	.15***	.031	-.19
Depression age 15	1.81	.85	1.64	.74	.18	.18***	.032	-.22
<i>Late Adolescence</i>								
Full time education age 17	.71	.45	.82	.38	-.11	-.64***	.107	-2.30
Work age 17	.12	.33	.07	.26	.05	.56***	.154	5.71
Unemployed age 17	.07	.25	.05	.21	.02	.40*	.195	3.44
Anxiety age 17	2.05	.77	1.90	.72	.16	.16***	.032	.21
Depression age 17	1.80	.82	1.61	.73	.20	.20***	.033	.25
<i>Young Adulthood</i>								
University age 19-20	.41	.49	.48	.50	-.08	-.31**	.099	-.65
Further education age 19-20	.23	.42	.22	.41	.01	.059	.118	.14
Work age 19-20	.49	.50	.46	.50	.03	.116	.098	.23
Unemployed age 19-20	.15	.36	.10	.31	.05	.45**	.150	1.83
Salary age 20	2.45	1.12	2.46	1.21	-.01	.00	.02	.00
Drinking age 19-20	4.35	1.63	4.27	1.63	.08	.075	.076	.08
Cannabis age 19-20	.95	.21	.97	.18	-.01	-.273	.248	-.17
Life satisfaction age 20	3.80	.96	4.03	.86	-.23	-.23***	.05	-.25

Notes: OR = odds ratios

Results with odds ratios are binary logistic regressions. Results without odds ratios are linear regressions

*** = $p < .000$, ** = $p < .01$, * = $p < .05$

Table 10. Matched group outcomes 3 (focus on stable disengagement)

	<u>Stable disengaged</u>		<u>Stable engaged</u>		<u>Logistic/linear regressions</u>				
	M	SD	M	SD	A	B	SE	d	OR
<i>End of School</i>									
Disengagement age 16	3.00	.00	2.00	.00	1.00	1.00***	.00	63.10	—
Effort age 16	2.50	.68	2.03	.60	.47	.47***	.040	.74	—
Truancy age 16	1.65	.95	1.32	.65	.33	.33***	.052	.40	—
University aspiration age 16	2.40	1.12	2.66	1.12	-.26	-.26***	.070	-.23	—
GCSE points age 16	33.48	154.38	352.06	153.46	-21.59	-21.59*	8.795	-.14	—
Parental relationship age 16	3.58	.58	3.68	.52	-.10	-.10**	.035	-.18	—
Bullying age 16	.34	.47	.26	.44	.08	.08**	.028	.17	—
Smoking age 16	2.64	2.15	2.00	1.84	.65	.65***	.125	.32	—
Alcohol age 16	3.94	1.85	3.20	1.91	.74	.74***	.118	.39	—
Cannabis age 16	.45	.50	.27	.44	.19	.19***	.029	.39	—
Anxiety age 15	1.99	.82	1.88	.74	.11	.11*	.045	.14	—
Depression age 15	1.91	.91	1.77	.81	.14	.14**	.049	.16	—
<i>Late Adolescence</i>									
In full time education age 17	.64	.48	.73	.45	-.08	-.39**	.143	-.94	.674
Work age 17	.15	.36	.09	.29	.06	.60**	.206	4.38	1.819
Unemployed age 17	.08	.27	.08	.27	.00	-.044	.244	-.16	.957
Anxiety age 17	2.05	.73	1.94	.78	.11	.11*	.048	.15	—
Depression age 17	1.78	.81	1.70	.83	.08	.08	.052	.10	—
<i>Young Adulthood</i>									
University age 19–20	.34	.47	.42	.49	-.08	-.36*	.156	-.79	.699
Further education age 19–20	.26	.44	.23	.42	.04	.19	.176	.45	1.208

Table 10. (Continued)

	<u>Stable disengaged</u>		<u>Stable engaged</u>		Δ	<u>Logistic/linear regressions</u>			
	M	SD	M	SD		B	SE	d	OR
Work age 19–20	.53	.50	.53	.50	.00	.01	.148	.03	1.013
Unemployed age 19–20	.13	.34	.12	.32	.02	.16	.228	.51	1.177
Salary age 20	2.70	1.24	2.53	1.15	.17	.03	.02	.01	–
Drinking age 19–20	4.46	1.39	4.31	1.58	.15	.15	.106	.10	–
Cannabis age 19–20	.96	.19	.97	.17	–.01	–.27	.404	–2.23	.762
Life satisfaction age 20	3.73	1.06	3.89	.96	–.15	–.16*	.08	–.15	–

Notes: OR = odds ratios

Results with odds ratios are binary logistic regressions. Results without odds ratios are linear regressions

