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Different factors predict different aspects of adolescent well-being: Evidence from the UK

Différents facteurs prédisant différents aspects du bien-être des adolescents : Données du Royaume-Uni

ABSTRACT

This article explores the relationships between four different aspects of child well-being – cognitive development, behavioural development, depression and life satisfaction – and factors associated with them. It makes use of data gathered at three years old and 14 years old for over 9,000 children in the UK Millennium Cohort Study. The analysis demonstrates mostly very weak associations between the four aspects, and evidence of differences in the strength of key factors such as family socio-economic status, early parent-child attachment, current relationships with family and peers in predicting different aspects. The findings support the idea that well-being is a multi-dimensional concept that cannot be reduced to a single metric. It emphasises the importance of clarity of language and concepts when considering potential interventions to improve children's well-being.

KEYWORDS

Well-being; Depression; Cognitive development; Behavioural development; Adolescence.

RÉSUMÉ

Cet article explore les relations entre quatre aspects différents du bien-être des enfants – développement cognitif, développement comportemental, dépression et satisfaction de la vie – et les facteurs qui y sont associés. Il exploite les données recueillies à trois ans et à 14 ans pour plus de 9 000 enfants dans le cadre de l'étude britannique *Millennium Cohort Study*. L'analyse révèle des associations généralement très faibles entre les quatre aspects, ainsi que des différences observables dans la force des facteurs clés tels que le statut socio-économique de la famille, l'attachement précoce parent-enfant, les relations actuelles avec la famille et les pairs pour prédire les différents aspects. Les résultats soutiennent l'idée que le bien-être est un concept multidimensionnel qui ne peut être réduit à une seule mesure. Ils soulignent l'importance de la clarté du langage et des concepts lors de l'examen des interventions potentielles visant à améliorer le bien-être des enfants.

MOTS CLÉS

Bien-être ; Dépression ; Développement cognitif ; Développement comportemental ; Adolescence.

1. INTRODUCTION

In the field of scientific research, the phrase 'well-being' tends to be used in different ways in different disciplines. For example, poverty researchers often conflate the terms "poverty" and "well-being". This is problematic because if poverty equates to well-being it is, by

definition, not possible to say that poverty is bad for well-being. This problem of mixing up cause and effect within the well-being concept has come to be recognised recently (e.g., Conti & Heckman, 2012) and has led to a more multi-layered conceptualization of child well-being (e.g., Organisation for Economic Co-operation and Development [OECD], 2011).

A second issue is how the concept of well-being is viewed. Some literature sees child well-being as multi-dimensional with each dimension contributing to an overall index of child well-being. A typical example is United Nations Children's Fund's (UNICEF) Innocenti Report Card 7 (2007) which ranks rich countries on a range of indicators covering material well-being, health and safety, educational well-being, family and peer relationships, behaviours and risks, and subjective well-being. Scores in each of these domains contribute to an overall ranking of well-being.

In contrast to this approach, some researchers treat well-being as a unified concept in which observed indicators, such as cognitive development, are aspects of the underlying phenomenon. For example, Irwin et al. (2007) argued that the "[socio-economic] gradient effect of family resources on [...] early child development [...] is the most powerful explanation for differences in well-being within societies," even though this paper only cites evidence about the effect of socio-economic factors on cognitive development.

These two different perspectives are reflective of an established distinction in the field of measurement between effect indicators and composite indicators

(Bollen & Bauldry, 2011). Effect indicators are seen as representing an underlying latent variable. Irwin et al.'s (2007) concept of cognitive development as reflecting well-being appears to equate to this measurement approach. On the other hand, the UNICEF approach is one in which the well-being index is derived from and defined by the indicators that make up the composite. The overall index is a linear function of these indicators.

The difference between these two perspectives is fundamental. In the effect indicator approach we would expect the various indicators to be reasonably well correlated because they are all caused by the underlying latent variable that they represent. We can also expect "conceptual unity." In the composite indicator approach, however, there are no expectations either of correlations between indicators or conceptual unity (Bollen & Bauldry, 2011).

The practical implications of this distinction are fundamental for considering methods of improving "well-being." In the effect indicator approach, with correlated indicators and conceptual unity, one might expect to find other variables that consistently explain variations in the latent variable and its indicators. On the other hand, in the composite approach, there may be quite different explanatory factors for different indicators. In this case it does not make sense to talk about explaining differences in, or improving, well-being as a whole. There may be different solutions to improving each underlying indicator.

The distinction between "effect" and "composite" approaches has been acknowledged in the literature on child

well-being (e.g., Bradshaw & Richardson, 2009) but has not been fully explored, and its practical and policy implications often go unacknowledged.

The purpose of this paper is to address this gap by examining two research questions:

1. To what extent are different components of well-being related to one another at a given point in time?
2. To what extent are there similarities and differences in the contextual factors that are associated with these different components?

This paper uses a large-scale UK birth cohort study that contains measures of several different aspects of children's well-being at 14 years old, as well as substantial contextual information from children and their parents. It makes use of four different measures that have previously been proposed as indicators of well-being – cognitive development, behavioural development, mental ill-health, and subjective experience. For example, cognitive, behavioural, and subjective aspects are all included in UNICEF (2007). The inclusion of mental ill-health is made on the basis that this has also been proposed as a reverse indicator of child well-being (e.g., Moore et al., 2008) and because there are still important unresolved issues about the extent of overlap between measures of mental ill-health and measures of positive subjective experience (Patalay & Fitzsimons, 2016). An important missing aspect, typically included in discussions of child well-being, is physical health. Unfortunately, there was no suitable measure of this aspect in the data set used.

