

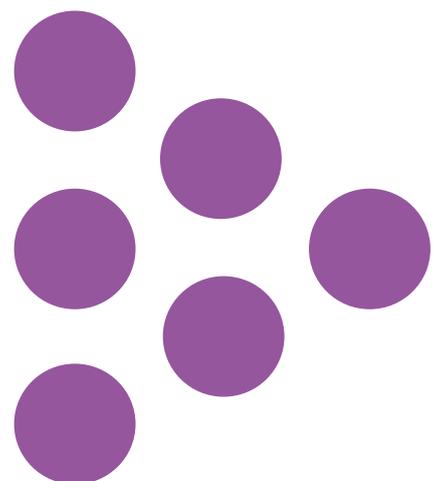
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**Report**

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**PISA 2018 additional analyses: What  
does PISA tell us about the wellbeing of  
15-year-olds?**

**National Foundation for Educational Research (NFER)**



# **PISA 2018 additional analyses: What does PISA tell us about the wellbeing of 15-year-olds?**

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Published in February 2021

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The Mere, Upton Park, Slough, Berkshire SL1 2DQ

[NFER](#)

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Registered Charity No. 313392

**ISBN:** 978-1-912596-36-2

**How to cite this publication:**

Kuhn, L., Bradshaw, S., Donkin, A., Fletcher, L., Liht, J., & Wheeler, R. (2021). *PISA 2018 additional analyses: What does PISA tell us about the wellbeing of 15-year-olds?* Slough: NFER.

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## Executive summary

Recent national and international evidence suggests that the wellbeing of young people in the UK has decreased. In 2018, the Programme for International Student Assessment (PISA) asked participating pupils a number of questions about their wellbeing, and some of the measures can be tracked over time. Based on PISA 2015 and 2018, this report focuses results from pupils' wellbeing data in England, Wales and Northern Ireland, as well as three OECD comparator countries, France, Finland and Korea. We investigated changes in wellbeing as assessed by a single measure of life-satisfaction, as well as wellbeing from a wider perspective which was based on a range of questions. Therefore, we refer to two measures: 'life-satisfaction' and 'wellbeing factor'.

## Key Findings

### Changes in life-satisfaction between 2015 and 2018

- In 2018, the strength of personal relationships was the most important factor linked to pupils' perceived life-satisfaction and wellbeing. As such, sense of belonging had the highest correlation with life-satisfaction, followed closely by parental- and then teacher-relationships.
- All countries (apart from Korea) included in this analysis showed a significant decrease in life-satisfaction between 2015 and 2018. For England, Wales and Northern Ireland, sense of belonging and emotional parental support also decreased over time whereas perceived teacher feedback increased.
- As such, this evidence suggests that greater focus in schools could be placed on improving personal and parental relationships in order to support wellbeing. Governments could explore how schools and others can help to promote these positive relationships.

### The relationship between life-satisfaction and wellbeing

- Our analysis suggests that out of all wellbeing variables used in PISA 2018, life-satisfaction, eudemonia<sup>1</sup> and positive emotions linked together to form a factor which measured wellbeing in a broader sense than the commonly used single-item of life-satisfaction.

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<sup>1</sup> PISA assessed eudemonia as a sense of meaning and purpose in life.

- Other factors that emerged from the factor-analysis identified both character strengths: (a) fear of failure<sup>2</sup>, (b) competitiveness and (c) work mastery; and interpersonal relationships (d) parental support and (e) school relationships.
- Fear of failure was the only component that was negatively correlated with the wider wellbeing factor.

## Relationship between wellbeing, attainment, and socio-economic status (ESCS)<sup>3</sup>

- There was a negative relationship in England, Northern Ireland and Wales between life-satisfaction and attainment in general.
- More emotional parental support was not strongly linked to attainment as a whole, but was found to be linked to better reading performance in Northern Ireland (but not in Wales or England).
- Pupils from more disadvantaged background tend to have lower attainment in PISA.
  - In Northern Ireland, the relationship between disadvantage and attainment was less strong for pupils who had a greater fear of failure.
  - For Wales, emotional parental support was linked to attainment in reading, maths and science for pupils from advantaged background.
  - For England, there was no evidence that wellbeing affected the relationship between either reading, science or maths attainment and socio-economic status.
  - For science, in Wales and Northern Ireland increased emotional parental support was linked to better performance in advantaged pupils.

## Policy recommendations

Throughout this report, wellbeing in young people seems to be first and foremost linked to personal-, then parental- and lastly teacher-relationships. As such, the report highlights several policy recommendations that might support wellbeing in young people:

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<sup>2</sup> OECD defines 'fear of failure' as 'the tendency to avoid mistakes because they may be regarded as shameful and could signal a lack of innate ability and perhaps even an uncertain future (Atkinson, 1957[2]; Conroy, Willow and Metzler, 2002[3])' (2019, page 188). 'Fear of failure' in this context is, therefore, a measure of self-doubt or sensitivity to failure. For a detailed description of 'fear of failure', see Chapter 7.

<sup>3</sup> Socio-economic background in PISA is reported as the ESCS (economic, social and cultural status) Index which is based on pupils' self-reported household possessions and their parents' occupation and education.

## **Recommendations:**

- Develop inclusive whole-school approaches, where the wider school community is fully committed to improving pupils' wellbeing.
- Explore what schools and others can do to support positive relationships with friends and family.
- Increase pupils' perceived sense of belonging by ensuring their voices are being heard.
- Continue to reinforce positive relationships between pupils and staff by encouraging positive teacher feedback, as well as positive relationships between pupils.
- Programmes such as peer-support / mentoring can help to create a positive school climate and therefore support pupils' wellbeing, as long as they are implemented carefully and monitored well.

# 1. Introduction

The wellbeing of young people in the UK has been deteriorating. The most recent Good Childhood Report stated that happiness continues to decrease in 10 to 15-year-olds in the UK. The aspects that decreased significantly over a 10-year period were happiness with life as a whole, happiness with friends and happiness with school (The Children's Society, 2020a). Ottová-Jordan et al. (2015) have also confirmed that there is a recent downward trend in overall mental health in England compared to other European countries.

Research from the Department of Health and Social Care (DHSC, 2014) suggests that wellbeing across adolescence presents as a 'u-shaped' curve, with 14 to 15-year-olds experiencing the lowest wellbeing. This is an important finding, as 15-year-olds are in a crucial period of transition from childhood to adulthood. A growing bank of evidence suggests that adolescence is a particularly vulnerable period in young people's lives as, during adolescence, major cognitive, emotional, behavioural and neurochemical changes take place which may be the reason why the first signs of mental disorders often emerge before the age of 14 (Kessler *et al.*, 2005). In line with this, the State of the Nation Report (DfE, 2019a) confirmed that younger children (aged 10 to 12) had higher life-satisfaction than 13 to 15-year-olds – shaping a strong rationale for the need to provide early support for children and young people's wellbeing.

The fact that the wellbeing of adolescents in the UK has deteriorated over the last few years, especially when compared to other countries, has been attributed to wide-ranging concerns including the impact of social media, high-stakes assessment and family circumstances (Department of Health & Social Care, and Department for Education, 2018). Most recently, research suggests that young people's wellbeing has further deteriorated due to the COVID-19 pandemic (The Children's Society, 2020a) as young people appear to be particularly affected by the lockdown that took place over spring and summer 2020 (NHS Digital, 2020). For this reason, it is important to understand the link between wellbeing and the current lives of school pupils of this age, particularly with regard to its impact on education. This evidence has prompted policy makers to take action to improve and monitor wellbeing in school-aged pupils.

The Programme for International Student Assessment (PISA) is a study of educational achievement organised by the Organisation for Economic Co-operation and Development (OECD) that takes place every three years. It assesses knowledge and skills acquired by 15-year-old pupils and how this is reflected in performance of reading, mathematics and science. Further, the survey also places special emphasis on pupils' wellbeing which can be measured by looking at aspects such as school climate and how satisfied pupils are with their lives. As such, it provides a unique opportunity to explore how life-satisfaction has changed over time, especially in comparison to other countries, and whether there are particular drivers of the change in wellbeing.

This report focuses on a variety of wellbeing questions from PISA 2015 as well as 2018 in order to answer the following questions:

**How has life-satisfaction in England, Wales, Northern Ireland and comparator countries changed between 2015 and 2018, and what could be the potential drivers for this?**

This analysis used the following variables from PISA 2015 and 2018 in order to investigate factors that may have affected changes in life-satisfaction over time in the selected countries (England, Wales, Northern Ireland, Finland, France and Korea)<sup>4</sup>:

**Repeated variables from PISA 2015 and PISA 2018**

- Life-satisfaction (single item)
- Sense of belonging to school
- Cultural possessions at home
- Parents' emotional support perceived by student
- Index of economic, social and cultural status
- Home educational resources
- Home possessions
- Perceived feedback from teachers
- Family wealth
- Student's expected occupational status

Note: For all full list of all variable names and questions included in the final analysis please see Appendix A Table 1 and 2.

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<sup>4</sup> This research was commissioned as part of the PISA 2018 national centre for England, Wales and Northern Ireland. The analysis of Scotland was out of scope.

## **What is the relationship between life-satisfaction and other measures of wellbeing?**

In PISA 2018, pupils were asked about many different elements that could have an impact on their wellbeing, based on findings from existing literature as well as a revised framework for developing relevant variables that contributed to the PISA 2018 assessment. However, these questions or variables on wellbeing mostly formed independent constructs and were not necessarily included with a view to explore how they relate to each other. By subjecting the PISA 2018 variables to an exploratory factor analysis, we were able to go one step further and see which variables formed clusters, i.e. variables which are highly correlated with one another, suggesting they are measuring the same underlying factor. For example, we saw that bullying and school belonging were highly correlated with each other and were not tapping into different wellbeing dimensions. As such, the factor analysis allowed us to better understand the relationship between life-satisfaction, a wider wellbeing factor and other socio-emotional factors.

## **What is the relationship between wellbeing and reading attainment, and can wellbeing moderate the relationship between attainment and ESCS?**

Lastly, we included the eight factors identified from the factor analysis in a multiple-regression analysis to investigate whether and to what extent they explain the established relationship between socio-economic background and attainment.

This report will present the key findings from these analyses based on some common themes that appeared to be important for pupils' wellbeing and life-satisfaction: school culture, parental support and individual factors.

## 2. Background

### What is wellbeing?

'Wellbeing' comes in many forms. Within the research community, it has previously been defined in many different ways, but it is generally agreed upon that wellbeing typically contains both objective and subjective components, including those that affect a person's life such as self-reported information about physical, mental or psychological health. According to the Office for National Statistics (2020), self-reported aspects of subjective wellbeing include affective wellbeing (positive and negative emotions), cognitive wellbeing (quality of life/life-satisfaction) and eudemonia (psychological wellbeing).

In PISA 2015, the OECD monitored psychological, physical, social as well as material dimensions of wellbeing. Whilst the physical dimension of wellbeing is beyond the scope of the present report, the PISA 2015 framework described the psychological dimension as "students' self-reported psychological functioning, [covering] life-satisfaction and three aspects of education related to psychological functioning: students' career and educational expectations, achievement motivation, and test and learning anxiety" (Borgonovi & Pál, 2016, p 18). The social dimension "captures both the quantity and the quality of students' social networks" (Borgonovi & Pál, 2016, p 29) covering aspects such as pupils' sense of belonging in school or relationships with others. The material dimension of wellbeing was comprised of four wellbeing factors measuring aspects such as material resources at school or extracurricular activities.

### Wellbeing policy context across the UK

Across the UK, the wellbeing of pupils in our schools is high on the political agenda. In England, the Government is taking forward proposals for all schools to identify and train a Designated Senior Lead for Mental Health (GB. Parliament. HoC, 2020) and it is also introducing compulsory health education focussed on the link between mental and physical wellbeing (DfE, 2020a). At the same time, there is renewed focus on how schools can support pupils to develop character via the Character Education Framework which forms non-statutory guidance to schools on how to develop pupils' mental wellbeing appropriately (DfE, 2019b). In Wales, the National Mission places wellbeing at the core of the new curriculum and a whole-school approach to support children and young people to become healthy and confident individuals (Williams & Gething, 2020) whilst in Northern Ireland, the iMatter programme recently launched a self-assessment tool for schools (DE, 2020a). DE has also launched the Education Restart Programme Wellbeing Initiatives in Schools to help educational settings support the mental health and wellbeing of children and young people (DE, 2020b).

In light of recent national and international study findings, the UK parliament are currently debating the case for the government to use wellbeing as a key indicator of national performance (Great Britain. Parliament. House of Lords, 2020a). Across England, a

range of mental wellbeing initiatives have been implemented, such as the Peer Support for Mental Health and Wellbeing pilots which recognise the importance of delivering peer support to improve pupils' wellbeing (Day et al., 2020). As these are relatively new initiatives, the most recent PISA 2018 cohort would not have benefitted from them at the time of assessment.

At the time the previous PISA cohort took part in the assessment in 2015, Wales elected a Future Generations Commissioner and the Well-being of the Future Generations (Wales) Act 2015 also became Welsh law. This act provided a long-term vision for the improvement of the social, economic, environmental and cultural wellbeing of Wales by embedding the United Nations Sustainable Development goals into law. As such, the most recent PISA 2018 cohort in Wales may have experienced changes in the way 'wellbeing' is being addressed within the classroom. In parallel, the UK is now in the process of introducing a UK Wellbeing of Future Generations Bill which aims to 'make provision for requiring public bodies to act in pursuit of the United Kingdom's environmental, social, economic and cultural wellbeing by meeting wellbeing objectives, publishing future generations impact assessments, accounting for preventative spending, and through public services contracts' (Great Britain. Parliament. House of Lords. 2020b).

In Northern Ireland, young people's wellbeing is central to the aim and objectives of the curriculum which specifically supports the 'Emotional Health and Wellbeing Framework for Children and Young People in Education'. Since 2007, the Department of Education has been funding an Independent Counselling Service for Schools (for post-primary aged in grant-aided schools) in order to provide pastoral care to pupils with the aim to support their wellbeing. Currently, a scoping report by the National Children's Bureau is underway to investigate the current support mechanisms in place for children and young people in schools, with the aim of developing an emotional health and wellbeing framework for children and young people in education (DE, 2020b).