*** = $p < .000$, ** = $p < .01$, * = $p < .05$

Table 11. Matched group outcomes 4 (focus on disengaging from disengaged baseline)

	<u>Disengaging disengaged</u>		<u>Stable disengaged</u>			<u>Logistic/linear regressions</u>			
	M	SD	M	SD	Δ	B	SE	d	OR
<i>End of School</i>									
Disengagement age 16	3.66	.23	3.00	.00	.66	.66***	.01	3.95	–
Effort age 16	2.71	.85	2.49	.70	.22	.22***	.05	.28	–
Truancy age 16	1.97	1.14	1.67	.98	.30	.30***	.07	.28	–
University aspiration age 16	2.17	1.17	2.25	1.11	–.09	–.09	.07	–.07	–
GCSE points age 16	289.52	164.15	312.52	157.07	–23.00	–23.00*	9.32	–.14	–
Parental relationship age 16	3.54	.60	3.57	.61	–.03	–.03	.04	–.06	–
Bullying age 16	.42	.49	.35	.48	.07	.07*	.03	.14	–
Smoking age 16	3.00	2.27	2.76	2.19	.24	.24	.14	.11	–
Alcohol age 16	4.39	1.93	3.98	1.90	.42	.42*	.12	.22	–
Cannabis age 16	.52	.50	.44	.50	.07	.07*	.03	.15	–
Anxiety age 15	2.14	.89	2.05	.84	.09	.09	.05	.10	–
Depression age 15	2.09	.97	1.98	.94	.11	.11*	.06	.12	–
<i>Late Adolescence</i>									
Full time education age 17	.53	.50	.62	.48	–.10	–.39**	.14	–.87	.68
Work age 17	.22	.41	.16	.36	.06	.41*	.17	1.23	1.50
Unemployed age 17	.13	.34	.10	.30	.03	.34	.21	1.27	1.40
Anxiety age 17	2.18	.86	2.05	.75	.13	.13**	.05	.16	–
Depression age 17	1.97	.93	1.82	.85	.14	.14**	.06	.16	–
<i>Young Adulthood</i>									
University age 19–20	.28	.45	.30	.46	–.02	–.09	.17	–.20	.91
Further education age 19–20	.20	.40	.28	.45	–.08	–.42*	.18	–1.12	.66
Work age 19–20	.58	.49	.56	.50	.02	.10	.15	.20	1.10
Unemployed age 19–20	.22	.41	.15	.36	.07	.46*	.20	1.48	1.59
Salary age 20	2.60	1.09	2.68	1.18	–.08	–.01	.02	.00	–
Drinking age 19–20	4.38	1.66	4.45	1.47	–.08	–.08	.11	–.07	–
Cannabis age 19–20	.96	.20	.96	.19	–.01	–.13	.37	–.08	.88
Life satisfaction age 20	3.72	1.06	3.72	1.07	.00	.00	.08	.00	–

Notes: OR = odds ratios

Results with odds ratios are binary logistic regressions. Results without odds ratios are linear regressions

*** = $p < .000$, ** = $p < .01$, * = $p < .05$

Disengaging/disengaged students in late adolescence

Next, we used linear and logistic regressions to test for differences between the disengaged students and their counterparts, after finishing compulsory comprehensive school (Wave 4). There we assumed (f) that disengaging students would participate less in upper secondary and further education and more in employment; but (g) that they would have similar psychological wellbeing and risk behaviours.

Disengaging mildly and rapidly. As assumed, both disengaging trajectories were less likely to be in full time education (*disengaging mildly* by 5%, $d = .66$; *disengaging rapidly* by 13%, $d = 2.30$) and more were working (*disengaging mildly* by 25%, $d = 1.32$; *disengaging rapidly* by 75%, $d = 5.71$). However, the *disengaging rapidly* students were also 40% more likely to be unemployed ($d = 3.44$) and both groups had higher anxiety and subjective ill-being. The effect sizes were larger in all cases for the *disengaging rapidly* versus *disengaging mildly* students.

Stable disengaged. In Wave 4, 12.4% fewer *stable disengaged* students attended full time education ($d = .94$), and 66% more were employed ($d = 4.38$). They also had greater anxiety, but similar subjective ill-being and unemployment to their *stable engaged* counterparts.

Disengaging disengaged. Compared to the *stable disengaged* students, fewer *disengaging disengaged* were in full time education (by 33%, $d = .87$) and more were in full time work (by 38%, $d = 1.23$), but they also had poorer psychological wellbeing.

Disengaging/disengaged students in young adulthood

Our final set of regressions tested the same assumptions (f and g) in young adulthood. However, anxiety and subjective ill-being were not measured in Waves 6 and 7, therefore we used life-satisfaction as a complementary measurement of psychological wellbeing.