1.1 Frameworks of child well-being

Ben-Arieh (2006; 2012) mapped the evolution of understandings of child well-being from the 1960s to recent years. He identified a number of shifts and refinements in this field (some of which also reflected in studies of well-being of adult populations). These shifts include from objective to subjective indicators; from negative to positive indicators; from survival to flourishing; from an orientation towards future well-being (well-becoming) to a stronger focus on current well-being; and from adult-reported to child-reported information.

By the mid 2000s there were a number of national and international frameworks reflecting some or all of these shifts. A notable example was UNICEF's Innocenti Report Card 7 (2007), discussed above, which was one of the first attempts to make international comparisons using a multi-dimensional approach to measuring child well-being.

There continues to be a growing interest in children's subjective evaluations of their well-being. By far the most common framework of subjective well-being (SWB) is the tripartite model (Andrews & Withey, 1976; Diener, 1984) that comprises cognitive, positive affective and negative affective components. This framework, and the distinction between the three components, has been well-supported by evidence in adult populations (Diener, 1999). Notably, positive and negative affect are only moderately highly correlated and therefore are not simply opposite ends of a single continuum. As of yet, it is less clear whether the tripartite model is equally applicable to children, although a few studies have

supported the idea (Huebner, 1991 in the US; Rees & Bradshaw, 2018 in the UK). Seligman and Csikszentmihalyi (2000) argued that positive experience is conceptually distinct from mental ill-health, and there is evidence to support this proposition in research both with adults (e.g., Bergsma et al., 2011) and with children (Antaramian et al., 2010). Although in many cases mental ill-health and lack of positive well-being co-occur, a person can be more or less satisfied with their lives irrespective of a diagnosis of mental health problems (Keyes, 2005). The negative affective component of SWB seems more closely linked to mental ill-health than the positive affective or cognitive components.

Returning to conceptualisations of well-being as a whole, there is little research on the links between the various components. For example, relatively little is known about the association between cognitive development and SWB. The recent PISA study introduced a measure of children's life satisfaction. Across a range of mostly high-income countries, there is very little within-country association between children's academic attainment and their life satisfaction (OECD, 2017). Children may be equally satisfied with their lives irrespective of how well they are doing at school.

This weak correlation between components of well-being raises important questions about the extent to which the factors that explain variation in each component are similar or different. This paper focuses on key factors that are known to be significantly associated with different components, in order to explore such similarities and differences.

1.2 Factors explored in this paper

The factors selected for the analysis are socio-economic disadvantage and the quality of current relationships with family and peers. A brief rationale for the selection of these factors and their potential utility is presented below. Unless otherwise stated, evidence cited is from the UK because this relates directly to the data being analysed. The strength of association between various contextual factors and measures of child well-being varies substantially from one country to another (Rees, 2017).

The link between family socio-economic status and children's development is well-established. The work of James Heckman and colleagues in the US has been central in understanding how early socio-economic disadvantage is a key influence on cognitive and behavioural development; and of broader links with child well-being (e.g., Conti & Heckman, 2012). Heckman and colleagues argue that, in the US, early childhood interventions to close this socio-economic gap in child development could yield substantial cost savings to society in the longer term and are more efficient than later interventions in relation to cognitive development in particular (Cunha et al., 2010). Less is known about how these early childhood factors might link to children's later subjective experiences. A study in the UK suggested the association may be more limited than for emotional and behavioural development (Rees, 2018).

Current socio-economic disadvantage is also significantly and substantially related with factors such as children's educational attainment and behavioural difficulties, although, of

course, there is an association between disadvantage at different points during childhood. On the other hand, these factors have been found only to have a weak relationship with children's subjective well-being (Rees, 2018) while children's direct experiences of material deprivation appear to be more important (Main & Bradshaw, 2012).

In contrast with these weak associations, the quality of children's relationships with family and friends have emerged as key correlates of children's subjective well-being. Several aspects of parent-child relationships including support, conflict, and autonomy-granting have been found to be associated with variations in children's life satisfaction (The Children's Society, 2013). Children cite friends as key sources of their subjective well-being (The Children's Society, 2006; Dex & Hollingworth, 2012) and evidence has demonstrated that both positive and negative aspects of peer relationships are linked to life satisfaction (Goswami, 2012). In the UK, experiences of being bullied are relatively strongly associated with levels of children's life satisfaction and depressive symptomatology (The Children's Society, 2018) as well as well-being much later in adulthood (Takizawa et al., 2014; Lereya et al., 2015).

In view of these findings, the analysis presented in this paper will explore the relative strengths of family socioeconomic status and relationship indicators (both during early childhood and contemporaneously) to explain variations in different components of child well-being at 14 years old. The approach builds on previous analysis with the same data source relating to predictors

of life satisfaction and behavioural difficulties at the age of 11 years old (Patalay & Fitzsimons, 2016; Rees, 2018). These papers have shown differential contemporaneous predictors of these two aspects of well-being. The paper extends this work by including a greater number of measures of well-being and introducing early childhood predictors.

2. METHOD

2.1 Data sources

The data used for this analysis is taken from the Millennium Cohort Study (MCS) – a UK birth cohort study that began with around 18,000 children in the early 2000s. The survey is managed by the Centre for Longitudinal Studies, University College London. After preparation, cleaning and weighting by researchers at this Centre, the data is made available to registered academic researchers for secondary analysis.

The first six waves of data were collected when children were aged around 9 months and 3, 5, 7, 11 and 14 years old. Around 11,000 children were still engaged in the study at 14 years old. This analysis uses data from the second and sixth of these waves, gathered from the main parent (usually the mother) at both waves and from children at 14 years old.