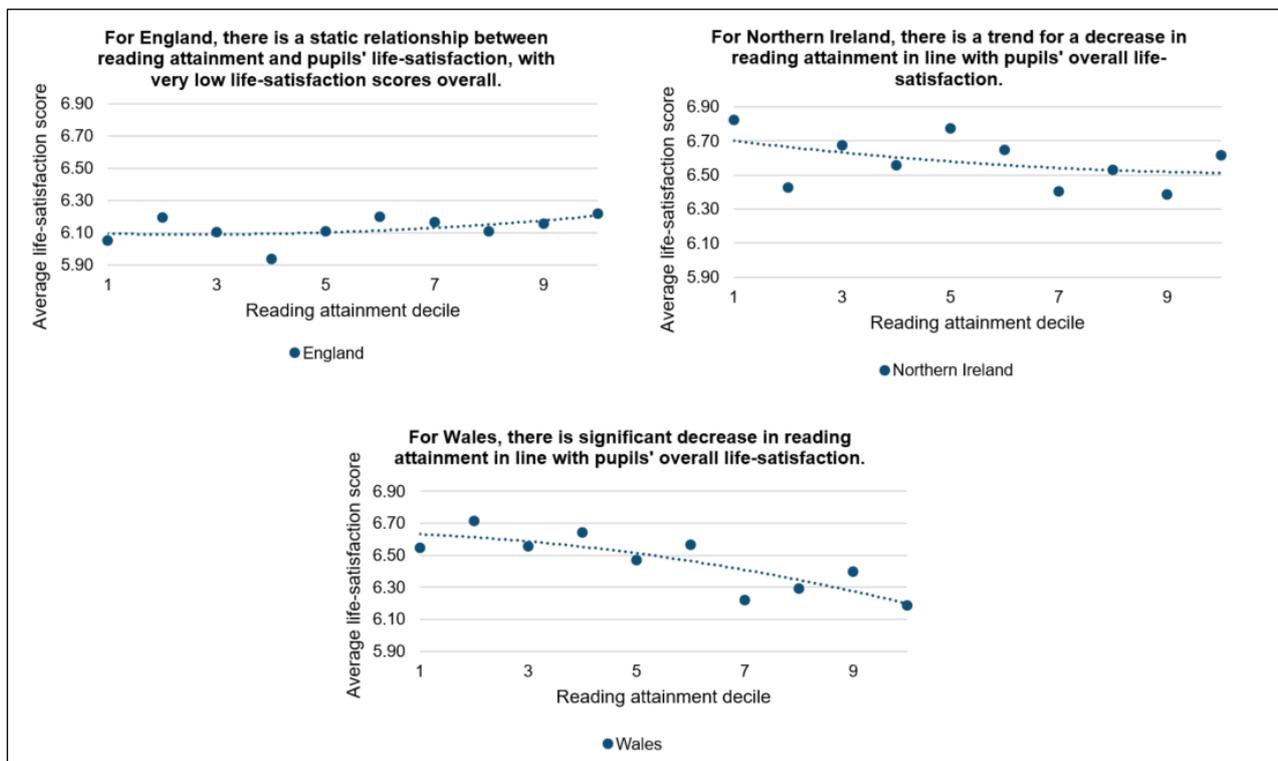
## **High attainment is linked to lower life-satisfaction in England, Wales and Northern Ireland**

Whilst wellbeing plays a crucial role in young people's lives, there appears to be a trade-off between attainment and wellbeing. As summarised by the OECD in 2019, high academic performance does not automatically imply high subjective wellbeing (OECD, 2019b). From the PISA national reports (Sizmur *et al.*, 2019a; Sizmur *et al.*, 2019b; Sizmur *et al.*, 2019c) we have seen that there is a negative relationship between attainment and reported life-satisfaction at the pupil level, this being particularly pronounced for the UK (Figure 1). This can also be observed at country level where the UK and other countries with above average attainment levels tend to have a low mean level of satisfaction (see Figure 3 below). Whilst Figure 1 shows a static relationship between reading attainment and pupils' life-satisfaction in England, probably resulting from a very low overall score of life-satisfaction, life-satisfaction visibly declined in line

with higher reading performance in Wales and Northern Ireland (significant for Wales only). This pattern cannot easily be explained by variation in overall reading attainment scores as England and Northern Ireland had very similar scores (average reading attainment scores in 2018: England: 505, NIR: 501, Wales: 483).

It may be that lower satisfaction with life short-term is a motivator for higher achievement and, in turn, higher attainment. In this analysis we therefore investigate whether specific factors can be addressed to improve wellbeing within the educational setting.

**Figure 1: Relationship between life-satisfaction and reading attainment for England, Northern Ireland and Wales**



Source: PISA 2018 database

## Pupils' socio-economic background is predictive of reading performance

Socio-economic background in PISA is reported as the ESCS (economic, social and cultural status) index which is based on pupils' self-reported household possessions and their parents' occupation and education. PISA defines a socio-economically disadvantaged pupil as a pupil in the bottom quarter of that index in his or her own country or economy. On average, pupils in the UK have a higher socio-economic status than the average across OECD countries but the degree of heterogeneity is also above the OECD average, suggesting that within the UK there is a larger gap between advantaged and disadvantaged pupils than on average in other OECD countries (OECD, 2019a). When looking at reading performance, the attainment gap between the most and

least advantaged pupils varies considerably across the OECD countries, though it was smaller in Scotland, Wales and Northern Ireland than the average across the OECD countries. On average in the UK, there is a negative relationship between pupils' socio-economic background and attainment, with lower ESCS linked to lower reading scores (Sizmur *et al.*, 2019a; Sizmur *et al.*, 2019b; Sizmur *et al.*, 2019c).

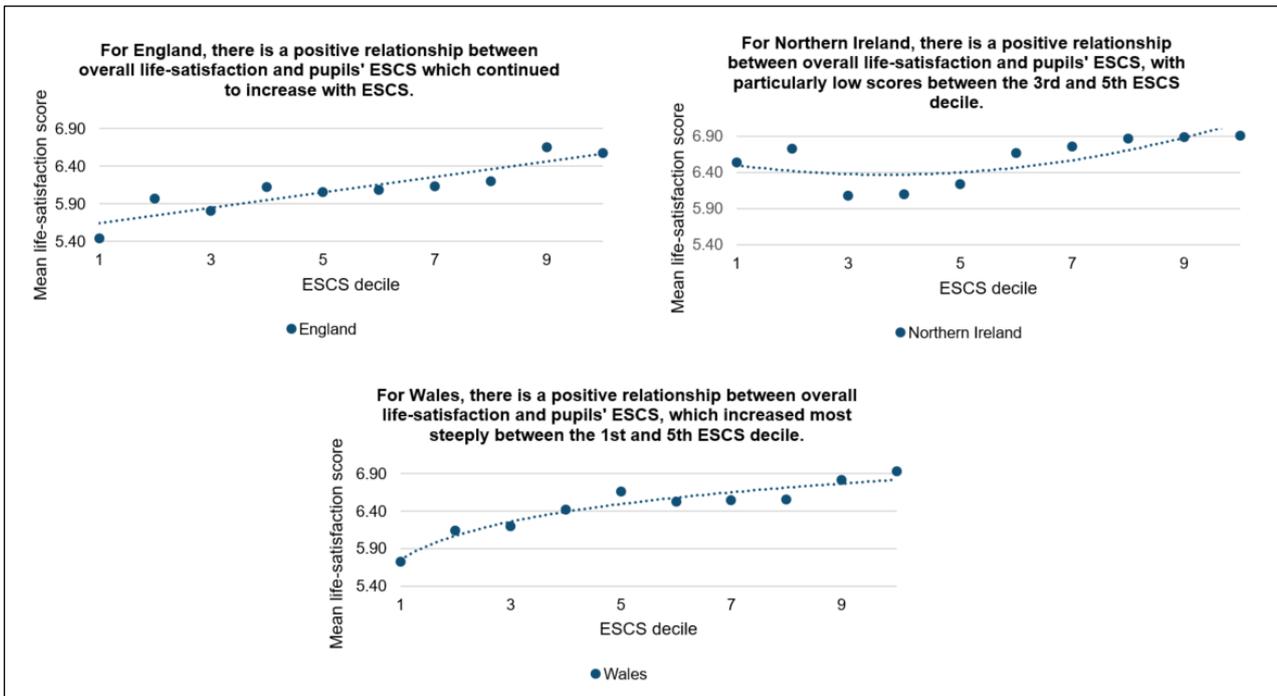
## **Adolescents from low-income households on average have poorer wellbeing than high-income adolescents**

There is plenty of evidence to suggest that wellbeing of young people is closely linked to their socio-economic background as well as pupils' experiences and perceptions (State of the Nations Report, 2020). For example, low-income adolescents seem to have more emotional problems and worse health in general (Escarce, 2003). Low-income households often lack financial resources or other mechanisms to support their children's health and wellbeing (Currie *et al.*, 2012). As such, national governments offer support to assist the education, and therefore in a wider sense wellbeing, of the most disadvantaged pupils by providing additional resources (e.g. free school meal entitlement and the Pupil Premium in England, and Pupil Development Grant in Wales). Nonetheless, data from PISA 2018 suggests that for England, Wales and Northern Ireland, life-satisfaction is on average lower for pupils from low ESCS backgrounds than those from high ESCS backgrounds (see Figure 2). This pattern, however, varied by country: whilst England showed a linear relationship between life-satisfaction and ESCS, Northern Ireland showed a particular drop in life-satisfaction scores between the 3rd and 5th ESCS decile, similar to a u-curve, and Wales showed a steeper increase between the 1<sup>st</sup> and 5<sup>th</sup> ESCS decile, which stabilised thereafter.

Given the established government support mechanisms currently in place, it is worth considering whether they sufficiently support the most vulnerable pupils within each country. In Chapter 6 and 7, this report will present further findings on the interaction between wellbeing, ESCS and attainment, and will investigate whether there are particular aspects related to wellbeing that can act as a protective factor for the most disadvantaged and low-attaining pupils.

**Figure 2: Relationship between life-satisfaction and ESCS for England, Northern Ireland and Wales**

**Figure 2**



Source: PISA 2018 database

### 3. Motivation for this research

#### **There was a significant decline in the wellbeing of 15-year-olds in the UK between 2015 and 2018**

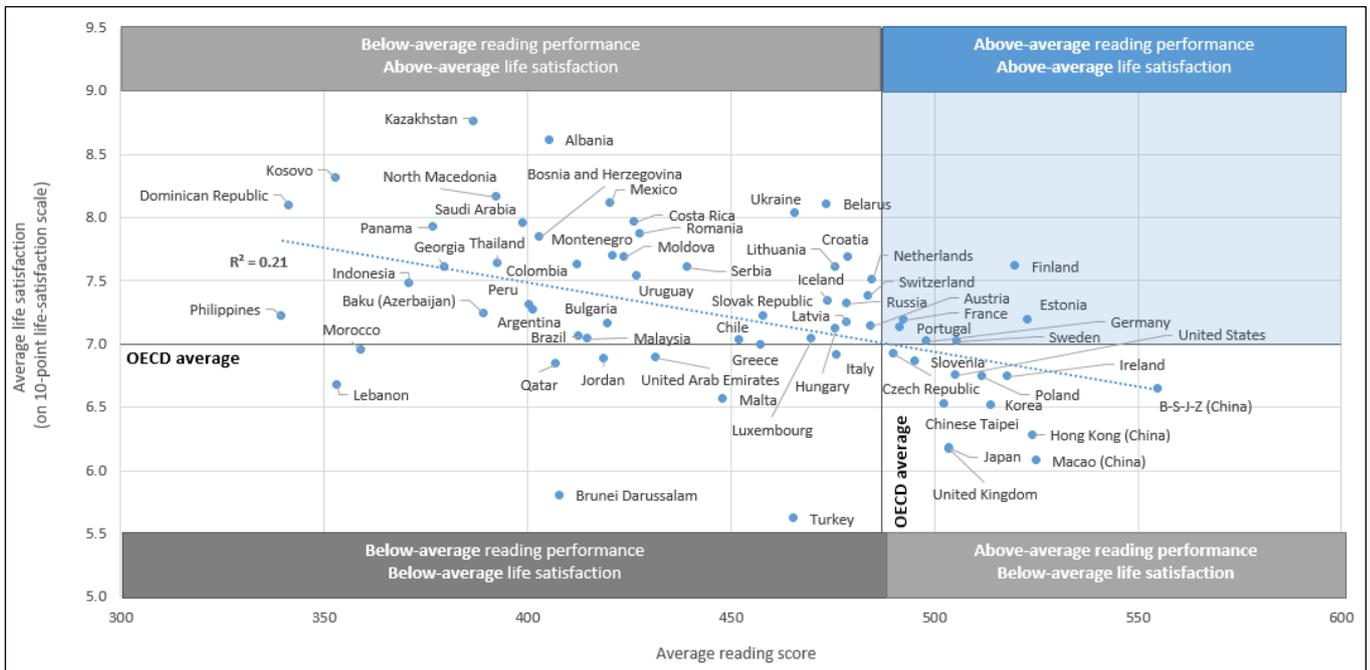
The PISA 2018 national reports for England, Wales and Northern Ireland (Sizmur *et al.*, 2019a; Sizmur *et al.*, 2019b; Sizmur *et al.*, 2019c) identified cause for concern for 15-year-old pupils. Pupils' wellbeing in the UK (mean = 6.16) was significantly lower than wellbeing in the other OECD countries on average (mean = 7.04). This was also true for England (mean = 6.12), Wales (mean = 6.45) and Northern Ireland (mean = 6.58) separately. The comparison with PISA 2015 is also worrying; the proportion of 15-year-olds in the UK that reported being satisfied with their lives (reporting 7 to 10 on the life-satisfaction scale) dropped at a faster rate than anywhere else, a 13 percentage point drop since 2015 (OECD, 2019b).

PISA 2018 provides information about the wellbeing of 15-year-olds in 79 countries, which allows the investigation of potential drivers for life-satisfaction across other OECD countries. In this analysis, we compared England, Wales and Northern Ireland's life-satisfaction with the OECD average and life-satisfaction in Finland, France and Korea as comparator countries.

The reasons for including these countries are:

- On average, life-satisfaction decreased in all participating OECD countries between 2015 and 2018, with the exception of Korea, where life-satisfaction increased significantly (but note that wellbeing was still below the OECD average). We therefore selected Korea as one of the countries for comparison to investigate whether there are specific indicators that can be linked to improved wellbeing over time.
- There was a negative relationship between reading attainment and life-satisfaction in 2018 (which mirrored the OECD relationship between science attainment and life-satisfaction in 2015): OECD countries with low reading attainment have reported higher levels of life-satisfaction and vice versa. However, as shown in Figure 3, in contrast to the UK (and the majority of other OECD countries), pupils in Finland and France scored above average in reading but also reported greater life-satisfaction than the average pupil in OECD countries. These two countries show that above average life satisfaction as well as above average attainment can be achieved together.
- Finland, France and Korea have a higher mean reading performance per capita GDP than the UK although this is still fairly similar.