Disengaging mildly and rapidly. In young adulthood, 15% fewer *rapidly disengaging* students attended university ($d = .65$) as assumed, but both disengaging trajectories also had a greater percentage of unemployment (*disengaging mildly* = 20%, $d = .78$; *disengaging rapidly* = 50%, $d = 1.83$). *Disengaging rapidly* students also had lower life-satisfaction ($d = .25$) although this was a small effect. Otherwise the disengaging trajectories looked similar to their *stable engaged* counterparts, in attending university and further education, employment, annual salary and substance use.

Stable disengaged. As for the disengaging trajectories, the notable effects of being stably disengaged at school dissipated in young adulthood. There, only reduced university participation (by 19%, $d = .79$) and a negligible negative effect on life satisfaction ($d = .15$) emerged.

Disengaging disengaged. Compared to the *stable disengaged* students, 29% fewer *disengaging* students attended further education ($d = 1.12$) and 46% more were unemployed ($d = 1.48$). However, as for the other trajectory pairs, they had similar career activity, salary, substance use and life-satisfaction in young adulthood.

Discussion

This study aimed to explore the most common trajectories of emotional disengagement from schoolwork in compulsory secondary school in England and establish their longitudinal associations with individual characteristics, achievement, psychological wellbeing, risk behaviours and career pathways. It tested seven assumptions about those associations, based on evidence from prior studies of schoolwork and schooling emotional disengagement and engagement; across four time periods (early, mid and late adolescence, and young adulthood) using longitudinal data from the LSYPE.

Multiple disengagement trajectories

We identified eight different disengagement and engagement trajectories in the LSYPE data, extending the latent transition analysis of the LSYPE by Ross (2009) by demonstrating slopes of (dis)engagement in school. The first two disengagement trajectories were emotionally engaged with schoolwork at age 14–15 years but then disengaged at different rates. This experience of initially being engaged but then losing interest in schoolwork is widespread in the school transition literature. Immediately following transfer to secondary school, students often report a ‘honeymoon’ period (Hargreaves, 1984) where they view their experiences through rose tinted glasses. However, this initial excitement can quickly wear off, as students realise that not all aspects of school environment are a good fit with their personal and developmental needs, as outlined by stage-environment fit theory (Eccles *et al.*, 1993; Symonds & Galton, 2014).

Second, we identified a group of students who remained at a stable level of disengagement during the study period. As disengagement was first measured at age 14 years, rather than at 12 years immediately after transfer to secondary school, it is impossible to tell whether these students had been engaged beforehand. However, the consistency of their disengagement drew our attention to exploring which mechanisms might have kept them at that stable level, by comparing them to the *disengaging disengaged* trajectory.

A final group of students were also disengaged at the start of the study, but then had rapidly increasing disengagement across secondary school. Possibly, whatever personal and social mechanisms were influencing their emotional disengagement from schoolwork became stronger, as their disengagement and these factors amplified each other through time (Skinner *et al.*, 2008). Interestingly, this trajectory of disengaging from a disengaged baseline has not been observed in other large scale studies (Janosz *et al.*, 2008; Li & Lerner, 2011), therefore does not necessarily relate to the greater heterogeneity of larger samples.

Individual characteristics of disengagement

Our next assumption (b) was that the trajectories would be marked by known risk factors for disengagement from schooling and schoolwork, including being male, having greater social disadvantage and being white. However, in contrast to studies from the US (Li & Lerner, 2011) and Canada (Janosz *et al.*, 2008), and to Ross' (2009) analysis of the LSYPE data, we observed no gender differences between trajectories, and no SES difference in three of the four disengagement trajectory pairs, after controlling for baseline disengagement. Further investigation using SES as an ordinal variable revealed that SES did not correlate with our measure of emotional disengagement at any wave. Also, the full range of SES categories were fairly normally distributed within each trajectory. Therefore, the lack of SES differences in our study was not accountable to our multiple regression method where gender and ethnicity were entered before SES in the models.

Our finding of a lack of relationship between individual background factors and emotional attitudes towards school is comparable to Gorard and Huat See's (2010) cross-sectional study of around 3,000 students in 45 secondary schools across England. There, background factors including gender, SES and eligibility for free school meals accounted for only 4% of the variation in students' perceptions of how interesting their lessons were, and 10% of the variation in how much they enjoyed school. As these authors commented, this finding is in stark contrast to the positive associations generally found between SES and other aspects of engagement such as educational aspirations (Chowdry *et al.*, 2011) and the amount of time not being in education, employment or training (NEET) (Schoon, 2014).