The parent-reported measures are taken from interviews conducted with parents. The child-reported measures are taken from a self-report questionnaire administered to children at 14 years old. The questionnaire took around 40 minutes to complete. Further information on technical aspects of the survey is to be found in Fitzsimons (2017) and associated documentation.

The MCS is designed to facilitate a broadly representative picture of children born in the UK in study period. Statistical methods relating to this aspect are discussed in the Analysis section below.

2.2 Measures

At the age of 14 years old, data is available relevant to four aspects of child well-being:

- *Vocabulary skills.* Children were asked to complete a 20-item multiple-choice test of word recognition (Sullivan et al., 2017). Respondents are asked to match the item word (e.g., “begin”) with a synonym from a multiple-choice list of five options. This measure is designated as a cognitive assessment in the survey technical report and is derived from earlier similar tests (Fitzsimons, 2017, p.37).
- *Emotional and behavioural difficulties (EBDs).* Parents completed the 25-item Strengths & Difficulties Questionnaire (Goodman, 1997) which includes 20 items in four groups (conduct disorders, hyperactivity/inattention, emotional symptoms, and peer problems) from which a “total difficulties score” can be created. An example of an item to measure conduct disorder is “Often lies or cheats”. For each item parents selected from three response options related to their child’s behaviour in the past six month – “Not true”, “Somewhat true”, “Always true.” The Cronbach’s alpha of a scale consisting of the four summary indicators was 0.74.
- *Depression.* Children completed the 13-item short form of the Moods &

Feelings Questionnaire which has been validated as a measure of depressive symptoms (Sharp et al., 2006). Each item relates to “how you have been feeling or acting recently” and respondents can choose from “Not true”, “Sometimes”, “True.” An example of an item is “I hated myself.” The Cronbach’s alpha of the 13-item scale was 0.92.

- *Subjective well-being.* Children were asked a question about how happy they were with their life as a whole, on a seven-point scale, and this is used as a measure of their life satisfaction. Because this is a single-item scale, tests of reliability are not possible. However, the use of single-item life satisfaction is well-established and used in wide variety of major studies of adults (e.g., Helliwell et al. 2020) and children (e.g., OECD, 2019). The validity of using such a measure as a dependent variable in linear regression has been demonstrated in Ferrer-i-Carbonnel & Frijters (2004).

These four measures will be used as dependent variables in the analysis. For ease of comparison, all four have been standardised (mean of zero and standard deviation of one) to facilitate comparison of results, and the EBD and depression scores have been reversed so that a higher score indicates higher well-being (i.e., lower EBDs and lower depression).

The independent variables in the analysis are ones that link to the family socio-economic status and the children’s relationships with family and friends for the reasons discussed earlier.

- *Household income.* This is the main variable used to measure socio-economic status at each wave. It is based

on information provided by parents. Missing data was imputed by the MCS survey team prior to publication of the data set (Fitzsimons, 2017). Income has been equivalised (OECD method) to reflect varying family size and then collapsed into quintiles (based on the sample, not the child population).

- *Family relationships.* In the second wave of the survey, when the child was three years old, the main parent completed Pianta scales (Johnson et al., 2012) measuring closeness to, and conflicts with, the child. At the age of 14 years old, there is more limited information about parent-child relationships, but the main parent is asked how close they feel to the child and how often they talk to them. The child themselves is asked how often they talk to their mother and father about things that are important to them and how often they argue with them. However, many children (42%) in the sample do not live with their father at 14 years old. In this context the frequency of arguing with a parent does not have the same meaning for a child living or not living with the parent. Thus, only the questions about the relationship with mother are used here. Over 95% of children still lived with their mother at 14 years old. Future research could explore the questions about fathers in more detail.
- *Friendships.* There is no good measure of quality of friendships in the survey, but children are asked at 14 years old how often they have been bullied by other children. Because bullying has previously been identified as a key predictor of both life sat-

isfaction and depression during adolescence, this variable is included in the analysis.

In addition, three control variables regarding the child's age, gender, and ethnic group are included in the analysis, because there are well-established variations in some of the well-being measures according to these factors. For example, at 14 years old, girls have significantly lower life satisfaction and significantly higher depressive symptoms (The Children's Society, 2018).

2.3 Analysis

The Results section presents univariate descriptive statistics for each variable used in the analysis, Pearson correlations between the four well-being measures, and then a series of regression models using each well-being measure as the dependent variable.

All analysis uses a reduced data set which includes 9,301 cases that participated in both relevant waves of the study (3 years old and 14 years old), and had complete data for the four well-being measures at 14 years old, for household income in both relevant waves, and for the three control variables. The number of cases is lower for some models where there was missing data for the relationship variables at 3 and 14 years old. There was relatively little missing data for these variables at 14 years old. There was, however, a more substantial level of missing data at 3 years old. As a robustness check, the analysis was replicated using multiple imputation for these variables at 3 years old, and there were no substantive differences in the key pat-

terns or conclusions drawn. Further information and tables are available on request from the author.

All multivariate analysis uses survey weights, calculated by the MCS survey team (Fitzsimons, 2017) so that the data is as representative as possible of the UK child population in this cohort, taking into account of unequal probability of selection and sample attrition. Additional information is provided by the survey team to take into account of survey design effects (stratification and clustering) and produce robust standard errors. This information was also utilised for all analysis involving significance testing in this paper. Unless otherwise

stated a statistically significant result refer to a p-value of less than 0.01. This value was chosen because the large sample size means that even substantively small differences of little practical significance may emerge as statistically significant (Orben & Przybylski, 2019), especially if larger p-values are used. Significant results are indicated by an asterisk.