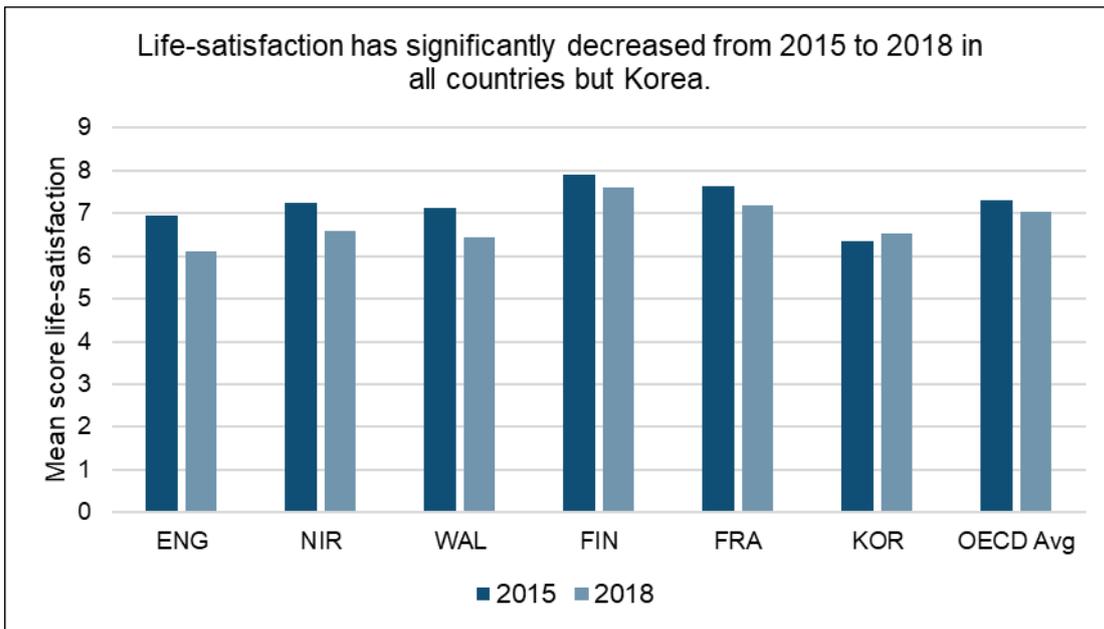
**Figure 3: Life-satisfaction and reading performance across education systems**



Source: OECD 2019

We note that all proposed comparator countries have a fairly different culture to the UK, which could be an unobservable factor in wellbeing and will need to be kept in mind when reading the findings. In order to investigate possible drivers of the link between wellbeing and attainment, this report therefore compared life-satisfaction and related factors in England, Wales and Northern Ireland to those selected OECD countries. When looking at these three countries separately, as well as the comparator countries Finland, France and Korea, our analyses confirm that all countries but Korea show a significant decrease in life-satisfaction (Figure 4).

**Figure 4: Change in pupils’ life-satisfaction between 2015 and 2018 for England, Wales and Northern Ireland and comparator countries**



Source: PISA 2018 database

### **PISA 2018 provides a broad range of wellbeing measures which are internationally comparable and can be linked to attainment**

The PISA 2015 wellbeing measure has been criticised for being too simplistic and ignoring the different cultural interpretations of wellbeing (Auld *et al.*, 2019). Perhaps as a response to this, the PISA dataset for 2018 included a range of measures related to wellbeing utilised previously, such as aspiration, life-satisfaction and sense of belonging. However, importantly, new questions addressing different aspects of wellbeing have been added for 2018. As such, it is possible to (a) track changes in wellbeing over time and (b) run cross-sectional analyses for the rich 2018 wellbeing data that shed light on possible pathways between those wider measures, traits, behaviour and attainment scores, and wellbeing. The measures relate to a variety of factors that have been reported in the literature to be important drivers of life-satisfaction and wellbeing.

Many of the initial findings on UK pupils’ wellbeing in national and international reports (e.g. OECD, 2019b; Sizmur *et al.*, 2019a; Sizmur *et al.*, 2019b; Sizmur *et al.*, 2019c) relate to the single measure of life-satisfaction. However, it is important to consider wellbeing from a wider perspective. As such, the present analysis not only reports findings from the single-item of life-satisfaction, but instead developed a more rounded measure of wellbeing using a factor analysis, resulting in a new outcome measure of a wider wellbeing factor. A detailed description of the rationale and process for creating a wider wellbeing factor can be found in Chapter 4. From here on, the report will either refer to the outcome of life-satisfaction (single-item), or to the outcome of wellbeing factor (a composite wellbeing factor resulting from the factor analysis).

## 4. Life-satisfaction versus wider wellbeing measure

In order to assess pupils' wellbeing, national and international studies such as the Youth Social Action Survey (Stevens & Bratsa, 2019) or the Good Childhood Index (The Children's Society, 2020b) often include a single-item measure of life-satisfaction amongst others (e.g. OECD, 2015; 2019a; ONS, 2020). However, it is important to consider wellbeing within the wider context for a number of reasons. For example, for life-satisfaction scales, it has been found that multi-item measures are more reliable than single-items and the scales can sometimes be influenced by current mood or life-circumstances of participants (Diener *et al.*, 2013). As such, especially when considering wellbeing over a longer period of time, stable measures of wellbeing are required by addressing different aspects of wellbeing simultaneously (ONS, 2020).

In order to explore the relationship between life-satisfaction and other measures of wellbeing, we subjected around 60 items from the PISA pupil survey to exploratory factor analysis<sup>5</sup>. Many of the questions had already been identified in pre-determined PISA scales and this analysis confirmed that the majority of the scales also held for the England, Wales and Northern Ireland data on its own.<sup>6</sup> For detailed technical information of the factor analysis used, please see Annex B.

As shown in Figure 5 and Appendix B Table 1 and Figure 1, the model had eight factors, three of which combined together in a higher-order wellbeing factor. The higher order wellbeing factor included life-satisfaction, eudemonia and positive emotions factors, which links back clearly to a framework provided by ONS (2018), stating that self-reported aspects of subjective wellbeing include affective wellbeing (positive and negative emotions), cognitive wellbeing (quality of life / life-satisfaction) and eudemonia (psychological wellbeing).

The other five factors seemed to have identified both character strengths: (a) fear of failure<sup>7</sup>, (b) competitiveness and (c) work mastery; and interpersonal relationships (d) parental support and (e) sense of belonging in school. Note that, as shown in Appendix B Table 1, amongst others, items from the PISA bullying scale were initially included in the factor analysis, but as they overlapped with sense of belonging, no factor specifically related to 'bullying' was identified in the final model. Obtaining a well-fitting measurement model for the wellbeing variables included in the PISA study is significant because it allows us to understand how well the items, which were originally conceptualised as

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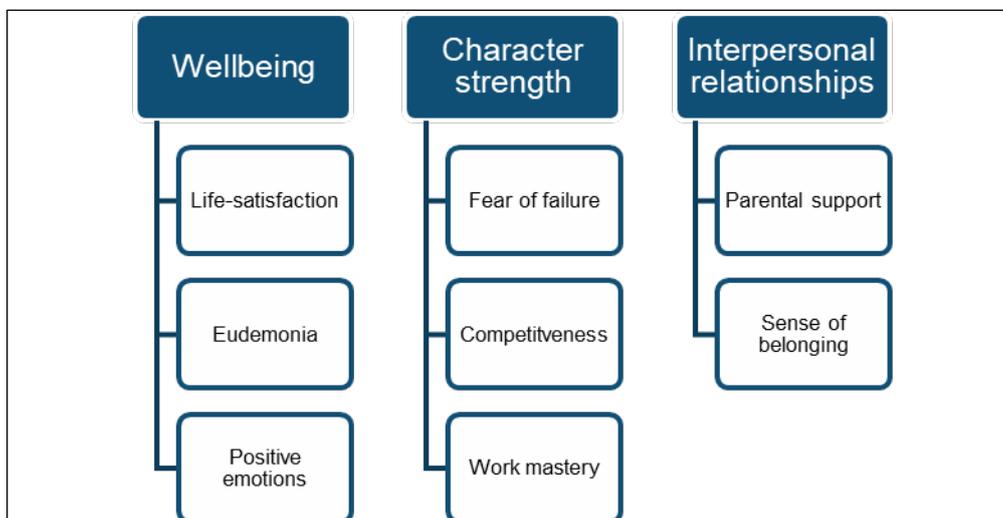
<sup>5</sup> Factor analysis was done through the Exploratory Structural Equation Modeling (ESEM) process in Mplus. ESEM allows cross-loadings of indicators on several latent variables in contrast to confirmatory factor analysis.

<sup>6</sup> Confirmatory factor analysis identified a model that provided a very good fit to the data (CFI = 0.97, RMSEA = < 0.05 and SRMR = < 0.05).

<sup>7</sup> OECD defines 'fear of failure' as 'the tendency to avoid mistakes because they may be regarded as shameful and could signal a lack of innate ability and perhaps even an uncertain future (Atkinson, 1957[2]; Conroy, Willow and Metzler, 2002[3])' (2019, page 188). 'Fear of failure' in this context is, therefore, a measure of self-doubt or sensitivity to failure. For a detailed description of 'fear of failure', see Chapter 7.

separate scales by PISA, are functioning in relation to each other. Thus it can shed light on how many constructs can be reliably identified and measured with the questions included in the PISA assessment<sup>8</sup>.

**Figure 5: Factor analysis showing how the included variables matched onto eight factors that connected wellbeing with other socio-emotional factors**



Source: PISA 2018 database

Hence, throughout this report, when we refer to 'life-satisfaction', this relates to the single-item measuring life-satisfaction. When we refer to the wider wellbeing-factor as outcome measure, this refers to the composite factor that includes the three scales of life-satisfaction, eudemonia and positive emotions.

The analysis further showed that the wellbeing factor correlated strongly with the factors eudemonia, life-satisfaction and positive emotions (which is to be expected as these three factors contributed to the overall wellbeing factor). Further, wellbeing was also positively correlated with work mastery, parental support and school social support, but less strongly with competitiveness (see Table 1). Fear of failure was the only component that was negatively correlated with wellbeing. Those patterns of relationships were more or less comparable across England, Northern Ireland and Wales, suggesting a UK-wide relationship between wellbeing and other socio-emotional factors in our 15-year-olds.

<sup>8</sup> Note: As a consequence, the factor 'sense of belonging' emerging from the factor analysis did not contain the exact same items as the PISA 2018 scale.

**Table 1: Correlations between the wider wellbeing factor and the individual eight components of the factor analysis, split by country**

-	Wellbeing factor England	Wellbeing factor Northern Ireland	Wellbeing factor Wales
Eudemonia (F1)	0.88	0.87	0.87
Life-satisfaction (F2)	0.89	0.88	0.88
Positive emotions (F3)	0.94	0.94	0.94
Workmastery (F4)	0.45	0.44	0.47
Fear of failure (F5)	-0.43	-0.33	-0.36
Competitiveness (F6)	0.23	0.18	0.24
Parents support (F7)	0.45	0.46	0.48
Sense of belonging (F8)	0.63	0.61	0.64

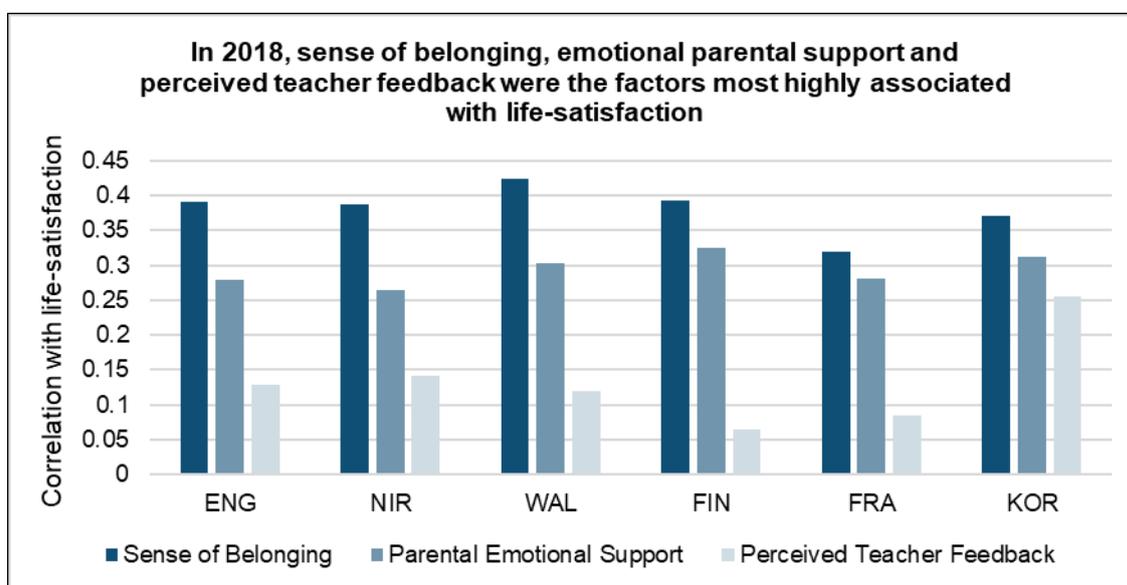
Source: PISA 2018 database

## 5. Drivers of life-satisfaction

### In 2018, sense of belonging, emotional parental support and perceived teacher feedback showed the highest correlations with life-satisfaction

The present analysis aimed to identify which areas of wellbeing formed the strongest relationship with the single item of life-satisfaction in 2018 in England, Wales and Northern Ireland, as well as the comparator countries of France, Finland and Korea. Of all repeated variables from 2015 and 2018 (see Chapter 1 for list of variables), sense of belonging in school, emotional parental support and perceived teacher support were most closely linked to pupils' perceived life-satisfaction in 2018 (see Figure 6 for individual correlations for each country). This suggests that young people's life-satisfaction was mostly linked to having positive personal-, followed by family- and lastly school-relationships. Figure 6 shows that whilst sense of belonging and perceived emotional parental support were the most important contributors to life-satisfaction in all countries, perceived teacher feedback played a particularly large role in Korea, but less so in England, Wales and Northern Ireland. There were no established contributions from the other repeated variables to life-satisfaction in 2018, and hence these were not further regarded as drivers of changes in life-satisfaction.

**Figure 6: Correlations between life-satisfaction and sense of belonging, emotional parental support and perceived teacher feedback for the England, Wales and Northern Ireland and comparator countries in 2018.**



Source: PISA 2018 database

## 6. School culture and wellbeing

### School culture plays an important role for pupils' wellbeing

As cited by OECD (2019b), sense of belonging is the “need to form and maintain at least a minimum number of interpersonal relationships” based on trust, acceptance, love and support (Baumeister and Leary, 1995[1]; Maslow, 1943[2])’ (page 130). Building high-quality relationships with others is a substantial part of healthy development during adolescence. Issues with forming relationships can have a detrimental effect on mental health (Lavis, 2016). For this analysis, all of the items in the PISA Sense of belonging scale were specifically about belonging in school. Pupils spend a large proportion of their day within the school setting and so it is not surprising that the quality of their relationships with other pupils, teachers and staff can affect their wellbeing. As such, the school climate a pupil experiences contributes significantly to their physical, emotional and mental health. Higher enjoyment, engagement and forming of positive relationships with others at school have previously been linked to higher attainment and better mental health (Public Health England, 2014), whilst a lack of sense of belonging has been linked to poor wellbeing. Data from PISA 2018 shows that school climate is closely associated with pupils’ sense of wellbeing (OECD, 2019b).