So why do our findings contrast with the prior longitudinal studies of emotional engagement? This may be explained by our narrower measurement of boredom and interest. Ross (2009) combined items on students' attitudes towards school, school work and lessons (a 10-item scale) with a measurement of their truancy and school leaving aspirations. In England, students' expectations for attending higher education are associated with their social class (Chowdry *et al.*, 2011; Parker *et al.*, 2016) therefore possibly explaining why SES differences were observed in Ross' (2009) study and not in ours. Also, Janosz *et al.* (2008) used a combined measure of emotional, cognitive and behavioural engagement, and Li and Lerner (2011) measured emotional engagement as students' emotional attitudes towards teachers and peers, not schoolwork. In all of these studies, social factors such as SES and gender may have influenced items within those measure that did not regard boredom and interest, calling attention to the importance of clear and specific construct definition.

In our study, being white was the only consistent predictor of trajectory membership with effect sizes that ranged from small to medium across the four disengagement trajectories. This could represent the protective process of being an ethnic-minority student in England, as they are often second-generation immigrants, whose attitudes towards schooling are positively influenced by their parents' high expectations for achievement, even if their achievement is often lower than their white peers (Strand, 2007).

Disengagement and achievement: A dynamic developmental system

Third we predicted that the disengagement trajectories would have similar achievement to their comparison trajectories at baseline (assumption c) but that their achievement would wane across the school years (assumption d). Accordingly, in the LSYPE, students disengaged in various ways, regardless of their childhood achievement. However, by the end of compulsory school, students in all disengaging trajectories had worse achievement on average than their counterparts. Our suggestion is that this decline in achievement was part of a broader dynamic system of emotional and behavioural disengagement, for, in line with assumption e, by Wave 3, disengaged students also tried less hard at school and attended less often, and had lower aspirations for academic success, which presumably would have negatively impacted their achievement. This might also explain why emotional engagement did not predict achievement in Wang and Eccles (2012), after they added behavioural engagement to their model, as behavioural engagement may have fully mediated the connection between emotional attitudes and achievement.

Longitudinal associations with education and employment

Next we assumed (f) that emotional disengagement from schoolwork would associate with less participation in full time education and more uptake of employment, after compulsory schooling. At age 17–18 years, our assumption was met for all disengagement trajectories.

The differences in educational participation might relate to the disengagement trajectories having lower end-of-school achievement, as students in England need to get reasonably high grades in order to continue to A-Level courses. Also, they might reflect an avoidance strategy (Heckhausen *et al.*, 2010), where students sought to protect themselves against having similar negative emotional experiences in the same institution or in a sixth form or Further Education college. In all those institutions, there are some environmental similarities including timetables and examinations, which can act as acute stressors in late adolescence (McCoy *et al.*, 2014). The lower rates of participation in full-time education at age 17–18 might also have affected the subsequent lower rates of participation in university and further education in young adulthood, observed for several of the disengagement trajectories. Together these results suggest that emotional disengagement from schoolwork affected students' school and career pathways by altering their chances of, and dispositions towards progression. Likewise, in Finland, having a cynical attitude towards school has predicted dropping out of education (Bask & Salmela-Aro, 2013).

Disengaged students were also more likely to enter employment in late adolescence as expected, but not in young adulthood; perhaps as more comparison students finished their educational courses and entered the workforce. Another interesting result surfaced in young adulthood, where the *disengaging mildly*, *disengaging rapidly* and *disengaging disengaged* students were more likely to be unemployed than their comparison students. Possibly their lower educational aspirations and achievement might have been a risk factor for unemployment, as has been found already in the LSYPE, and in other British cohorts (Duckworth & Schoon, 2012; Schoon 2014).

Longitudinal associations with wellbeing

Finally, we assumed (g) that disengaged students would have similar psychological wellbeing and risk behaviours to their counterparts in young adulthood, despite having poorer psychological wellbeing and riskier behaviour at the end of compulsory school, indicating some type of personal recovery as they engaged in new activities that were presumably less boring and more interesting to them. However, in the year after compulsory school, students in the disengagement trajectories still had higher anxiety and subjective ill-being. Possibly these were recent spillover effects from their negative emotional experiences of doing schoolwork (Salmela-Aro & Upadaya, 2013) that were only temporary, for two years later in young adulthood, only the *disengaging rapidly* students were notably less satisfied with their lives. Interestingly, even the *stable disengaged* students had very similar life satisfaction to those who were *stable engaged*, indicating that despite their prior differences in wellbeing, and their different uptake of education and employment, they evaluated their lives as being just as good in young adulthood. Possibly, their greater uptake of vocational pathways acted as a protective process, by which their mental health improved (Symonds *et al.*, 2016).