3. RESULTS

3.1 Descriptive statistics

Summary univariate descriptive statistics for each variable are shown in Table 1.

Table 1: Descriptive statistics

Variable (range)	Mean	SD	Skewness/ Kurtosis	N valid cases
<i>Well-being</i>				
Vocabulary score (0 to 20)	7.152	2.612	0.508 / 3.601	9,301
Total difficulties score (0 to 40)	7.830	5.710	-1.112 / 4.262	9,301
Depressive symptoms (0 to 26)	5.561	5.857	-1.366 / 4.424	9,301
Life satisfaction (0 to 6)	4.553	1.418	-1.128 / 3.822	9,301
<i>Independent</i>				
Pianta conflicts, 3yo (8 to 39)		17.063	5.850	8,054
Pianta closeness, 3yo (10 to 35)		33.636	2.181	7,941
Parent closeness, 14yo				9,097
Not very/fairly	12.3			
Very	40.6			
Extremely	47.1			
Parent talks to child, 14yo				9,254
Less than once a week	2.5			
Once or twice a week	10.0			
Several times a week	21.5			
Every day or almost	66.0			
Child close to parent, 14yo				9,207
Not very close	2.7			
Fairly close	14.7			
Very close	38.9			
Extremely close	43.7			
Child argues with parent, 14yo				9,190
Most days	7.4			
More than once a week	17.7			
Less than once a week	30.9			
Hardly ever	37.9			
Never	6.0			

Table 1: Descriptive statistics (continued)

	%	Mean	SD	N valid cases
<i>Independent</i>				
Child bullied, 1470				9,289
Never	50.6			
Less often	28.2			
Every few months	5.7			
About once a month	5.2			
About once a week	6.2			
Most days	4.1			
<i>Control</i>				
Age at wave 6 (10ths of a year)	-	14.245	.336	9,301
Gender				9,301
Female	50.4			
Male	49.6			
Ethnic origin				9,301
White	81.0			
Mixed	4.7			
Indian	2.7			
Pakistani/Bangladeshi	6.4			
Black or Black British	2.7			
Other ethnic group	2.4			

Table 2: Pearson correlations between four well-being measures

	Life satisfaction	Depression	EBDs
Depression	0.613*		
EBDs	0.215*	0.229*	
Vocabulary	-0.006	-0.018	0.170*

N=9,301 cases (unweighted)

No statistics are shown for income as this variable was grouped into quintiles. As noted earlier, the well-being measures were standardised prior to analysis.

3.2. Correlations between well-being measures

Bivariate Pearson correlations between the four well-being measures are shown in Table 2. The strongest association was between life satisfaction and depression. However, a correlation coefficient of around 0.6 is not large enough to suggest that these measures are capturing the same concept. Associations of

smaller effect size were observed between EBDs and each of the other three variables. The correlation between vocabulary scores and both life satisfaction and depressive symptoms was not significantly different from zero. This network of relationships provide an important context for the analysis that follows.

3.3 Regression analysis

Regression analyses are presented in steps comparing all four well-being measures. A summary of the overall picture from the analysis is provided at the end of this section. Table 3 shows the results using only the three control varia-

bles. There were some significant patterns here which reflect previous research – such as the gender differences in life satisfaction and depression.

The explanatory power (R-squared) of these models is used as a baseline for all subsequent models, and the added R-

squared of each model compared to this baseline is presented. Various independent variables are now introduced to the models and the strength of their relationship (coefficient) and explanatory power (added R-squared) with each well-being measure is compared.

Table 3: Regression of well-being measures onto control variables

	Vocabulary	EBDs	Depression	Life satisfaction
Age (10ths of a year)	0.056	0.030	-0.101*	-0.088
Gender (ref=female)	0.012	-0.072	0.523*	0.410*
Ethnic group (ref=White)	0	0	0	0
Mixed	-0.017	0.038	-0.062	-0.097
Indian	-0.086	0.082	0.233*	0.207*
Pakistani or Bangladeshi	-0.274*	-0.182*	0.263*	0.150*
Black or Black British	-0.249*	-0.0513	0.175*	0.031
Other ethnic group	-0.320*	-0.195	0.066	-0.058
Constant	-0.738	-0.296	1.144	1.035
Observations	9,301	9,301	9,301	9,301
R ²	0.8%	0.4%	7.1%	4.4%

Table 4: Regression of well-being measures onto household income at 14 years old

	Vocabulary	EBDs	Depression	Life satisfaction
Income quintile, 14yo (ref=Lowest)				
2 nd lowest	0.0842	0.172*	-0.049	0.003
Middle	0.234*	0.411*	0.0486	0.098
2 nd highest	0.400*	0.703*	0.132*	0.174*
Highest	0.649*	0.836*	0.221*	0.280*
Constant	-1.241	-0.996	0.982	0.821
Observations	9,301	9,301	9,301	9,301
R ²	6.1%	9.1%	8.0%	5.4%
Added R ² (after control variables)	+5.3%	+8.7%	+0.9%	+1.0%

Regression also included control variables (see Table 3)

Household income when the child was 14 years old significantly predicted all four well-being measures, but the strength of the relationship with EBDs and vocabulary scores was much stronger than with depressive symptoms and life satisfaction (Table 4). Similar

but less strong results were found for income at 3 years old (Table 5). Income had the strongest predictive power for variation in EBDs. Income at 14 years old explained 9% of variation in EBDs while income at three years old explained only a little less (8%). Both income variables

together made a significant contribution to the model and increased the explanatory power to 10%. The picture was similar but less strong for vocabulary scores, with both income variables significantly explaining variation in scores and a combined explanatory power of 7%.