Feeling a close sense of connectivity within the school setting requires forming positive relationships not only with other pupils, but also with teaching staff. Motivated and engaging teachers play an important role in how satisfied pupils are with their lives at school. Teacher support is crucial for positive pupil outcomes and performance (e.g. Federici & Skaalvik, 2014; Lee, 2012). Indeed, when looking across all OECD countries, pupils who perceived more support from teachers also performed better in reading (after accounting for ESCS; OECD, 2019b). One potential area of interest for policy makers is for teachers to give support to pupils providing constructive and encouraging feedback, for example by providing regular feedback about a pupil’s strengths. Interestingly, in PISA 2018, only between 10 and 15% of pupils across all OECD countries reported receiving this kind of regular and positive teacher feedback (OECD, 2019b). Of course, it is not surprising that this number varies greatly by country and also between schools and teachers within a country. For example, factors such as school location or whether pupils attended an advantaged or disadvantaged school influenced perceived teacher feedback, as well as ESCS of the pupils themselves – but note that this also varied by country (OECD, 2019b). The following section provides insights into how sense of belonging in school as well as teacher feedback changed over time within England, Wales and Northern Ireland.

## Feeling a sense of belonging decreased from 2015 to 2018 but was still the factor most strongly associated with life-satisfaction

### The following items from PISA 2018 contributed to the PISA scale of sense of belonging in school:

- Thinking about your school: I feel like an outsider (or left out of things) at school.
- Thinking about your school: I make friends easily at school.
- Thinking about your school: I feel like I belong at school<sup>9</sup>.
- Thinking about your school: I feel awkward and out of place in my school.
- Thinking about your school: Other students seem to like me.
- Thinking about your school: I feel lonely at school.

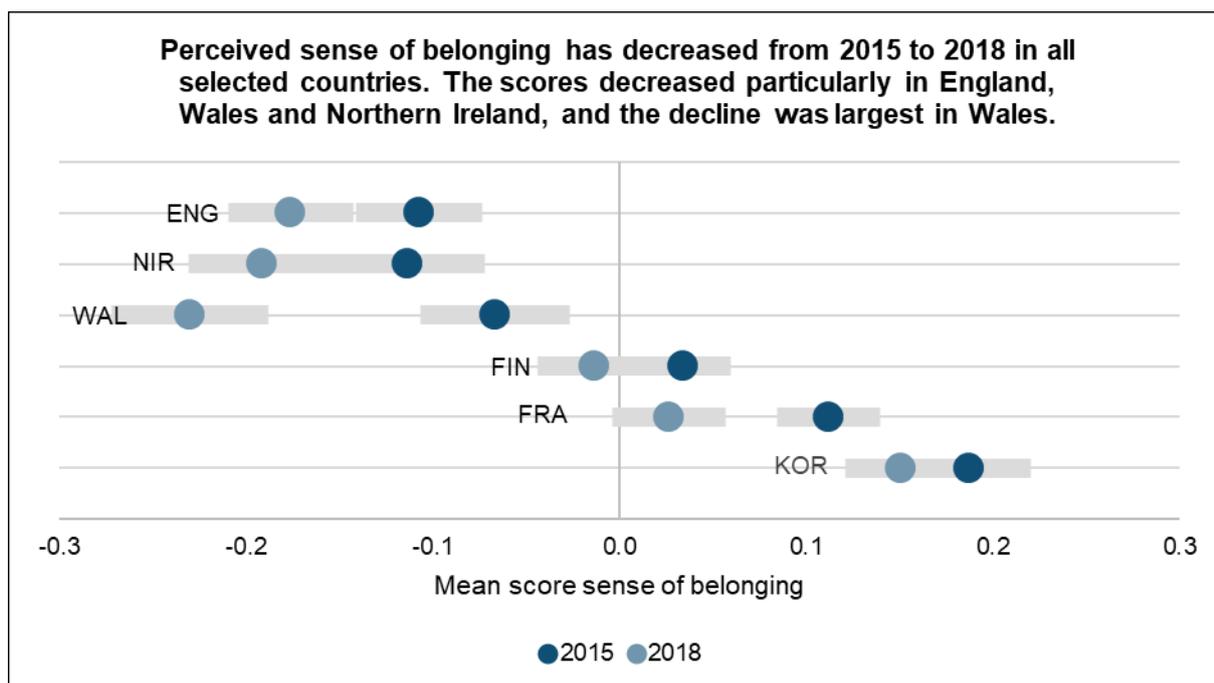
Our analysis supports the findings from the literature: feeling a sense of belonging in school was the scale most strongly associated with the single question of life-satisfaction for pupils in England, Wales and Northern Ireland, and also in Finland, France and Korea (see Figure 6). Further, across England, Wales and Northern Ireland, sense of belonging showed a moderate association not only with life-satisfaction, but also with the wider wellbeing factor (correlation ranging from .51 to .54), suggesting a positive relationship between sense of belonging and aspects of wellbeing (life-satisfaction, eudemonia, positive emotions) in 15-year-old pupils. However, the OECD (2019b) also reported that on average across all OECD countries, pupils' sense of belonging deteriorated between 2015 and 2018 and here we confirm that this trend was evident across England, Wales and Northern Ireland as well as the majority of comparator countries.

Whilst sense of belonging in school was associated with higher life-satisfaction more generally, across England, Wales and Northern Ireland, pupils have reported that their sense of belonging has decreased from 2015 to 2018. When looking at the three individual countries within the UK as well as comparator countries, it becomes evident that reported sense of belonging decreased in all countries, but for England, Wales and Northern Ireland, the responses were particularly negative. Especially pupils in Wales reported a large decline. In comparison, Korea reported the highest score for sense of belonging in both 2015 and 2018 (see Figure 7).

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<sup>9</sup> Note: The factor 'sense of belonging' that emerged as a result of our factor analysis did not include this item from the original PISA scale 'sense of belonging in school'.

**Figure 7: Change in perceived sense of belonging in school from 2015 to 2018**



Note: Grey bars represent confidence intervals. In order to make scales comparable across cycles, we recalculated the scales from the raw responses to the questions that form each scale and rescaled to Z scores for both 2015 and 2018 cycles jointly. Once this was achieved, we then proceeded to compare the means across cycles for each scale.

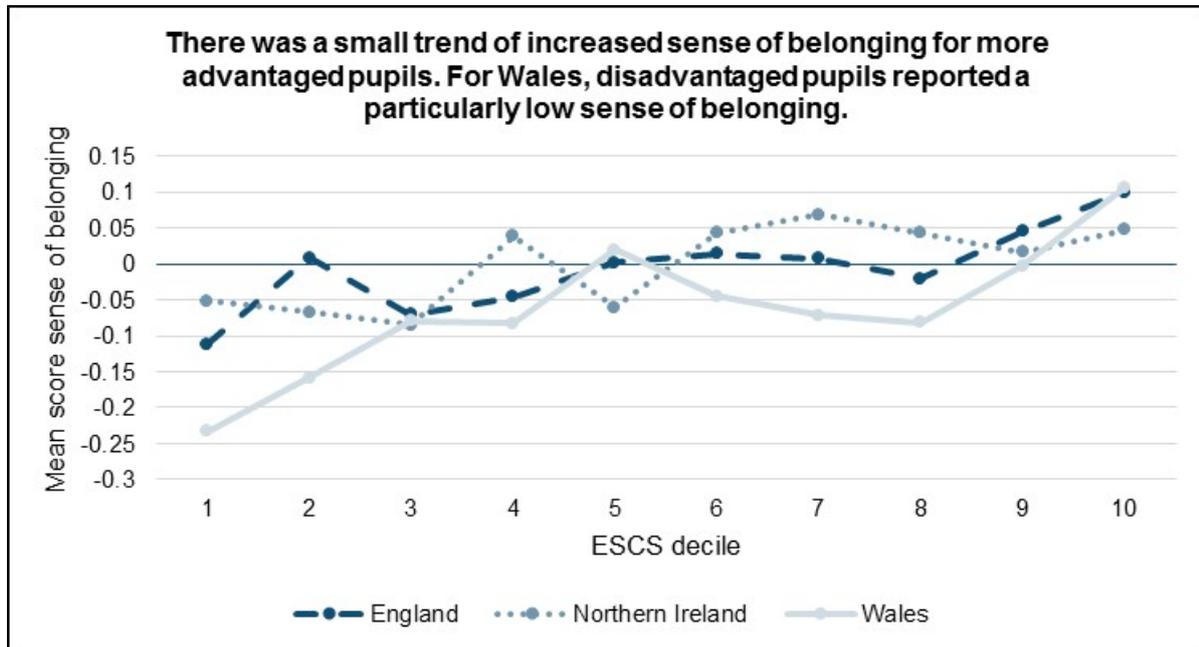
Source: PISA 2018 database

### **There was no statistically significant relationship between sense of belonging and ESCS**

As shown in Figure 2, we know that for England, Wales and Northern Ireland, life-satisfaction was lower for pupils from low ESCS backgrounds than those from high ESCS backgrounds. As such, this report investigated whether ESCS also affected pupils' perceived sense of belonging, which decreased between 2015 and 2018. Our analysis suggests that overall for sense of belonging and ESCS there was no statistically significant relationship, with only very small correlations for England, Wales and Northern Ireland varying between .06 and .09.

Nonetheless, when looking at Figure 8, whilst the pattern across England, Wales and Northern Ireland was generally similar, it however seems that the most disadvantaged pupils in Wales had a lower sense of belonging in school than the most advantaged pupils in Wales (mirroring the pattern between ESCS and life-satisfaction), and also a lower sense of belonging in school than their disadvantaged peers in England and Northern Ireland. Future analyses could investigate what drives this pattern for the most disadvantaged pupils across the UK countries.

**Figure 8: Relationship between sense of belonging and ESCS in England, Wales and Northern Ireland in 2018**



Source: PISA 2018 database

### Perceived teacher feedback in England, Wales and Northern Ireland has increased from 2015 to 2018

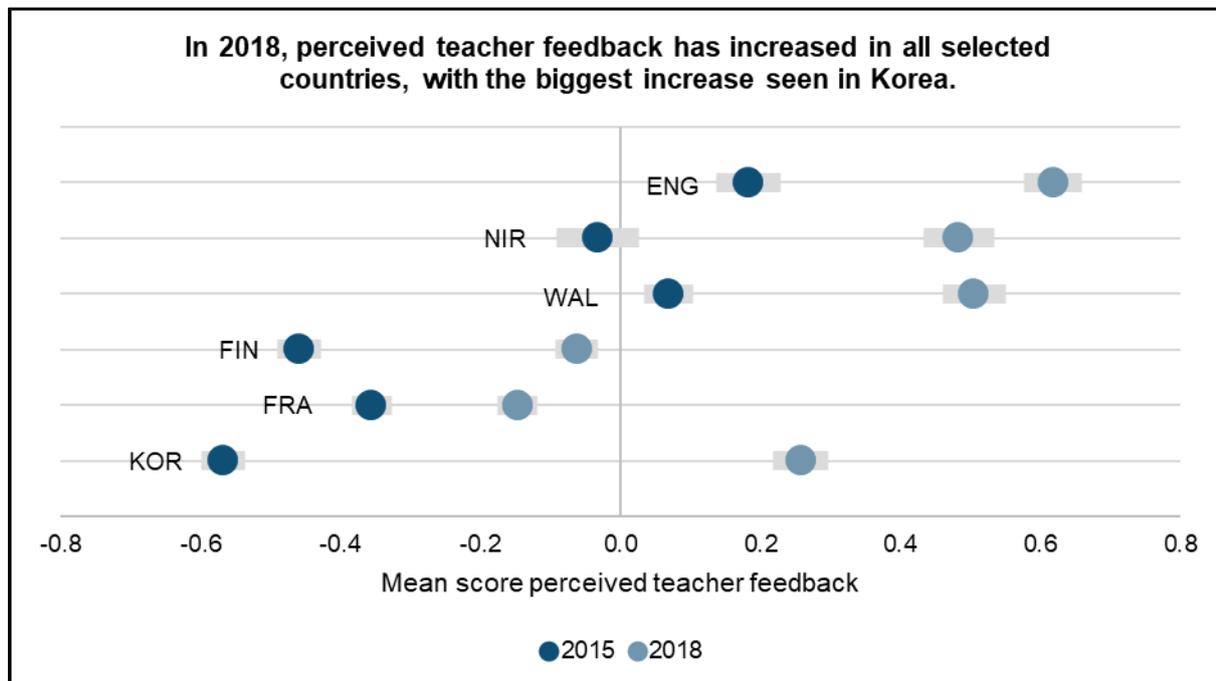
**The following items in PISA 2018 contributed to the PISA scale of Perceived teacher feedback:**

- How often during <test language lessons>: The teacher gives me feedback on my strengths in this subject.
- How often during <test language lessons>: The teacher tells me in which areas I can still improve.
- How often during <test language lessons>: The teacher tells me how I can improve my performance.

Whilst teacher feedback played a smaller role than sense of belonging in school for pupils' life-satisfaction in the UK generally, it was still the third most associated factor with life-satisfaction, after sense of belonging and parental support. As such, it is important to investigate how perceived teacher feedback varied for England, Wales and Northern Ireland between 2015 and 2018 and how this compared to a selection of OECD countries. In contrast to a decline in perceived sense of belonging, pupils in the UK

reported increased teacher feedback from 2015 to 2018 (see Figure 9). This increase was evident across all selected countries, with England, Wales and Northern Ireland on average reporting more teacher feedback than the comparator countries.

**Figure 9: Change in perceived teacher feedback from 2015 to 2018**



Note: Grey bars represent confidence intervals. In order to make scales comparable across cycles, we recalculated the scales from the raw responses to the questions that form each scale and rescaled to Z scores for both 2015 and 2018 cycles jointly. Once this was achieved, we then proceeded to compare the means across cycles for each scale.

Source: PISA 2018 database

## Implications

These results demonstrate the importance of school culture for pupils' wellbeing. More specifically, data from PISA 2018 in England, Wales and Northern Ireland show that sense of belonging in school and receiving positive teacher feedback have been linked to better wellbeing. But while teacher feedback increased over time, there was a significant drop in sense of belonging between 2015 and 2018 in all selected countries (but non-significant for Korea). Further analyses could explore whether, compared to all other OECD countries, teacher feedback is currently low but rising in UK countries. Although teacher feedback was important, feeling a sense of belonging and forming personal relationships was linked more strongly to young people's wellbeing and as such, should be the focus of future interventions. Therefore, it is crucial to consider policies that target increasing pupils' sense of belonging in school and positive school relationships between pupils but also staff.

Looking at Wales, the Healthy and Happy report (Estyn, 2019) proposes that pupils' sense of belonging can be increased by listening to pupils' views and making them feel that their voices are being heard. As such, a potential policy lesson might be that the relationship between pupils and staff, as well as peer-relationships are crucial factors for pupil wellbeing – as, in fact, identified by our analysis. Estyn (2019) specifically proposes that small gestures such as greeting pupils by their name or starting the day with positive conversations can increase pupils' self-perceived sense of belonging. This reinforces the view that simply teaching wellbeing by introducing a specific programme is not sufficient unless all members of the wider school community are fully committed to it and reinforce the effective integration, justifying an increase in whole-school approaches.