A similar pattern appeared for substance use, where the higher levels of smoking, drinking and drug use observed at the end of compulsory schooling were not present in young adulthood. Our suggestion is that those enhanced levels at compulsory school were part of the broader dynamic disengagement system described earlier, where students avoided school and spent more time engaged in risk behaviours outside school (Henry *et al.*, 2012). However, after leaving school, these students might have resumed a more normative level of substance use. Their engaged counterparts who were more likely to attend university might also have overtaken them in substance use, for in the US, young adults attending university have reported higher levels of substance use than their non-university peers (Carter *et al.*, 2010). Regardless, the findings present a picture of improved health behaviours after leaving school for emotionally disengaged students.

Limitations

The findings presented above should be interpreted in mind of several limitations. First, it is possible that we might have generated further, substantive findings about how different types of trajectories related to psychosocial functioning, by choosing a solution with a greater number of trajectories, despite this having a poorer model fit. Second, the main findings were generated using propensity score matched sub-samples. This reduced the representativeness of our findings to the larger sample and its underlying population (Thoemmes & Kim, 2011). However, the consistency of our main findings across the comparison groups indicates that our analysis was robust despite those changes in sample membership. Third, our attrition analysis indicated that students missing in subsequent waves were more disadvantaged socially and academically, therefore our findings are conservative estimates of the risks associated with disengaging emotionally from schoolwork. Fourth, there may have been other mediating variables not measured in this study that influenced the changes in disengagement and observed group differences, such as participation in alternative

education, the quality of school and community services for supporting social, emotional and behavioural development, and fluctuations in the levels of child poverty throughout the period of study. Fifth, there are many other types of emotions that underpin the formation of emotional attitudes towards schoolwork, including for example anxiety, frustration, pride and joy (Pekrun & Linnenbrink-Garcia, 2012). Other researchers may be interested in conducting similar studies using these different indicators, in order to advance our knowledge of students' emotional functioning and longer-term associations.

Conclusions

In this analysis of the LSYPE, we found several distinct trajectories of schoolwork emotional engagement and disengagement, in compulsory secondary schooling. However, unlike prior studies in the US (Li & Lerner, 2011), Canada (Janosz *et al.*, 2008) and England (Ross, 2009), we found very few individual differences to mark those trajectories. In our discussion we posited that measurement differences might explain this lack of comparison, because unlike those studies, we focused exclusively on interest and boredom. Accordingly, as discussed, our results are similar to another English study of students' interest in lessons (Gorard & Huat See, 2010). But we still need to offer an explanation for why boredom and interest might have little connection to background factors when they are studied by themselves.

Possibly, situational interest and boredom are closely connected to students' basic psychological reactions to curricula and pedagogy, such as whether or not they inspire adequate motivation, cognitive challenge (Shernoff *et al.*, 2016) and internal regulation while learning (Westling *et al.*, 2013). These basic reactions and the emotions that they help generate may occur independently of students' aspirations and career identities that commonly relate to SES and gender (e.g., Parker *et al.*, 2016). Therefore, the finding that students' perceived interest and boredom do not vary by background characteristics in England could indicate a lack of systematic bias in the way that students of different genders and social classes are taught (Gorard & Huat See, 2010).

The existence of multiple disengagement trajectories in our study could, therefore, relate to students experiencing person–environment misfits in classrooms that were unaligned with gender or SES. Possibly, disengaging students experienced misfits between their desired for and experienced emotional support from teachers and peers, or between their need for cognitive stimulation and the manner in which schoolwork was delivered in their classrooms (Eccles *et al.*, 1993). They may also have had fewer personal resources that can be used to sustain educational resilience, such as self-regulated learning orientations (Skinner & Pitzer, 2012).

These possibilities may have relevance for school-based interventions to improve students' emotional experiences of doing schoolwork. For example, creating a more personalised learning environment so that every adolescent student can utilise their personal motivational styles and learning preferences while doing schoolwork; improving the quality of teacher–student relationships across the board by helping teachers become more familiar and empathetic with their students through continued

professional development modules; and developing schoolwork units designed to facilitate positive emotions such as enjoyment, curiosity, interest and pride. The continued disengagement for many students in our study, the associations between these trajectories with negative outcomes at the end of compulsory schooling, and the longer-term effects on educational participation, suggest that it is important to start these interventions early on in secondary school.

During school, any type of emotional disengagement from schoolwork was positively associated with students' anxiety and subjective ill-being, and negatively associated with achievement, especially for students who disengaged the most rapidly. Here, we presumed that a broader dynamic system of disengagement was being played out. This may have begun by students continually experiencing negative state emotions while doing schoolwork, such as boredom, or lacking positive state emotions such as interest. Over time, those state emotions became absorbed into students' negative emotional attitudes towards schoolwork. In order to avoid experiencing negative emotions, students might have disengaged cognitively from schoolwork, putting in less effort and attention thus reducing their opportunities to make good academic progress. Regarding their temporary loss of wellbeing, disengaging from schoolwork may have reduced students' opportunities to capitalise on social and emotional resources such as support from teachers and pro-schoolwork classmates, and the chance to boost their self-esteem through academic progress.