For depressive symptoms and life satisfaction, significant differences were only observed between the higher and lowest quintiles. Given this weak correlation, income at 3 and 14 years old only explained 1% of the variation in these two variables.

Table 5: Regression of well-being measures onto household income at 3 years old

	Vocabulary	EBDs	Depression	Life satisfaction
Income quintile, 3yo (ref=Lowest)				
2 nd lowest	0.103*	0.125*	-0.049	0.020
Middle	0.246*	0.471*	0.106	0.137*
2 nd highest	0.427*	0.574*	0.126*	0.190*
Highest	0.666*	0.772*	0.202*	0.236*
Constant	-1.275	-0.978	0.973	0.825
Observations	9,301	9,301	9,301	9,301
R ²	6.2%	8.0%	7.9%	5.2%
Added R ² (after control variables)	+5.4%	+7.6%	+0.8%	+0.8%

Regression also included control variables (see Table 3)

Table 6: Regression of well-being measures onto parent-child relationships at 3 years old (parent-reported)

	Vocabulary	EBDs	Depression	Life satisfaction
Parent-child closeness (Pianta)	0.044*	0.042*	0.012	0.006
Parent-child conflicts (Pianta)	-0.003	-0.048*	-0.011*	-0.011*
Constant	-2.076*	-0.706	0.893	1.006
Observations	7,771	7,771	7,771	7,771
R ²	1.6%	10.8%	8.2%	4.9%
Added R ² (after control variables)	+0.8%	+10.4%	+1.1%	+0.5%

Regression also included control variables (see Table 3)

Table 6 shows results for the parent-child attachment variables at 3 years old. These two variables both made a significant contribution to explaining variations in EBDs at 14 years old, with an added explanatory power of 10%. The parent's perception of closeness to the child at 3 years old significantly predicted vocabulary scores at 14 years old, although the coefficient and explanatory

power (less than 1%) were quite weak. Similarly, parent-child conflicts at 3 years old made a significant but substantively small contribution to explaining variations in children's depression and life satisfaction at 14 years old. The nature of the link between parent-child relationships at 14 years old and each of the children's well-being measures de-

depends on whose perspective is considered (Table 7). Based on parent reports, the closeness of the relationship makes the strongest contribution to explaining variations in children's EBDs and a much weaker contribution to explaining variations in children's depression and life

satisfaction. Closeness does not significantly predict variations in vocabulary scores, but the frequency with which the parent talks to child does, although the explanatory power of this variable is minimal.

Table 7: Regression of well-being measures onto parent-child relationships at 14 years old (parent-reported)

	Vocabulary	EBDs	Depression	Life satisfaction
Parent closeness (ref=Not very/fairly)	0	0	0	0
Very	0.034	0.438*	0.216*	0.224*
Extremely	-0.020	0.649*	0.312*	0.358*
Parent talks to child (ref=Less than once a week)	0.000	0.000	0.000	0.000
Once or twice a week	0.204*	0.076	-0.001	0.115
Several times a week	0.213*	0.118	0.041	0.226
Every day or almost	0.223*	0.149	0.053	0.239
Constant	-0.934	-1.203	0.686	0.222
Observations	9,095	9,095	9,095	9,095
R-squared	0.9%	5.2%	8.1%	6.4%
Added R ² (after control variables)	+0.1%	+4.8%	+1.0%	+2.0%

Regression also included control variables (see Table 3)

Table 8: Regression of well-being measures onto parent-child relationships at 14 years old (child-reported)

	Vocabulary	EBDs	Depression	Life satisfaction
Child close to parent (ref=Not very close)	0.000	0.000	0.000	0.000
Fairly close	-0.018	0.29	0.225	0.458*
Very close	0.025	0.435*	0.642*	0.870*
Extremely close	0.015	0.469*	0.799*	1.126*
Child argues with parent (ref=Most days)	0.000	0.000	0.000	0.000
More than once a week	0.335*	0.352*	0.276*	0.234*
Less than once a week	0.265*	0.589*	0.501*	0.414*
Hardly ever	0.167*	0.668*	0.655*	0.533*
Never	0.054	0.735*	0.818*	0.704*
Constant	-0.981	-1.55	-0.968	-1.269
Observations	9,189	9,189	9,189	9,189
R ²	1.8%	6.1%	18.8%	17.6%
Added R ² (after control variables)	+1.0%	+5.7%	+11.7%	+13.2%

Regression also included control variables (see Table 3)

Looking at the parent-child relationship from the child's perspective produces very different results (Table 8). Child reports of feelings of closeness to, and arguments with, their parent are statistically significant with a combined explanatory power of 13%. The pattern is

only slightly less strong (12%) for depression. The explanatory power of the child-reported variables is lower (6%) for EBDS and lower still (1%) for vocabulary scores, where only frequency of arguing made a significant contribution to the model.