Moreover, as part of a whole-school approach, more specific programmes could be used to enhance pupils' sense of belonging in school and therefore wellbeing as part of the school culture. For example, in England, the Peer Support for Mental Health and Wellbeing pilots (2018-2019) were set up in order to tackle a decline in young people's wellbeing by encouraging a peer-support programme. A recent DfE report (Day et al., 2020) confirmed that peer-support mechanisms increased the self-reported wellbeing of mentors as well as mentees, however, these findings did not immediately translate to increased scores in validated wellbeing measures. HeadStart Kent has recently also released a Peer Mentoring Toolkit (Kent County Council, 2016) in order to support educational programmes that target resilience and wellbeing in young people. As such, the importance of peer-support and mentoring in recent years is evident, but more long-term research is needed to investigate the impact of these programmes on young people's wellbeing. Further, it is important that any peer-support or mentoring systems are implemented carefully and monitored well in order to ensure that all supporters / mentors and supportees / mentees are safe and well looked after in order to avoid any potentially negative implications.

## 7. Emotional parental support and wellbeing

### The importance of emotional parental support

Findings from the Progress in International Reading Literacy Study (PIRLS) in Northern Ireland demonstrated that early and often parental engagement in literacy activities was associated with higher attainment aged 9 and 10 (Wheater *et al.*, 2020). These findings indicate that from an early age, parental involvement and support is an important factor in a child's attainment. The evidence for parental support and attainment is less clear for secondary aged pupils, partially due to the smaller number of studies completed with this age group (Gorard & See, 2013).

Looking beyond attainment, emotional parental support can also contribute to higher wellbeing in children. Parental support in the form of weekend activities and eating meals together has been found to have strong associations with children's wellbeing (NatCen, 2013). Relationships with parents can also mediate the impact of stressful life events for adolescents (McMahon, Creaven & Gallagher, 2020), which could indicate that parental support is important for wellbeing over and above life events. However, data from PISA 2018 suggested that fewer than one in five parents were involved in school government or volunteered to participate in extracurricular activities in their child's school (OECD, 2019b).

Based on the existing research, it appears that emotional parental support has the potential to improve wellbeing and, to some extent, attainment. This secondary analysis of the PISA 2015 and 2018 data offers insight into the role of parental support in the wellbeing of 15-year-olds in England, Wales and Northern Ireland, especially when looking at the role of parental support for wellbeing within specific subgroups, such as those from disadvantaged households.

### Perceived emotional parental support showed a positive correlation with wellbeing in England, Wales and Northern Ireland

#### **The following items from PISA 2018 contributed to the PISA scale of Emotional parental support:**

- Thinking about <this academic year>: My parents support my educational efforts and achievements.
- Thinking about <this academic year>: My parents support me when I am facing difficulties at school.
- Thinking about <this academic year>: My parents encourage me to be confident.

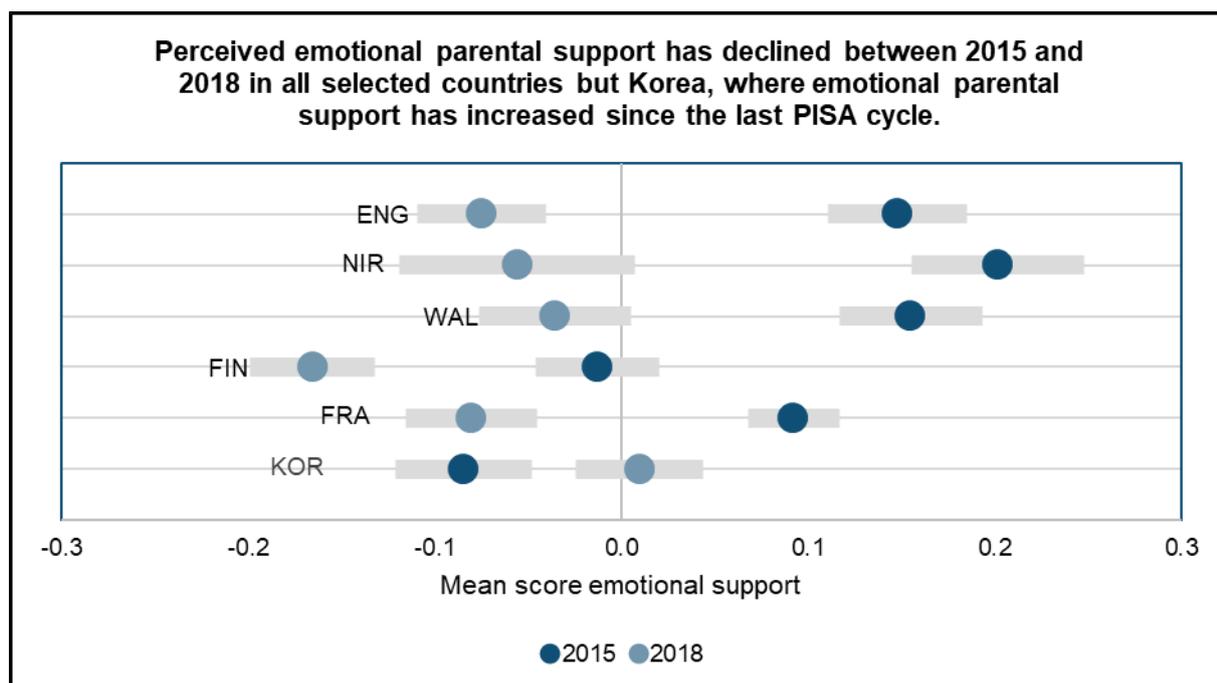
In 2018, perceived emotional parental support was found to be the second most important scale linked to wellbeing for pupils in the England, Wales and Northern Ireland, as measured by the single life-satisfaction question. The correlation between parental support and life-satisfaction was between .26 and .32 for all three UK countries (see Figure 6).

Using the wider wellbeing factor from the 2018 PISA data, the relationship between perceived emotional parental support and wellbeing appears even more important. As shown in Table 1, perceived emotional parental support showed a moderate to strong relationship with the composite wellbeing factor. Interestingly, this correlation was comparatively similar across England (.45), Wales (.48) and Northern Ireland (.46), but also when split across gender or ESCS, indicating that this aspect of a young person's life is important for wider wellbeing, regardless of their particular life-circumstances.

### **Perceived emotional parental support decreased in all countries between 2015 and 2018, except Korea where it increased slightly**

Despite its importance for life-satisfaction and wellbeing, perceived emotional parental support has significantly decreased in England, Wales and Northern Ireland as well as in France and Finland between 2015 and 2018. Interestingly, Korea was the only country in our selection that showed statistically significant improved emotional parental support from 2015 to 2018 (see Figure 10). As perceived emotional parental support correlates with life-satisfaction and wellbeing, further research into this decrease may prove valuable in highlighting ways we can improve the wellbeing of the UK's young people.

**Figure 10: Change in perceived emotional parental support from 2015 to 2018**



Note: Grey bars represent confidence intervals. In order to make scales comparable across cycles, we recalculated the scales from the raw responses to the questions that form each scale and rescaled to Z scores for both 2015 and 2018 cycles jointly. Once this was achieved, we then proceeded to compare the means across cycles for each scale.

Source: PISA 2018 database

However, it is important to remember that the questions do not measure *absolute* parental support but rather the support *perceived* by the young person. Therefore, this pattern could be an attitudinal or emotional change in the young person feeling that they need more support.

### **Emotional parental support was linked to better reading performance in Northern Ireland**

As discussed in the introduction, data from PISA 2018 suggests a negative relationship between wellbeing and attainment. Data for England, Wales and Northern Ireland from PISA 2018 shows that when looking at parental support more specifically, the relationship between perceived parental support and attainment is a little more complex. Perceived parental support was not strongly linked to attainment as a whole, but was found to be linked to better reading performance in Northern Ireland, showing a significant positive correlation between emotional parental support and reading attainment.

## Emotional parental support strengthened the relationship between ESCS and attainment for advantaged pupils in some countries

Data from PISA 2018 further suggests a positive relationship between ESCS and attainment, with pupils from higher socio-economic backgrounds on average outperforming those from disadvantaged households. As such, we looked at whether specific aspects related to wellbeing can help to overcome that attainment gap in the most disadvantaged pupils. For this purpose, advantaged pupils were defined to be the top 67% in the ESCS whereas disadvantaged pupils were the bottom 33% in the ESCS, within each country.

Overall, the link between ESCS and attainment was not moderated by different aspects of wellbeing, suggesting that the relationship between ESCS and attainment was not significantly affected by additional wellbeing-related aspects. However, there were some exceptions, for example with Northern Ireland and Wales showing that the strong relationship between ESCS and science attainment was further enhanced by emotional parental support (as shown in Table 2). Therefore, parental support increased the attainment of those with higher ESCS (which is already linked to increased attainment) in some countries and for some subjects, but not for those from disadvantaged backgrounds. This was despite the fact that emotional parental support on its own did not significantly relate to pupils' overall mean attainment levels. Please see Appendix C Table 1 to 3 for technical details about the regression model for the interaction between wellbeing, ESCS and attainment.

**Table 2: Relationship between attainment and emotional parental support for advantaged pupils**

Parental support improves attainment in disadvantaged pupils:

-	Reading	Maths	Science
England	no	no	no
Northern Ireland	no	no	yes
Wales	yes	yes	yes

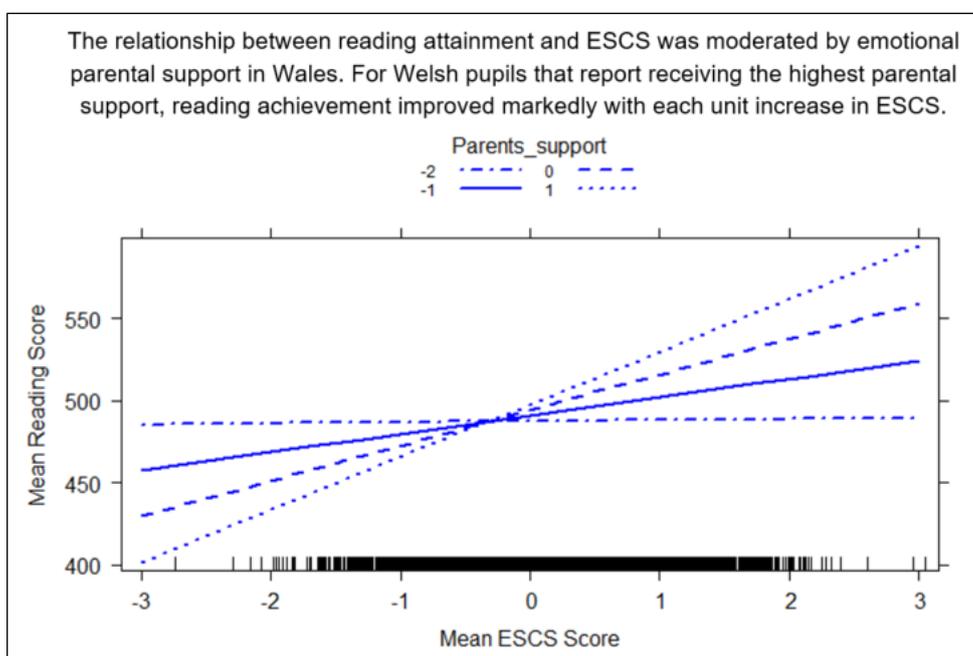
Source: PISA 2018 database

Results from our analysis showed that, for Wales, the ESCS-attainment relationship was strengthened by parental support. This result was seen consistently across reading, mathematics and science performance in Wales, suggesting that emotional parental support plays a significant role in advantaged households in Wales but not in disadvantaged households. For Northern Ireland, the interaction between attainment and parental support in advantaged pupils was seen for science only. As such, for the subject science, two out of the three UK countries showed increased parental support that was

linked to better science performance in advantaged pupils but not in disadvantaged pupils. For England, no such interaction was seen which suggests that neither for reading, maths or science attainment, parental support influenced the relationship between ESCS and attainment.

The graph below (Figure 11) illustrates the significant relationship between ESCS and parental support for reading attainment in Wales; it can be seen that pupils in Wales who report receiving the highest parental support (red line), reading achievement improved markedly with each unit increase in ESCS.

**Figure 11: Parental support significantly moderates the relationship between ESCS and reading attainment in Wales**



Source: PISA 2018 database

Further research into this complex relationship would be advised in order to clarify these interacting effects. We reported that the wider wellbeing factor had a negative relationship with reading attainment, however parental support, which is significantly and positively correlated with the wellbeing factor, did not influence overall attainment. However, perceived parental support did have a significant positive relationship with attainment in conjunction with ESCS in Wales and to some extent in Northern Ireland. Qualitative methodology may be able to illuminate this effect, for example by asking parents and young people what kinds of support they provide or are given.

## Implications

### Increasing parental support should be a focus of policy in order to improve wellbeing

The results from this secondary analysis of PISA data shows that whilst perceived parental support was not always clearly linked to better attainment, nonetheless it played a crucial role for overall wellbeing of 15-year-olds in England, Wales and Northern Ireland. Whilst the perceived parental support, as reported by pupils themselves, has recently decreased, it is important to further investigate under what circumstances parental support can be increased in order to support the wellbeing of young people. In practical terms, this means finding ways to increase input from both parents themselves, and from schools in supporting parents, in line with an inclusive whole-school approach to wellbeing.

The National Institute for Health and Care Excellence (NICE, 2009) recommend that schools help parents and carers develop their parenting skills, including making any training and resources accessible for everyone regardless of circumstance. Parental support can also be increased by helping parents to engage with their child's learning. The Anna Freud Centre for Children and Families suggests programmes for parents to build their child's resilience, in addition to schools supporting the mental wellbeing of parents, which can in turn affect the children. Research on parental engagement and attainment suggests that training and structure is needed from schools when trying to increase parental engagement and support, therefore it is not enough to simply encourage parents to do more at home (Estyn, 2018). In fact, parental engagement in young people's education is referred to as one specific disadvantage factor that can affect attainment and as such forms part of a wider interaction between parental support, attainment and disadvantage (Lessof *et al.*, 2019a).

Thus, similarly for increasing parental support in relation to wellbeing, it would be advisable for schools and policy makers to focus on programmes that are highly structured and give parents the chance to support their child, beyond just advising them to support at home. Nevertheless, research does show that home engagement and support, such as family mealtimes, improve wellbeing (NatCen, 2013). These times may provide opportunities to discuss school, friends and general wellbeing, and so should be encouraged where possible alongside more directed school action.

Secondly, it needs to be discussed how emotional parental support can be increased for the most disadvantaged pupils in particular in order for them to feel the benefit on wellbeing and attainment. Often, parents living on a low income experience high stress levels and increased time-pressure (About Families, 2012) or have poor mental health themselves since poverty increases the risk of mental health problems (Elliott, 2016). As a consequence, they will therefore find it harder to support their children in a positive way. As discussed in the introduction of this report, families from disadvantaged

backgrounds often lack financial resources to support their children's health and wellbeing (Currie *et al.*, 2012). Whilst national governments are offering a range of support mechanisms to assist the education and wellbeing of the most disadvantaged pupils by providing additional resources (e.g. free school meal entitlement in England, or the Pupil Development Grant in Wales), the recent PISA 2018 data nonetheless suggests that for Wales, the relationship between reading attainment and parental support differs between pupils from high- and low-income households. As such, it will be important to consider in future how wellbeing and parental support in disadvantaged pupils can be further supported.