However, in young adulthood, those negative effects on wellbeing dissipated, suggesting that even though these students followed less academic pathways, they were just as satisfied with their lives, and lived just as healthily (or unhealthily) as those who had remained engaged with their schoolwork in compulsory school. As discussed earlier, this might relate to their greater uptake of vocational pathways and lower continuation in academic education, which has associated with improved mental health in the LSYPE (Symonds *et al.*, 2016). After leaving comprehensive school, the disengaged students might have selected their main activities to optimise their chances of avoiding negative emotions related to schoolwork and similar types of study. These eventual pathways might have originated earlier in their school experiences through the development of lower educational aspirations. As proposed by Heckhausen *et al.* (2010) their disengagement at secondary school might have been an avoidance tactic, protecting their self-identity. The findings of this study suggest that this avoidance tactic can be extended well past the critical period that fuelled the disengagement, in order to protect the person against future negative experiences. As was the case with students in this study, this tactic can create a return to wellbeing once young people have the freedom to select their main activity.

NOTES

¹ <https://www.education.gov.uk/ilsype/workspaces/public/wiki/LSYPE>

² At the time of writing, the LSYPE user guide is available at <https://www.education.gov.uk/ilsype/workspaces/public/wiki/UserGuide>

³ <https://www.statmodel.com/>

References

- Abbott-Chapman, J., Martin, K., Ollington, N., Venn, A., Dwyer, T. & Gall, S. (2014) The longitudinal association of childhood school engagement with adult educational and occupational achievement: Findings from an Australian national study, *British Educational Research Journal*, 40(1), 102–120.
- Bask, M. & Salmela-Aro, K. (2013) Burned out to drop out: Exploring the relationship between school burnout and school dropout, *European Journal of Psychology of Education*, 28(2), 511–528.
- Carter, A. C., Brandon, K. O. & Goldman, M. S. (2010) The college and noncollege experience: A review of the factors that influence drinking behavior in young adulthood, *Journal of Studies on Alcohol and Drugs*, 71(5), 742–750.
- Chowdry, H., Crawford, C. & Goodman, A. (2011) The role of attitudes and behaviours in explaining socio-economic differences in attainment at age 16, *Longitudinal and Life Course Studies*, 2(1), 59–76.
- Cohen, J. (1992) A power primer, *Psychological Bulletin*, 112(1), 155–159.
- Csikszentmihalyi, M. (1990) *Flow: the psychology of optimal experience* (New York, Harper & Row).
- Downes, P. (2011) The neglected shadow: Some European perspectives on emotional supports for early school leaving prevention, *International Journal of Emotional Education*, 3(2), 3–39.
- Duckworth, K. & Schoon, I. (2012) Beating the odds: Exploring the aspects of social risk on young people's school-to-work transitions during recession in the UK, *National Institute Economic Review*, 222, 38–51.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D. & Schellinger, K. B. (2011) The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions, *Child Development*, 82(1), 405–432.
- Eccles, J. S., Wigfield, A., Midgley, C., Reuman, D., Mac Iver, D. & Feldlaufer, H. (1993) Negative effects of traditional middle schools on students' motivation, *The Elementary School Journal*, 93(5), 553–574.
- Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N. M., Kessler, R., Schwab-Stone, M. E. & Shriver, T. P. (1997) *Promoting social and emotional learning: guidelines for educators* (Alexandria, Association for Supervision and Curriculum Development).
- Ermisch, J., Jäntti, M. & Smeeding, T. (Eds) (2012) *From parents to children: The intergenerational transmission of advantage* (New York, Russell Sage Foundation).
- Fredricks, J. A., Blumenfeld, P. C. & Paris, A. H. (2004) School engagement: Potential of the concept, state of the evidence, *Review of Educational Research*, 74(1), 59–109.
- Gorard, S. & Huat See, B. (2010) How can we enhance enjoyment of secondary school? *The student view*, *British Educational Research Journal*, 37(4), 671–690.
- Green, J., Liem, G. A. D., Martin, A. J., Colmar, S., Marsh, H. W. & McInerney, D. (2012) Academic motivation, self-concept, engagement, and performance in high school: Key processes from a longitudinal perspective, *Journal of Adolescence*, 35(5), 1111–1122.
- Hargreaves, D. J. (1984) *Improving secondary schools* (London, Inner London Education Authority).
- Heckhausen, J., Wrosch, C. & Schulz, R. (2010) A motivational theory of life-span development, *Psychological Review*, 117(1), 32–60.
- Henry, K. L., Knight, K. E. & Thornberry, T. P. (2012) School disengagement as a predictor of dropout, delinquency, and problem substance use during adolescence and early adulthood, *Journal of Youth and Adolescence*, 41(2), 156–166.
- Hidi, S. & Renninger, K. A. (2006) The four-phase model of interest development, *Educational Psychologist*, 41(2), 111–127.
- HM Treasury (2004) *Child poverty review* (London, Her Majesty's Stationary Office).
- Humphrey, N., Lendrum, A. & Wigelsworth, M. (2010) *Social and emotional aspects of learning (SEAL) programme in secondary schools: National evaluation, Research Report DFE-RR049* (London, Department for Education).
- Janosz, M., Archambault, I., Morizot, J. & Pagani, L. S. (2008) School engagement trajectories and their differential predictive relations to dropout, *Journal of Social Issues*, 64(1), 21–40.