Table 9: Regression of well-being measures onto child's experiences of being bullied at 14 years old (child-reported)

	Vocabulary	EBDs	Depression	Life satisfaction
Child bullied (ref=Never)	0.000	0.000	0.000	0.000
Less often	0.102*	(-0.076) ^a	-0.378*	-0.326*
Every few months	0.162*	(-0.193*) ^a	-0.749*	-0.548*
About once a month	0.145	(-0.368*) ^a	-0.895*	-0.682*
About once a week	0.215*	(-0.442*) ^a	-0.962*	-0.796*
Most days	0.058	(-1.073*) ^a	-1.425*	-1.114*
Constant	-0.871	(0.306) ^a	2.198*	1.853*
Observations	9,289	(9,289) ^a	9,289	9,289
R ²	1.3%	(6.5%) ^a	22.9%	14.3%
Added R ² (after control variables)	+0.5%	(+6.1%) ^a	+15.8%	+9.9%

Regression also included control variables (see Table 3)

Note: (a) EBD regression may not be valid as bullying and other questions about peer-related problems contribute to the dependent variable

Table 10: Summary of explanatory power of regression models

	Vocabulary	EBDs	Depression	Life satisfaction
Income at 3yo	+5.3%	+8.7%	+0.9%	+1.0%
Income at 14yo	+5.4%	+7.6%	+0.8%	+0.8%
Parent-child relationships at 3yo (parent-reported)	+0.8%	+10.4%	+1.1%	+0.5%
Parent-child relationships at 14yo (parent-reported)	+0.1%	+4.8%	+1.0%	+2.0%
Parent-child relationships at 14yo (child-reported)	+1.0%	+5.7%	+11.7%	+13.2%
Bullying at 14yo (child-reported)	+0.5%	+6.1%	+15.8%	+9.9%

Table shows added explanatory power of independent variables after accounting for control variables

The final regression analyses utilise the variable asking children how frequently they were bullied (Table 9). Here the strongest predictive power (6%) was for depression, followed by life satisfaction (10%). There was also a significant relationship between being bullied and EBDs, although this may be spurious because the EBD measure included a question about bullying and several other items about peer-related problems. The bullying variable made a minimal contribution to explaining variations in vocabulary scores. It is, however, worth noting that the direction of the association that does exist suggests that children with higher vocabulary scores were a little more likely to be bullied.

In order to gain an overview of these regression results, Table 10 shows the added explanatory power of each set of variables, after accounting for variation due to age, gender, and ethnicity. Income (at either age) is the key driver of vocabulary scores, and other variables make relatively little contribution towards explaining variations in these scores. All variables explain variations in EBDs. The strongest predictive power here is for parent-child attachment at the age of three years old. Income, early attachment, and current parent-child relationships as reported by the parent make relatively little contribution to explaining variations in life satisfaction or depressive symptoms. On the other hand, children's reports of their relationships with their parent and the frequency with which they are bullied make a much more substantial contribution. Relationships with the parent are a little stronger in relation to life satisfaction while bullying plays a bigger role in relation to depression.

4. CONCLUSION

This paper has explored the associations between various measures that are often regarded as representing child well-being, as well as similarities and differences in contextual factors associated with them. It clearly demonstrates the complexity of the term and illustrates the risks of making universal statements about determinants of well-being.

The first simple but important finding from this analysis is that different indicators of child well-being at 14 years old in the UK are not strongly correlated. There was a moderately strong association between subjective well-being and depressive symptoms, suggesting that children who had mental health difficulties often had less than optimal subjective experiences. On the other hand, there was no substantive association between vocabulary scores and these other two variables. This pattern of relationships supports the idea that well-being is a multidimensional concept and cannot easily be reduced to a single metric. Researchers need to engage with this complexity in their presentation of results about specific aspects of children's lives that may be deemed to represent components of their well-being.

Given the pattern of correlations it is not surprising that the analysis revealed different patterns of association between the independent variables selected and each of the well-being measures.

Children's emotional and behavioural difficulties at 14 years were the most consistently associated with the income and relationships measures employed in the analysis, both with reference to the family context when the child was 3 years old and 14 years old.

Children living in lower income families and with poorer quality relationships with parents had greater emotional and behavioural difficulties. This is consistent with previous research on this topic in relation to poverty (e.g., Pearce et al., 2019) and parent-child attachment (e.g., Fearon et al., 2010).

Children's vocabulary skills were only substantively predicted by household income (and the effect of income at 3 years old and 14 years old was roughly equal). This is consistent with a large body of research that identifies socio-economic differences in children's cognitive development and academic attainment in the UK and elsewhere (e.g., Goodman et al., 2011; Hadjar & Uusitalo, 2016; Chzhen et al., 2018). The finding of a lack of strong association of vocabulary scores with children's relationships with parents and peers at 14 years old is not particularly surprising. It is not clear what the hypothesised mechanism would be for a strong association. The very weak relationship between parent reports of their relationship with the child at 3 years old is more notable. It might have been expected that a positive relationship with the child at this age was reflective of an underlying positive home environment that would foster children's development.

The patterns of predictors for children's depression and life satisfaction at 14 years old are mostly similar to one another. Household income and parents' reports of relationships have only weak associations with these two measures of well-being. The findings on income are not particularly surprising. Children's life satisfaction in the UK tends not to be strongly related with household income (Rees, 2018; Rees & Bradshaw, 2018)

while there are mixed findings on, for example, the relationship between social class and adolescent depression (Merikangas et al., 2009). The weak association between depression and parent-child relationships is a little more unexpected, because poor quality of these relationships has been identified as a risk factor for depression (Hammen, 2018).

Meanwhile, children's reports of relationships with parents and of experiences of being bullied show much stronger associations with both depression and life satisfaction. These findings are consistent with previous UK research (Patalay & Fitzsimons, 2016; The Children's Society, 2018). The main difference is that children's life satisfaction is a little more strongly linked to the quality of their relationships with their parents while depression is more strongly linked to experiences of being bullied. This difference supports the distinction between indicators of positive well-being and indicators of mental health problems made in previous studies (Antaramian et al., 2010; Westerhof & Keyes, 2010).