## 8. Fear of failure and wellbeing

OECD defines 'fear of failure' as "the tendency to avoid mistakes because they may be regarded as shameful and could signal a lack of innate ability and perhaps even an uncertain future (Atkinson, 1957[2]; Conroy, Willow and Metzler, 2002[3])" (2019, page 188). 'Fear of failure' in this context is, therefore, a measure of self-doubt or sensitivity to failure. Levels of fear of failure can play an important role in the overall wellbeing of young people. Interestingly, the PISA 2018 data shows that for the majority of the OECD countries, socio-economically advantaged pupils reported more self-confidence in their abilities, and therefore less fear of failure, than their disadvantaged peers. After accounting for the socio-economic profile of pupils and schools, greater fear of failure was linked to better reading performance but lower life-satisfaction (OECD, 2019b). This suggests that a moderate degree of fear of failure might be linked to completing academic tasks more diligently – however, the important question arises at what point too much fear of failure has negative consequences for long-term wellbeing and attainment.

### Fear of failure is negatively linked to wellbeing in England, Wales and Northern Ireland

#### **The following items from PISA 2018 contributed to the PISA scale of Fear of failure:**

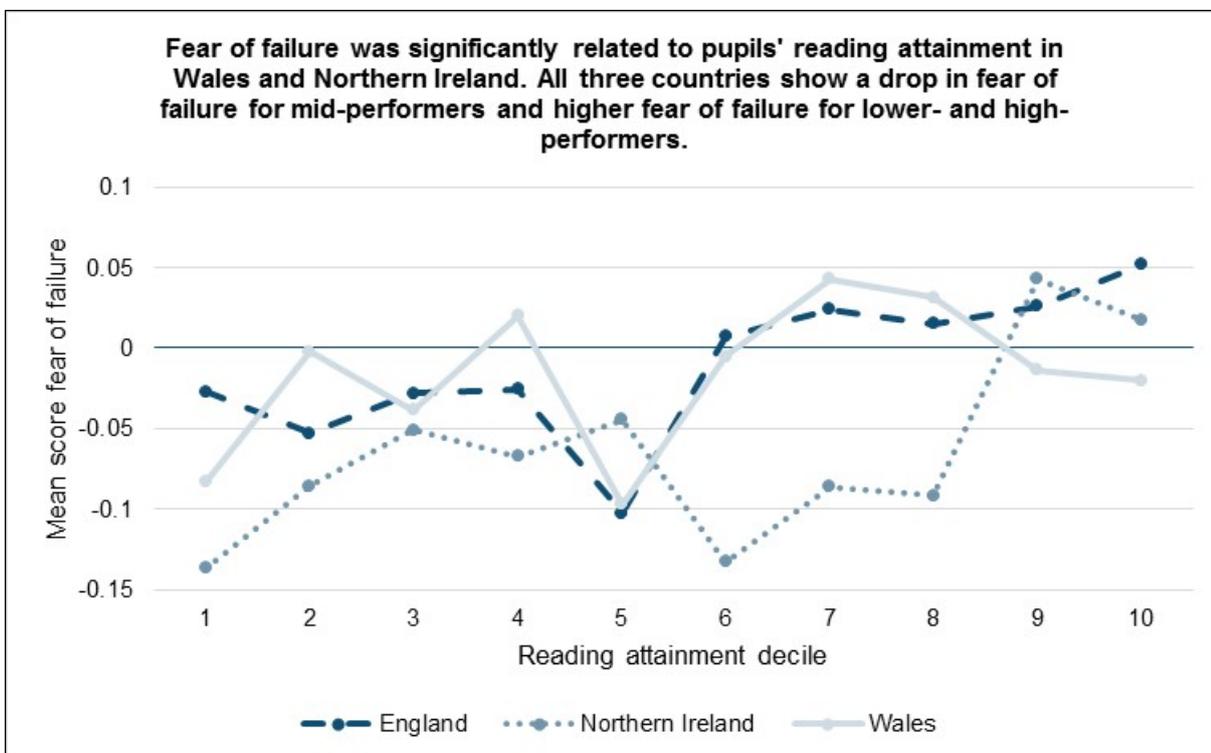
- Agree: When I am failing, I worry about what others think of me.
- Agree: When I am failing, I am afraid that I might not have enough talent.
- Agree: When I am failing, this makes me doubt my plans for the future.

In line with what is known from the negative effects of fear of failure on the single question of life-satisfaction from the majority of OECD countries (OECD, 2019b), our analysis confirmed that the relationship between fear of failure and the wider wellbeing factor was also negative. As shown in Table 1, for all three UK nations there was a weak to moderate correlation of  $-.43$  for England,  $-.33$  for Northern Ireland and  $-.36$  for Wales. Based on these wider wellbeing questions from the 2018 survey, this would suggest that the wellbeing (as well as life-satisfaction) of young people in England, Wales and Northern Ireland suffers when they worry about the opinions of others and about their plans for the future. This is unsurprising, especially when considering the impact and increased pressure of social media, which can make young people feel like they are surrounded by people who are achieving more than them.

## Fear of failure is linked to reading attainment in Wales and Northern Ireland

Despite the negative effects that fear of failure can have on wellbeing, the present analysis of the PISA 2018 data suggests that for Wales and Northern Ireland, a high degree of fear of failure was significantly linked to higher reading scores, but this positive relationship was not statistically significant for England. In line with the overall PISA 2018 findings (OECD, 2019b), it can be confirmed that on average, greater fear of failure was linked to better reading performance for two out of the three UK countries in this analysis (see Figure 12). It will be interesting to investigate why fear of failure did not have a significant impact on reading performance in England, whilst the reading performance was relatively similar for England and Northern Ireland (but significantly higher than Wales; average reading attainment scores in 2018: England: 505, NIR: 501, Wales: 483). Secondly, it is interesting when looking at this relationship across all three countries (Figure 12) that there appears to be a dip in fear of failure for mid-achievers, while both lower- and high-performers tend to exhibit a higher degree of fear of failure. This raises the question to what degree fear of failure might support attainment (potentially in high-performers) – but at what point it might affect the wellbeing, or indeed attainment of young people, negatively long-term.

**Figure 12: Relationship between fear of failure and reading attainment in the England, Wales and Northern Ireland in 2018**



Source: PISA 2018 database

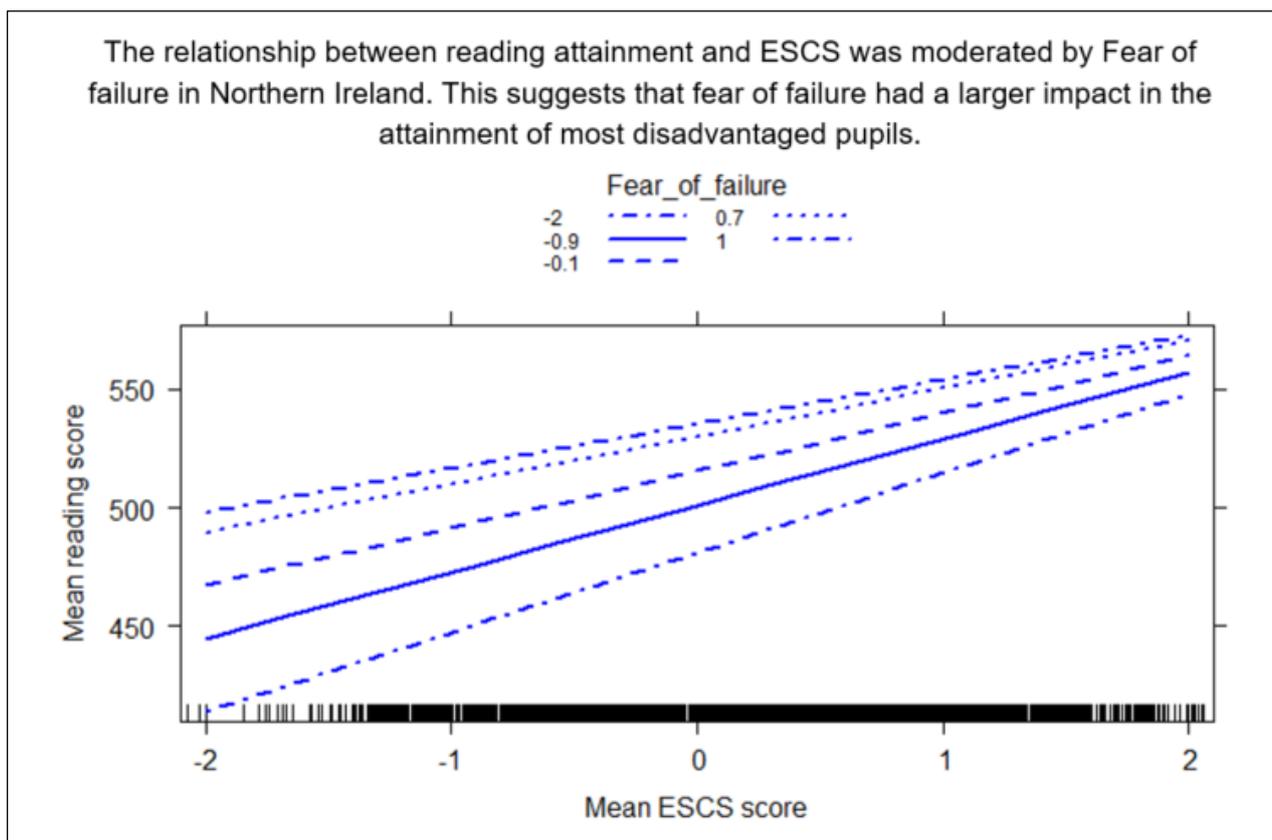
## **Fear of failure can increase reading attainment for low ESCS pupils in Northern Ireland**

The PISA 2018 report (OECD, 2019b) suggested that, on average, higher attainment was linked to a higher degree of fear of failure, but at the same time socio-economically advantaged pupils reported a lower degree of fear of failure than their disadvantaged peers. We found that for England, Wales and Northern Ireland, this relationship between fear of failure, attainment and ESCS was not straightforward. From the PISA 2018 report (OECD, 2019a), one would expect that, on average, advantaged pupils exhibit less fear of failure and that fear of failure might therefore be a potential mediator for the ESCS and attainment interaction in disadvantaged pupils.

We found that this pattern seemed to appear for one of the UK nations only: in Northern Ireland, there was a negative interaction between ESCS and fear of failure for reading attainment. This means that fear of failure appeared to improve reading attainment, but mainly for disadvantaged pupils. In other words, the most disadvantaged pupils showed better reading performance if they exhibited the highest fear of failure (yellow line) compared to those disadvantaged pupils that had least fear of failure (blue line). For the advantaged pupils on the other hand, fear of failure had much less of an impact on their reading performance (see Figure 13 for the interaction between ESCS, fear of failure and reading attainment).

Whilst overall, fear of failure was linked to lower wellbeing, these findings appear to suggest that for low ESCS pupils, a fear of failure (or, perhaps, more emphasis on expectations and social comparisons between pupils) can help them to achieve better results in reading. For the highest ESCS pupils, a fear of failure had little impact on reading results. This may be for a number of reasons, for example because attainment is likely to be higher due to other factors such as additional resources or parental support (but see the complex relationship between parental support, attainment and ESCS, which varied by country and subject in Chapter 6). Overall, for high-performing, advantaged pupils, there might simply be less 'room' for the positive impact of fear of failure on attainment, or advantaged pupils may have 'less to lose' than their disadvantaged peers. However, as all these conclusions are currently based on very specific circumstances only (i.e. one country and for reading attainment only), this warrants further investigation.

**Figure 13: Fear of failure significantly moderates the relationship between ESCS and reading attainment in Northern Ireland**



Source: PISA 2018 database

## Implications

### **We must find a way to channel a fear of failure into a more positive ‘drive for achievement’, to act as a protective factor for low ESCS pupils**

In line with what is reported for the majority of OECD countries (2019), the present analysis confirmed that for Wales and Northern Ireland, a greater fear of failure was on average linked to higher reading attainment, but had a negative impact on pupils’ wellbeing. As a consequence, to benefit the young people in England, Wales and Northern Ireland, we must find a way to protect them against the negative implications of a high degree of fear of failure. It is possible that this might include a range of approaches to offer support in the school environment in addition to parental support, to reassure young people that they are not failing compared to their peers, and that ‘failing’ can be turned into a positive, resilience-building experience.

We should also consider how we can positively channel the effect of fear of failure on attainment in order to turn this into a positive ‘drive for attainment’. Again, there might be

a variety of useful approaches, and as one example, could potentially be achieved through a holistic approach, by schools communicating with parents to ensure that academic achievement is seen as a priority and encouraged in all aspects of pupils' lives. This may help to provide motivation to the pupils, whilst an increased level of support may help to reduce the negative effects of this fear of failure, by turning it into a positive learning experience. This links to both school culture and parental support (discussed in Chapter 5 and Chapter 6, respectively). However, note that the relationship between psychological distress (which may be related to experiencing fear of failure) and attainment has been found to be curvilinear<sup>10</sup>: both very low and very high psychological distress was associated with poor attainment whereas moderate levels of psychological distress were linked to better attainment (Lessof *et al.*, 2019b).

However, it is important to clarify the extent of this research. Further qualitative research would be advised to find out from pupils exactly what it is they are feeling when they responded to items in the *fear of failure* scale<sup>11</sup>, and what they think would help them to channel this in a positive way. It is possible that pupils with different backgrounds (e.g. those coming from different socio-economic households) or by gender require different strategies for building their resilience and overcoming challenges in order to reduce their fear of failure. As such, it might be beneficial to interview low ESCS pupils to ascertain whether those who have higher attainment recognise any impact of the fear of failure/social comparison factor. For the present findings of the impact of fear of failure on attainment, it should be noted that this effect was found only for reading performance in Northern Ireland, thus wider research would allow results to be generalised to other subjects and countries. Finally, any school or wider policies aiming to emphasise the drive for attainment should be closely monitored to ensure they are having the positive effect intended; they may decrease wellbeing even further if pupils interpret them as additional pressure.

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<sup>10</sup> A curvilinear relationship is a type of relationship between two variables where as one variable increases, so does the other variable, but only up to a certain point, after which, as one variable continues to increase, the other decreases.

<sup>11</sup> Please note that in PISA pupils were not explicitly asked about their "fear of failure" but instead several items formed the scale Fear of Failure.

## 9. Conclusions and final recommendations

### Conclusions

The recent downward trend in young people's wellbeing is concerning and especially so with uncertainty due to the COVID-19 pandemic which has added even more stressors on young people's lives. As a consequence, this report analysed possible drivers of the decline in young people's life-satisfaction and wellbeing, and how this may impact on their education. Here, we summarise the key findings from this report:

### Life-satisfaction in England, Wales and Northern Ireland in 2018

- For England, Wales and Northern Ireland, life-satisfaction was lower for pupils from low ESCS backgrounds than those from high ESCS backgrounds.
- In 2018, the strength of personal relationships was the most important factor linked to pupils' perceived life-satisfaction and wellbeing. As such, sense of belonging had the highest correlation with life-satisfaction, followed closely by parental- and then teacher-relationships.