- Li, Y. & Lerner, R. M. (2011) Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use, *Developmental Psychology*, 47(1), 223–247.
- Li, Y. & Lerner, R. M. (2013) Interrelations of behavioral, emotional, and cognitive school engagement in high school students, *Journal of Youth and Adolescence*, 42(1), 20–32.
- Linnenbrink-Garcia, L., Durik, A. M., Conley, A. M., Barron, K. E., Tauer, J. M., Karabenick, S. A. & Harackiewicz, J. M. (2010) Measuring situational interest in academic domains, *Educational and Psychological Measurement*, 70(4), 647–671.
- Linnenbrink-Garcia, L., Patall, E. A. & Messersmith, E. E. (2013) Antecedents and consequences of situational interest, *British Journal of Educational Psychology*, 83(4), 591–614.
- Little, R. J. A. & Rubin, D. B. (2014) *Statistical analysis with missing data* (2nd edn) (Hoboken, John Wiley & Sons).
- McCoy, S., Smyth, E., Watson, D. & Darmody, M. (2014) *Leaving school in Ireland: A longitudinal study of post-school transitions* (Dublin, The Economic and Social Research Institute).
- Muthén, B. & Muthén, L. K. (2000) Integrating person-centered and variable-centered analyses: Growth mixture modeling with latent trajectory classes, *Alcoholism: Clinical and Experimental Research*, 24(6), 882–891.
- Nagin, D. S. & Odgers, C. L. (2010) Group-based trajectory modeling in clinical research, *Annual Review of Clinical Psychology*, 6, 109–138.
- O’Keefe, P. A. & Linnenbrink-Garcia, L. (2014) The role of interest in optimizing performance and self-regulation, *Journal of Experimental Social Psychology*, 53(1), 70–78.
- Parker, P. D., Jerrim, J., Schoon, I. & Marsh, H. W. (2016) A multination study of socioeconomic inequality in expectations for progression to higher education: The role of between-school tracking and ability stratification, *American Educational Research Journal*. Available online at: <http://aer.sagepub.com/content/53/1/6.abstract> (accessed 3 June 2016).
- Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H. & Perry, R. P. (2010) Boredom in achievement settings: Exploring control–value antecedents and performance outcomes of a neglected emotion, *Journal of Educational Psychology*, 102(3), 531–549.
- Pekrun, R., Goetz, T. & Titz, W. (2002) Academic emotions in students’ self-regulated learning and achievement: A program of qualitative and quantitative research, *Educational Psychologist*, 37(2), 91–106.
- Pekrun, R. & Linnenbrink-Garcia, L. (2012) Academic emotions and student engagement, in: S. L. Christenson, A. L. Reschly & C. Wylie (Eds) *Handbook of research on school engagement* (New York, Springer), 259–282.
- Pietarinen, J., Soini, T. & Pyhältö, K. (2014) Students’ emotional and cognitive engagement as the determinants of well-being and achievement in school, *International Journal of Educational Research*, 67(1), 40–51.
- Rimm-Kaufman, S. E., Baroody, A. E., Larsen, R. A. A., Curby, T. W. & Abry, T. (2015) To what extent do teacher–student interaction quality and student gender contribute to fifth graders’ engagement in mathematics learning? *Journal of Educational Psychology*, 107(1), 170–185.
- Ross, A. (2009) *Disengagement from education among 14–16 year olds* (London, National Centre for Social Research, Department for Children, Schools and Families).
- Salmela-Aro, K. & Upadyaya, K. (2013) School burnout and engagement in the context of demands–resources model, *British Journal of Educational Psychology*, 84(1), 137–151.
- Salmela-Aro, K. & Upadyaya, K. (2014) Developmental trajectories of school burnout: Evidence from two longitudinal studies, *Learning and Individual Differences*, 36(1), 60–68.
- Schafer, J. L. & Graham, J. W. (2002) Missing data: Our view of the state of the art, *Psychological Methods*, 7(2), 147–177.
- Schneider, B., Krajcik, J., Lavonen, J., Salmela-Aro, K., Broda, M., Spicer, J., Bruner, J., Moeller, J., Linnansaari, J., Juuti, K. & Viljaranta, J. (2016) Investigating optimal learning moments in US and Finnish science classes, *Journal of Research in Science Teaching*, 53(3), 400–421.
- Schoon, I. (2008) A transgenerational model of status attainment: The potential mediating role of school motivation and education, *National Institute Economic Review*, 205, 72–82.