The difference in findings of the link between depression and life satisfaction for children's and parent's evaluations of their relationships is notable. In fact, the link between these two evaluations of relationships was relatively weak. For example, the two measures of closeness from the point of view of children and parents only had a Pearson correlation of .29. This highlights that the choice of respondent for these subjective experiences is critical.

There are a number of limitations to these findings. Because of missing data, the sample used for analysis is not completely representative of the UK child

population in this age cohort, although robustness checks do not suggest this is a major problem. Two of the well-being measures (EBDs and depressive symptoms) are based on validated multi-item scales, but the life satisfaction relies on a single item, and the validity of the vocabulary test is not known. Additionally, the vocabulary test focuses on a specific competence and so should not be regarded as a good measure of academic progress or cognitive development in general.

Another key issue relates to the sources of information. The measure of EBDs is reported by the main parent, while the depression and life satisfaction measures are reported by the child, and the vocabulary test also comes directly from the child. This issue is highlighted by the fact that children's depression and life satisfaction are much more strongly associated with their views of parent-child relationships than their parents' views. This could indicate a reverse causality whereby children who have lower well-being have poorer quality relationships or are more pessimistic about the quality of their relationships. On the other hand, it could simply be indicative of how different actors view the same relationship differently. It is quite plausible that, at 14 years old, children's feelings of closeness to their parent differ from parent's feelings of closeness to their child. This limitation highlights the need for further research using additional waves of longitudinal data that may be able to shed some light on directions of influence.

Finally, it is important to acknowledge that these findings relate to the UK context and are not necessarily broadly generalisable to other

countries. For example, international studies have shown that the strength of the association between bullying and life satisfaction varies substantially across countries and that this association is relatively strong in the UK (Rees & Bradshaw, 2018).

Despite these limitations, the analysis contributes to an important gap in research on child well-being through its ability to compare associations and patterns for four different measures of well-being with the same sample of children, the potential to link data from children with that of parents, and to connect well-being at 14 years old with early childhood experiences also provides new insights. There are messages from this analysis both for researchers and for policymakers.

For researchers, the findings emphasise the importance of precision regarding discussions of child well-being, particularly when making statements about predictors or determinants. The analysis clearly shows that different components of well-being have different associations with contextual factors. Researchers should embrace this complexity and avoid making universal statements about what is good or bad for child well-being.

This complexity also has implications for policymakers. The most appropriate and effective policy and practice interventions, and their timing, will depend on the aspect of well-being that is the target for improvement.

For example, policies and practices targeted at children from disadvantaged socio-economic backgrounds are known to have potential in closing socio-economic gaps in educational development (Conti & Heckman, 2012). On the other

hand, the absence of a strong link between family socio-economic background and adolescent depressive symptoms suggests that socio-economic differences are not a key driver of depression. Instead, policymakers and practitioners might look towards interventions focusing on family relationships and the reduction of bullying.

These are just two examples. It was not the purpose, or a realistic goal, of this article to identify all of the possible intervention points to improve all aspects of child well-being. Therefore, it's not possible to conclude with a set of clear actionable recommendations for policy and practice. Nevertheless, the paper makes a potentially important contribution to our understanding of child well-being in casting doubt on the idea that it is a unified concept. In that sense, it is simply not possible or correct about what is good for child well-being, or at what point in the child's development intervention is most effective. These propositions can only be made for specific dimensions of child well-being. As highlighted in recent work by Cunha et al. (2010, p.926), "the timing and level of optimal interventions for disadvantaged children depend on the conditions of disadvantage and the nature of desired outcomes." The challenge for research and policy is to recognise this complexity and avoid the temptation of over-simplification.

CONFLICTS OF INTEREST

The author does not declare any conflict of interest.

REFERENCES

Andrews, F., & Withey, S. (1976). *Social*

indicators of well-being: Americans' perceptions of life quality. Plenum Press.

Antaramian, S. P., Huebner, E. S., Hills, K. J., & Valois, R. F. (2010). A dual-factor model of mental health: Toward a more comprehensive understanding of youth functioning. *American Journal of Orthopsychiatry*, 80(4), 462–472. <https://doi.org/10.1111/j.1939-0025.2010.01049.x>

Ben-Arieh, A. (2006). Is the study of the "State of our children" changing? Re-visiting after 5 years. *Children and Youth Services Review*, 28(7), 799–811. <https://doi.org/10.1016/j.childyouth.2005.08.004>

Ben-Arieh, A. (2012). How do we measure and monitor the "state of our children"? Revisiting the topic in honor of Sheila B. Kamerman *Children and Youth Services Review*, 34(3), 569–575. <https://doi.org/10.1016/j.childyouth.2011.008>

Bergsma, A., Have, M. ten, Veenhoven, R., & Graaf, R. de. (2011). Most people with mental disorders are happy: A 3-year follow-up in the Dutch general population. *The Journal of Positive Psychology*, 6(4), 253–259. <https://doi.org/10.1080/17439760.2011.577086>

Bollen, K. A., & Bauldry, S. (2011). Three Cs in measurement models: Causal indicators, composite indicators, and covariates. *Psychological Methods*, 16(3), 265–284. <https://doi.org/10.1037/a0024448>

Bradshaw, J., & Richardson, D. (2009). An index of child well-being in Europe. *Child Indicators Research*, 2(3), 319–351. <https://doi.org/10.1007/s12187-009-9037-7>