### How has life-satisfaction in England, Wales and Northern Ireland and comparator countries changed between 2015 and 2018, and what could be the potential drivers for this?

- When looking at England, Wales and Northern Ireland, as well as the comparator countries Finland, France and Korea, all countries but Korea showed a significant decrease in life-satisfaction between 2015 and 2018.
- Reported sense of belonging in school decreased in all countries, but for England, Wales and Northern Ireland, the responses were particularly negative. Pupils in Wales had a particularly large decline in perceived sense of belonging. Among the group of comparator countries considered for this report, Korea reported the highest score for sense of belonging in both 2015 and 2018.
- Perceived emotional parental support has decreased in England, Wales and Northern Ireland as well as in France and Finland between 2015 and 2018. Interestingly, Korea was the only country in our selection that showed improved emotional parental support from 2015 to 2018.
- Pupils in England, Wales and Northern Ireland reported increased teacher feedback between 2015 and 2018. This increase was evident across all selected countries, with England, Wales and Northern Ireland on average reporting more teacher feedback than the comparator countries.

- As such, this evidence suggests that greater focus in schools could be placed on improving personal and parental relationships in order to support wellbeing. Governments could explore how schools and others can help to promote these positive relationships.

## **What is the relationship between life-satisfaction and other measures of wellbeing?**

- Factor analysis suggested that out of all wellbeing variables used in PISA UK 2018, life-satisfaction, eudemonia and positive emotions together formed a composite factor which measured wellbeing in a broader sense, offering a wider outcome measures than the commonly used single-item of life-satisfaction on its own.
- Other factors that emerged from the factor-analysis identified both character strengths: (a) fear of failure<sup>12</sup>, (b) competitiveness and (c) work mastery; and interpersonal relationships (d) parental support and (e) school relationships.
- The wider wellbeing factor correlated strongly with the factors eudemonia, life-satisfaction and positive emotions.
- The wider wellbeing factor was also positively correlated with work mastery, parental support and school social support, but less strongly with competitiveness.
- Fear of failure was the only component that was negatively correlated with the wider wellbeing factor.

## **What is the relationship between wellbeing and reading attainment, and can wellbeing moderate the relationship between attainment and socio-economic status (ESCS)?**

- More perceived emotional parental support was not strongly linked to attainment as a whole, but was found to be linked to better reading performance in Northern Ireland (but not in Wales or England).
- Pupils from more disadvantaged background tend to have lower attainment in PISA.
- For Wales, emotional parental support was associated with increased performance in reading, maths and science for those from advantaged backgrounds (which is already linked to increased attainment).

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<sup>12</sup> OECD defines 'fear of failure' as 'the tendency to avoid mistakes because they may be regarded as shameful and could signal a lack of innate ability and perhaps even an uncertain future (Atkinson, 1957[2]; Conroy, Willow and Metzler, 2002[3])' (2019, page 188). 'Fear of failure' in this context is, therefore, a measure of self-doubt or sensitivity to failure. For a detailed description of 'fear of failure', see Chapter 7.

- For science, in Wales and Northern Ireland increased emotional parental support was associated with better performance for advantaged pupils.
- For Wales and Northern Ireland, a high degree of fear of failure was linked to higher reading scores (but note possible consequences as fear of failure was also negatively linked to wellbeing, and better attainment was linked to lower overall life-satisfaction).
- For Northern Ireland, fear of failure mediated the relationship between ESCS and attainment, suggesting that the most disadvantaged pupils showed better reading performance if they had a greater fear of failure (but note that fear of failure was also negatively correlated with wellbeing, and life-satisfaction is also correlated with ESCS).
- For England, there was no evidence that wellbeing affected the relationship between either reading, science or maths attainment and ESCS.

## Final policy recommendations

As seen throughout this report, life-satisfaction in young people seems to be first and foremost linked to personal-, then parental- and lastly teacher-relationships. Most recent policy implications aim to tackle changes in wellbeing by addressing pupils' perceived Sense of belonging in school and positive interactions with others within the school setting, but also at home. Often, the importance of adopting whole-school approaches in order to improve the wellbeing of young people is highlighted and common practice within the UK, with the literature recently providing some examples from Wales. Following the publication of the Mind Over Matter Report on the emotional and mental health needs of children and young people in Wales (National Assembly for Wales, 2018), new guidance on whole-school approaches to pupils' health and wellbeing was recently published, including the Together for Children and Young People Programme (Williams & Gething, 2020).

As such, we have identified some potential lessons that could be applied across the UK. In Wales, inclusive whole-school approaches are more common in primary schools than secondary schools, with two-thirds of primary schools and one-third of secondary schools in favour of adopting those approaches as a basis for supporting their pupils' health and wellbeing (Estyn, 2019). One reason why the support for young people in secondary schools is more difficult than for younger pupils is that messages given to pupils might not always reflect the actual every-day experiences of these young people. As a consequence, the Together for Children and Young People Programme highlights the importance for schools to not only focus on learner wellbeing, but also on the wellbeing of the wider school community in order to provide a united stance on wellbeing (Williams & Gething, 2020). For 2020-21, £5m has been set aside to extend inclusive whole-school approaches to support wellbeing to all schools in Wales in post-COVID-19 times, with a focus on fostering increased sense of belonging and community (Estyn, 2019).

As these are all recent developments, it will be interesting to see how those campaigns impact young people's wellbeing between now and the next PISA cycle in 2022, especially in the light of the current difficulties young people are facing as a consequence of the COVID-19 pandemic. Whilst the findings from the present report do not allow us to draw conclusions about causality, a list of recommendations has been established, based on existing literature in this field that has supported some of our present findings:

### **Policy recommendations:**

- Develop inclusive whole-school approaches, where the wider school community is fully committed to improving pupils' wellbeing.
- Explore what schools and others can do to support positive relationships with friends and family.
- Increase pupils' perceived sense of belonging by ensuring their voices are being heard.
- Continue to reinforce positive relationships between pupils and staff by encouraging positive teacher feedback, as well as positive relationships between pupils.
- Programmes such as peer-support / mentoring can help to create a positive school climate and therefore support pupils' wellbeing, as long as they are implemented carefully and monitored well.

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## Appendix A Repeated wellbeing variables

Appendix A Table 1. List of repeated variables from 2015 to 2018 included in the analysis

Variable	Description
AUTICT*	Perceived autonomy related to ICT use (WLE)
COMPICT*	Students' Perceived ICT Competence (WLE)
CULTPOSS	Cultural possessions at home (WLE)
CURSUPP	Current parental support for learning at home (WLE)
EMOSUPP	Parents' emotional support (WLE)
EMOSUPS	Parents' emotional support perceived by student (WLE)
ENTUSE*	ICT use outside of school (leisure) (WLE)
ESCS	Index of economic, social and cultural status
HEDRES	Home educational resources (WLE)
HOMEPOS	Home possessions (WLE)
HOMESCH*	Use of ICT outside of school (for school work activities) (WLE)
ICTHOME*	ICT available at Home Index (Sum)
ICTRES*	ICT Resources (WLE)
ICTSCH*	ICT available at School Index (Sum)
INTICT*	Students' ICT Interest (WLE)
PERFEED	Perceived feedback (WLE)
PQSCHOOL	Parents' perceived school quality (WLE)
PRESUPP	Previous parental support for learning at home (WLE)
USESCH	Use of ICT at school in general (WLE)
WEALTH	Family wealth (WLE)
SOIAICT	ICT as a topic in social interaction (WLE)
BSMJ	Students' expected occupational status (SEI)
BELONG	Subjective well-being: Sense of belonging to School (WLE)

\* Note: The ICT questionnaire was not completed by all schools in all countries and in both years. Hence a comparison of change from 2015 to 2018 of the ICT questions was not included in the present report.

**Appendix A Table 2. List of questions included in the analysis for the repeated wellbeing variables in 2015 and 2018**

Item	Description	HOMEPOS	CULTPOSS	HEDRES	WEALTH
ST011Q01TA	A desk to study at	X	-	X	-
ST011Q02TA	A room of your own	X	-		X
ST011Q03TA	A quiet place to study	X	-	X	-
ST011Q04TA	A computer you can use for school work	X	-	X	-
ST011Q05TA	Educational software	X	-	X	-
ST011Q06TA	A link to the Internet	X	-	-	X
ST011Q07TA	Classic literature (e.g. Shakespeare)	X	X	-	-
ST011Q08TA	Books of poetry	X	X	-	-
ST011Q09TA	Works of art (e.g. paintings)	X	X	-	-
ST011Q10TA	Books to help with your school work	X	-	X	-
ST011Q11TA	Technical reference books	X	-	X	-
ST011Q12TA	A dictionary	X	-	X	-
ST011Q16N A	Books on art, music, or design	X	X	-	-
ST011Q17TA	<Country-specific wealth item 1>	X	-	-	X
ST011Q18TA	<Country-specific wealth item 2>	X	-	-	X
ST011Q19TA	<Country-specific wealth item 3>	X	-	-	X
ST012Q01TA	Televisions	X	-	-	X
ST012Q02TA	Cars	X	-	-	X

Item	Description	HOMEPOS	CULTPOSS	HEDRES	WEALTH
ST012Q03TA	Rooms with a bath or shower	X	-	-	X
ST012Q05NA	Mobile phones with internet access (e.g. smartphones)	X	-	-	X
ST012Q06NA	Computers (desktop computer, portable laptop or notebook)	X	-	-	X
ST012Q07NA	Tablet computers (e.g. iPad, Samsung Galaxy Tab)	X	-	-	X
ST012Q08NA	E-book readers (e.g. Kindle, Kobo, Nook)	X	-	-	X
ST012Q09NA	Musical instruments (e.g. guitar, piano)	X	X	-	-
ST013Q01TA	How many books are there in your home?	X	-	-	-

Item	Description	EMOSUPS	PERFEED	BELONG
ST123Q02NA	My parents support my educational efforts and achievements.	X	-	-
ST123Q03NA	My parents support me when I am facing difficulties at school.	X	-	-
ST123Q04NA	My parents encourage me to be confident.	X	-	-
ST104Q02NA	The teacher gives me feedback on my strengths in this subject.	-	X	-
ST104Q03NA	The teachers tells me in which areas I can still improve.	-	X	-
ST104Q04NA	The teacher tells me how I can improve my performance.	-	X	-

<b>Item</b>	<b>Description</b>	<b>EMOSUPS</b>	<b>PERFEED</b>	<b>BELONG</b>
ST034Q01TA	I feel like an outsider (or left out of things) at school	-	-	X
ST034Q02TA	I make friends easily at school	-	-	X
ST034Q03TA	I feel like I belong at school	-	-	X
ST034Q04TA	I feel awkward and out of place in my school	-	-	X
T034Q05TA	Other students seem to like me	-	-	X
ST034Q06TA	I feel lonely at school	-	-	X

# Appendix B Exploratory Factor Analysis

Appendix B Table 1. List of all variables initially included in the Exploratory Factor Analysis, showing loadings of each item and overlap.

Item	Wellbeing		Character strength				Interpersonal relationships			PISA Scales	
	Life satisfaction/eudemonia	Positive emotions	Competitiveness/ambitious	Fear failure/negative emotions	Positive attitude to school	Work-mastery/mas tgoal	Belong/bullied	Emotional support parents	Environment and relationships		
	F3	F5	F1	F2	F9	F4	F6	F7	F8		
ST18 5Q2	0.94	-0.05	0.02	0.06	0.06	0.02	-0.02	-0.09	0.02	EUDMO	Agree: I have discovered a satisfactory meaning in life.
ST18 5Q3	0.91	-0.05	0.00	0.05	0.06	0.04	-0.02	-0.06	0.02	EUDMO	Agree: I have a clear sense of what gives meaning to my life.
ST18 5Q1	0.81	-0.02	0.00	0.01	0.02	0.09	-0.08	-0.05	0.00	EUDMO	Agree: My life has clear meaning or purpose.
ST18 6Q9	0.41	0.74	-0.07	0.00	-0.02	0.02	0.03	0.05	-0.06	SWBP	Thinking about yourself and how you normally feel: how often do you feel as described below? Cheerful
ST18 6Q7	0.43	0.71	-0.06	0.02	-0.02	0.02	0.02	0.06	-0.04	SWBP	Thinking about yourself and how you normally feel: how often do you feel as described below? Joyful
ST18 6Q3	0.35	0.57	0.05	-0.02	0.01	0.02	-0.01	0.02	-0.02		Thinking about yourself and how you normally feel: how often do you feel as described below? Lively
ST18 6Q1	0.42	0.55	-0.06	-0.06	-0.09	-0.04	-0.03	0.07	0.07	SWBP	Thinking about yourself and how you normally feel: how often do you feel as described below? Happy
ST18 1Q3	-0.02	-0.02	0.68	-0.03	-0.07	0.31	-0.08	0.08	-0.07	COMPETE	Agree: I try harder when I'm in competition with other people.
ST18 1Q2	0.00	-0.05	0.62	-0.04	-0.07	0.31	-0.02	0.02	-0.07	COMPETE	Agree: It is important for me to perform better than other people on a task.
ST18 1Q1	0.02	-0.01	0.60	-0.21	-0.02	0.21	-0.05	0.03	-0.01	COMPETE	Agree: I enjoy working in situations involving competition with others.
ST18 3Q2	0.06	0.01	0.25	0.92	-0.06	-0.03	-0.01	0.02	-0.03	GFOFAIL	Agree: When I am failing, I am afraid that I might not have enough talent.
ST18 3Q3	0.02	0.03	0.17	0.80	-0.05	-0.02	-0.04	0.02	-0.08	GFOFAIL	Agree: When I am failing, this makes me doubt my plans for the future.