- Schoon, I. (2010) Planning for the future: Changing education expectations in three British cohorts, *Historical Social Research*, 35(2), 99–119.
- Schoon, I. (2014) Parental worklessness and the experience of NEET among their offspring. Evidence from the Longitudinal Study of Young People in England (LSYPE), *Longitudinal and Life Course Studies*, 6(6), 129–150.
- Shernoff, D. J., Kelly, S., Tonks, S. M., Anderson, B., Cavanagh, R. F., Sinha, S. & Abdi, B. (2016) Student engagement as a function of environmental complexity in high school classrooms, *Learning and Instruction*. Available online at: <http://www.sciencedirect.com/science/article/pii/S0959475215300451> (accessed 3 June 2016).
- Skinner, E., Marchand, G., Furrer, C. & Kindermann, T. (2008) Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100(4), 765–781.
- Skinner, E. A. & Pitzer, J. R. (2012) Developmental dynamics of student engagement, coping and everyday resilience, in: S. L. Christenson, A. L. Reschly & C. Wylie (Eds) *Handbook of research on school engagement* (New York, Springer), 21–44.
- Steyer, R. & Schmitt, M. J. (1990) Latent state-trait models in attitude research, *Quality and Quantity*, 24(4), 427–445.
- Strand, S. (2007) *Minority ethnic pupils in the Longitudinal Study of Young People in England (LSYPE)*, Research Report No RR002 (London, Department for Children, Schools and Families).
- Symonds, J. (2014) The international measurement of school perceptions: School environment, school climate and student attitudes, *International Psychology Bulletin*, 18(2–3), 72–74.
- Symonds, J., Dietrich, J., Chow, A. & Salmela-Aro, K. (2016) Mental health improves after transition from comprehensive school to vocational education or employment in England: A national cohort study, *Developmental Psychology*, 52(4), 652–665.
- Symonds, J., Galton, M. & Hargreaves, L. (2014) Emerging gender differences in times of multiple transitions, in: I. Schoon & J. Eccles (Eds) *Gender differences in aspirations and attainment* (Cambridge, Cambridge University Press), 101–122.
- Symonds, J. & Hargreaves, L. (2016) Emotional and motivational engagement at school transition: A qualitative stage-environment fit study, *The Journal of Early Adolescence*, 36(1), 54–85.
- Symonds, J. E. & Galton, M. (2014) Moving to the next school at age 10–14 years: An international review of psychological development at school transition, *Review of Education*, 2(1), 1–27.
- Thoemmes, F. J. (2012) Propensity score matching in SPSS. Published in the electronic holdings of the Cornell University Library. Available online at: <http://arxiv.org/abs/1201.6385> (accessed 20 November 2015).
- Thoemmes, F. J. & Kim, E. S. (2011) A systematic review of propensity score methods in the social sciences, *Multivariate Behavioral Research*, 46(1), 90–118.
- Tuominen-Soini, H. & Salmela-Aro, K. (2014) Schoolwork engagement and burnout among Finnish high school students and young adults: Profiles, progressions, and educational outcomes, *Developmental Psychology*, 50(3), 649–662.
- Voelkl, K. E. (2012) School identification, in: S. L. Christenson, A. L. Reschly & C. Wylie (Eds) *Handbook of research on student engagement* (New York, Springer), 193–218.
- Wang, M. T. & Eccles, J. S. (2012) Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their differential relations to educational success, *Journal of Research on Adolescence*, 22(1), 31–39.
- Wang, M. T. & Peck, S. C. (2013) Adolescent educational success and mental health vary across school engagement profiles, *Developmental Psychology*, 49(7), 1266–1276.
- Westling, S. K., Pyhältö, K., Pietarinen, J. & Soini, T. (2013) How do ninth-graders perceive their involvement in the most meaningful episodes of their school career? *International Journal of Educational Research*, 58(1), 25–35.