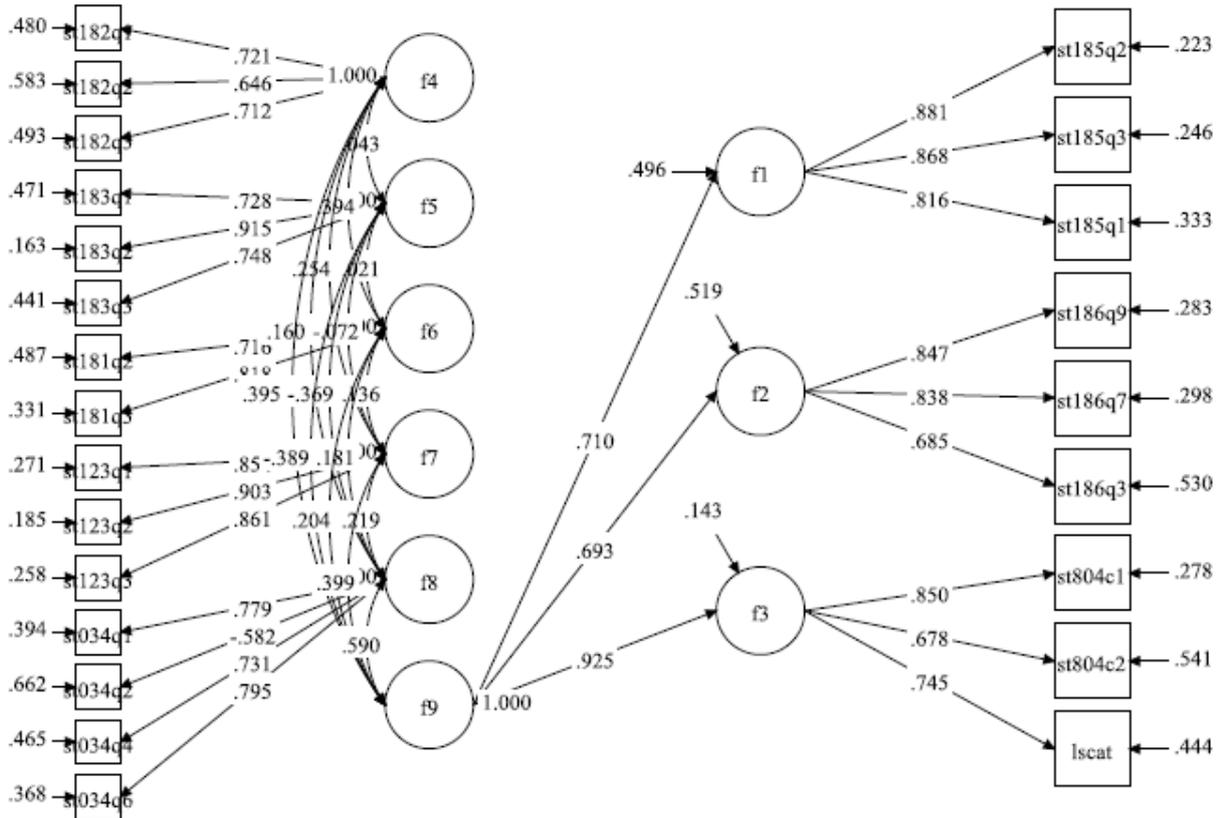
ST18 3Q1	0.06	-0.01	0.26	0.75	-0.04	0.00	0.07	0.04	-0.02	GFOFAIL	Agree: When I am failing, I worry about what others think of me.
ST18 6Q6	-0.12	0.05	-0.09	0.66	0.17	0.08	0.06	0.04	0.00		Thinking about yourself and how you normally feel: how often do you feel as described below? Afraid
ST18 6Q2	0.00	0.11	-0.08	0.55	0.18	0.03	0.11	-0.01	0.02		Thinking about yourself and how you normally feel: how often do you feel as described below? Scared
ST18 6Q8	-0.31	-0.07	-0.08	0.54	0.27	0.07	0.07	0.03	-0.01		Thinking about yourself and how you normally feel: how often do you feel as described below? Sad
ST03 6Q1	-0.01	-0.01	-0.01	-0.02	0.83	-0.40	-0.09	0.00	-0.03	ATTLN- ACT	Thinking about your school: Trying hard at school will help me get a good job.
ST03 6Q3	0.00	0.01	0.03	-0.06	0.77	-0.44	-0.01	-0.01	-0.02	ATTLN- ACT	Thinking about your school: Trying hard at school is important.
ST03 6Q2	0.06	0.00	-0.05	-0.01	0.76	-0.42	0.01	-0.02	0.02	ATTLN- ACT	Thinking about your school: Trying hard at school will help me get into a good <college>.
ST20 8Q2	0.00	0.03	-0.24	0.00	-0.04	0.84	0.00	-0.07	-0.02	MAST- GOAL	How true for you: My goal is to completely master the material presented in my classes.
ST20 8Q3	-0.04	0.04	-0.29	0.04	-0.04	0.82	-0.04	-0.02	-0.01	MAST- GOAL	How true for you: My goal is to understand the content of my classes as thoroughly as possible.
ST20 8Q1	-0.01	0.03	-0.25	0.01	-0.04	0.81	0.02	-0.02	0.03	MAST- GOAL	How true for you: My goal is to learn as much as possible.
ST18 2Q1	0.12	-0.18	0.01	0.13	-0.01	0.62	-0.07	0.03	0.07	WORK- MAST	Agree: I find satisfaction in working as hard as I can.
ST18 2Q3	0.10	-0.16	0.08	0.09	0.04	0.58	-0.07	0.03	0.03	WORK- MAST	Agree: Part of the enjoyment I get from doing things is when I improve on my past performance.
ST18 2Q2	0.13	-0.23	0.05	-0.04	0.04	0.56	0.03	0.02	0.08	WORK- MAST	Agree: Once I start a task, I persist until it is finished.
ST03 8Q3	-0.02	0.04	0.44	0.01	0.03	0.00	0.80	-0.08	0.05	BE- INGBUL- LIED	During the past 12 months, how often: I was threatened by other students.
ST03 8Q5	0.00	0.08	0.45	-0.07	0.03	-0.05	0.77	-0.08	0.05	BE- INGBUL- LIED	During the past 12 months, how often: I got hit or pushed around by other students.
ST03 8Q1	0.00	-0.10	0.27	0.10	-0.01	0.04	0.75	-0.02	-0.03	BE- INGBUL- LIED	During the past 12 months, how often: Other students left me out of things on purpose.
ST03 8Q4	-0.02	0.02	0.39	-0.01	0.06	0.00	0.74	-0.08	0.06	BE- INGBUL- LIED	During the past 12 months, how often: Other students took away or destroyed things that belonged to me.

ST03 8Q2	-0.05	0.03	0.39	0.09	0.00	-0.01	0.73	0.00	0.03	BE- INGBUL- LIED	During the past 12 months, how often: Other students made fun of me.
ST03 8Q6	-0.02	0.04	0.34	0.12	0.04	0.02	0.71	-0.05	0.00	BE- INGBUL- LIED	During the past 12 months, how often: Other students spread nasty rumours about me.
ST03 4Q1	-0.01	0.30	0.05	-0.06	0.03	-0.03	-0.61	-0.02	0.11	BELONG	Thinking about your school: I feel like an outsider (or left out of things) at school.
ST03 4Q6	0.03	0.33	0.07	-0.07	0.03	-0.04	-0.59	-0.02	0.11	BELONG	Thinking about your school: I feel lonely at school.
ST03 4Q5	0.02	-0.39	-0.08	-0.06	-0.11	-0.12	0.57	0.12	-0.07	BELONG	Thinking about your school: Other students seem to like me.
ST03 4Q2	-0.01	-0.42	-0.11	-0.02	-0.10	-0.06	0.54	0.13	-0.04	BELONG	Thinking about your school: I make friends easily at school.
ST03 4Q4	-0.03	0.32	0.10	-0.05	0.02	-0.01	-0.53	-0.03	0.11	BELONG	Thinking about your school: I feel awkward and out of place in my school.
ST12 3Q2	0.01	0.01	-0.02	0.00	0.01	0.01	-0.01	0.93	0.04	EMO- SUPS	Thinking about <this academic year>: My parents support me when I am facing difficulties at school.
ST12 3Q1	-0.03	0.01	0.02	0.03	-0.02	0.07	-0.04	0.88	0.03	EMO- SUPS	Thinking about <this academic year>: My parents support my educational efforts and achievements.
ST12 3Q3	0.03	0.01	0.01	0.01	0.01	0.04	-0.02	0.87	0.03	EMO- SUPS	Thinking about <this academic year>: My parents encourage me to be confident.
ST80 3C6	-0.02	-0.03	0.02	0.12	0.08	-0.02	0.00	0.22	0.71	GB varia- ble	How satisfied are you with each of the following? All the things you have
ST80 3C9	-0.07	0.00	-0.05	0.01	-0.04	0.25	-0.01	-0.02	0.66	GB varia- ble	How satisfied are you with each of the following? Your relationship with your teachers
ST80 3C3	0.01	-0.05	-0.07	-0.04	-0.10	0.27	0.02	-0.06	0.63	GB varia- ble	How satisfied are you with each of the following? What you learn at school
ST80 3C5	-0.02	0.02	0.04	0.14	0.04	-0.01	-0.08	0.13	0.62	GB varia- ble	How satisfied are you with each of the following? The neighbourhood you live in
ST80 3C10	0.02	0.11	-0.07	-0.05	-0.05	0.19	-0.20	-0.09	0.62	GB varia- ble	How satisfied are you with each of the following? Your life at school
ST80 3C7	0.19	-0.05	0.05	-0.11	0.06	-0.01	0.07	0.03	0.55	GB varia- ble	How satisfied are you with each of the following? How you use your time
ST80 3C8	0.10	-0.02	0.00	-0.02	-0.01	-0.03	0.01	0.37	0.53	GB varia- ble	How satisfied are you with each of the following? Your relationship with your parents/guardians
ST80 3C4	-0.03	0.14	0.01	0.10	0.06	-0.04	-0.28	0.03	0.52	GB varia- ble	How satisfied are you with each of the following? The friends you have

ST80 3C1	0.16	-0.01	0.06	-0.20	-0.02	0.06	-0.02	0.03	0.48	GB variable	How satisfied are you with each of the following? Your health
ST80 4C2	0.31	0.03	-0.05	-0.06	-0.04	-0.01	0.04	0.18	0.43	GB variable	Thinking about your life, how much do you disagree or agree with each of the following statements? I have what I want in life.
ST80 3C2	0.20	-0.03	0.02	-0.36	0.02	0.05	-0.06	0.00	0.39	GB variable	How satisfied are you with each of the following? The way that you look
ST80 4C1	0.39	0.11	-0.02	-0.22	-0.08	0.01	-0.03	0.15	0.38	GB variable	Thinking about your life, how much do you disagree or agree with each of the following statements? My life is going well.
LSCA T	0.42	0.16	-0.02	-0.23	-0.11	0.00	0.00	0.05	0.28		Life Satisfaction as a categorical variable
ST80 4C3	0.09	0.04	0.07	0.01	-0.01	0.10	-0.01	0.16	0.27	GB variable	Thinking about your life, how much do you disagree or agree with each of the following statements? My life is better than most kids' lives.
ST18 2Q4	0.10	-0.16	0.02	-0.06	0.03	0.41	0.02	-0.01	0.06		Agree: If I am not good at something, I would rather keep struggling to master it than move on to something I may [...]
ST18 6Q5	0.32	0.24	0.03	-0.26	0.02	0.21	0.07	0.04	0.06		Thinking about yourself and how you normally feel: how often do you feel as described below? Proud
ST18 8Q2	0.22	0.11	0.01	-0.08	0.04	0.42	-0.02	0.13	0.05	RESILIENCE	Agree: I feel proud that I have accomplished things.
ST18 4Q1	0.04	-0.04	0.08	0.13	0.09	-0.23	0.11	-0.03	0.04		Agree: Your intelligence is something about you that you can't change very much.
ST18 8Q1	-0.06	0.03	0.03	-0.25	0.13	0.46	-0.01	0.11	-0.01	RESILIENCE	Agree: I usually manage one way or another.
ST18 8Q5	0.04	0.05	0.08	-0.43	0.16	0.44	0.01	0.08	-0.02	RESILIENCE	Agree: When I'm in a difficult situation, I can usually find my way out of it.
ST18 8Q3	0.08	0.01	0.06	-0.36	0.15	0.46	0.03	0.03	-0.02	RESILIENCE	Agree: I feel that I can handle many things at a time.
ST18 6Q4	-0.31	-0.14	0.01	0.42	0.21	0.04	0.12	0.00	-0.02		Thinking about yourself and how you normally feel: how often do you feel as described below? Miserable
ST18 8Q4	0.31	0.05	0.01	-0.35	0.11	0.37	0.04	0.03	-0.03	RESILIENCE	Agree: My belief in myself gets me through hard times.
ST03 4Q3	-0.04	-0.27	-0.03	-0.07	0.03	-0.19	0.36	0.09	-0.17	BELONG	Thinking about your school: I feel like I belong at school.

Note: Values below 0.4 have been blanked out. Factors have been ordered descendingly down to 0.5 or above.

**Appendix B Figure 1. Illustration of how individual items loaded onto the final factors identified by the Exploratory Factor Analysis.**



## Appendix C – Regression analysis

**Appendix C Table 1 Regression analysis for the interaction between wellbeing, ESCS and attainment for England**

	estimate	se	t.value	Pr.t
(Intercept)	508.60	2.44	208.23	<0.001
ESCS	31.88	2.07	15.42	<0.001
Wellbeing	-24.89	3.31	-7.52	<0.001
Workmastery	23.02	3.62	6.36	<0.001
Fear of failure	0.71	2.56	0.28	0.783
Competitiveness	7.76	3.08	2.52	0.014
Parents support	0.56	2.36	0.24	0.814
School social	1.62	3.02	0.54	0.593
Wellbeing by ESCS	-1.75	2.64	-0.66	0.508
Workmastery by ESCS	-0.77	3.69	-0.21	0.835
Fear of failure by ESCS	3.09	3.00	1.03	0.306
Competitiveness by ESCS	-1.56	3.74	-0.42	0.678
Parents support by ESCS	2.50	2.19	1.14	0.259
School social by ESCS	1.90	2.92	0.65	0.517

**Appendix C Table 2. Regression analysis for the interaction between wellbeing, ESCS and attainment for Northern Ireland**

	estimate	se	t.value	Pr.t
(Intercept)	515.36	3.81	135.14	<0.001
ESCS	23.85	2.57	9.27	<0.001
Wellbeing	-27.30	4.26	-6.40	<0.001
Workmastery	10.38	5.38	1.93	0.057
Fear of failure	11.74	3.70	3.17	0.002
Competitiveness	4.73	4.98	0.95	0.346
Parents support	8.62	3.81	2.26	0.026
School social	9.43	5.13	1.84	0.070
Wellbeing by ESCS	5.99	5.27	1.14	0.259
Workmastery by ESCS	2.10	6.01	0.35	0.728
Fear of failure by ESCS	-6.55	3.12	-2.10	0.039

Competitiveness by ESCS	3.74	5.21	0.72	0.475
Parents support by ESCS	7.12	3.67	1.94	0.056
School social by ESCS	-5.17	4.28	-1.21	0.231

**Appendix C Table 3. Regression analysis for the interaction between wellbeing, ESCS and attainment for Wales**

	<b>estimate</b>	<b>se</b>	<b>t.value</b>	<b>Pr.t</b>
(Intercept)	493.81	3.29	150.05	<0.001
ESCS	20.18	2.76	7.32	<0.001
Wellbeing	-17.34	3.88	-4.47	<0.001
Workmastery	20.50	3.88	5.28	<0.001
Fear of failure	11.03	3.70	2.98	0.004
Competitiveness	0.98	3.64	0.27	0.789
Parents support	3.28	2.99	1.10	0.276
School social	1.64	4.17	0.39	0.695
Wellbeing by ESCS	-3.34	4.23	-0.79	0.432
Workmastery by ESCS	-6.77	4.04	-1.68	0.098
Fear of failure by ESCS	-1.76	3.66	-0.48	0.633
Competitiveness by ESCS	1.97	3.44	0.57	0.568
Parents support by ESCS	10.93	3.08	3.55	0.001
School social by ESCS	2.31	4.39	0.53	0.600

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**NFER ref. PSUK**

**ISBN. 978-1-912596-36-2**