Chzhen, Y., Rees, G., Gromada, A.,

- Cuesta, J. A. & Bruckauf, Z. (2018). *An unfair start: Inequality in children's education in rich countries*. UNICEF Office of Research – Innocenti.
- Conti, G., & Heckman, J. (2012). *The economics of child well-being* (No. w18466). <https://doi.org/10.3386/w18466>. National Bureau of Economic Research.
- Cunha, F., Heckman, J. J., & Schennach, S. M. (2010). Estimating the technology of cognitive and noncognitive skill formation. *Econometrica*, 78(3), 883–931. <https://doi.org/10.3982/ECTA6551>
- Dex, S., & Hollingworth, K. (2012). *Children's and young people's voices on their wellbeing*. Childhood Wellbeing Research Centre.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542–575. <http://dx.doi.org/10.1037/0033-2909.95.3.542>
- Diener, E. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin* 125(2), 276–302. <http://dx.doi.org/10.1037/0033-2909.125.2.276>
- Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Lapsley, A.-M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behavior: A meta-analytic study. *Child Development*, 81(2), 435–456. <https://doi.org/10.1111/j.1467-8624.2009.01405.x>
- Ferrer-i-Carbonell, A., & Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness? *The Economic Journal*, 114(497), 641–659. <https://doi.org/10.1111/j.1468-0297.2004.00235.x>
- Fitzsimons, E. (Ed.). (2017). *Millennium Cohort Study. Sixth survey 2015-2016. User guide (1st ed.)*. Centre for Longitudinal Studies.
- Goodman, A., Gregg, P., & Washbrook, E. (2011). Children's educational attainment and the aspirations, attitudes and behaviours of parents and children through childhood. *Longitudinal and Life Course Studies*, 2(1), 1–18. <https://doi.org/10.14301/llcs.v2i1.147>
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38(5), 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Goswami, H. (2012). Social relationships and children's subjective well-being. *Social Indicators Research*, 107(3), 575–588. <https://doi.org/10.1007/s11205-011-9864-z>
- Hadjar, A., & Uusitalo, E. (2016). Education systems and the dynamics of educational inequalities in low educational attainment: A closer look at England (UK), Finland, Luxembourg, and German-speaking Switzerland. *European Societies*, 18(3), 264–287. <https://doi.org/10.1080/14616696.2016.1172719>
- Hammen, C. (2018). Risk factors for depression: An autobiographical review. *Annual Review of Clinical Psychology*, 14(1), 1–28. <https://doi.org/10.1146/annurev-clinpsy-050817-084811>
- Helliwell, J. F., Layard, R., Sachs, J. D., & De Neve, J.-E. (2020). *World Happiness Report 2020*. Sustainable Development Solutions Network.
- Huebner, E. S. (1991). Further validation of the Students' Life Satisfaction Scale: The independence of satisfaction and af-

- fect ratings. *Journal of Psychoeducational Assessment*, 9(4), 363–368. <https://doi.org/10.1177/073428299100900408>
- Irwin, L. G., Siddiqui, A., & Hertzman, C. (2007). *Early child development: A powerful equalizer: Final report*. Human Early Learning Partnership.
- Johnson, J., Joshi, H., Smith, K., & Others. (2012). *Millennium Cohort Study: Psychological, developmental and health inventories*. Centre for Longitudinal Studies.
- Keyes, C. L. M. (2005). Mental Illness and/or Mental Health? Investigating Axioms of the Complete State Model of Health. *Journal of Consulting and Clinical Psychology*, 73(3), 539–548. <https://doi.org/10.1037/0022-006X.73.3.539>
- Lereya, S. T., Copeland, W. E., Costello, E. J., & Wolke, D. (2015). Adult mental health consequences of peer bullying and maltreatment in childhood: Two cohorts in two countries. *The Lancet Psychiatry*, 2(6), 524–531. [https://doi.org/10.1016/S2215-0366\(15\)00165-0](https://doi.org/10.1016/S2215-0366(15)00165-0)
- Main, G., & Bradshaw, J. (2012). A Child Material Deprivation Index. *Child Indicators Research*, 5(3), 503–521. <https://doi.org/10.1007/s12187-012-9145-7>
- Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience*, 11(1), 14.
- Moore, K. A., Theokas, C., Lippman, L., Bloch, M., Vandivere, S., & O'Hare, W. (2008). A microdata child well-being index: Conceptualization, creation, and findings. *Child Indicators Research*, 1(1), 17–50. <https://doi.org/10.1007/s12187-007-9000-4>
- OECD (2011). *How's life? Measuring well-being*. ECD Publishing.
- OECD (2017). *PISA 2015 Results (Volume III) Students' well-being*. OECD.
- OECD. (2019). *PISA 2018 Results (Volume III): What school life means for students' lives*. OECD.
- Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*, 3(2), 173–182. <https://doi.org/10.1038/s41562-018-0506-1>
- Patalay, P., & Fitzsimons, E. (2016). Correlates of mental illness and wellbeing in children: Are they the same? Results from the UK Millennium Cohort Study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 55(9), 771–783. <http://dx.doi.org/10.1016/j.jaac.2016.05.019>
- Pearce, A., Dundas, R., Whitehead, M., & Taylor-Robinson, D. (2019). Pathways to inequalities in child health. *Archives of Disease in Childhood*. <https://doi.org/10.1136/archdischild-2018-314808>
- Rees, G. (2017). *Children's views on their lives and well-being – Findings from the Children's Worlds Project*. Springer International Publishing.
- Rees, G. (2018). The association of childhood factors with children's subjective well-being and emotional and behavioural difficulties at 11 years old. *Child Indicators Research*, 11(4), 1107–1129. <https://doi.org/10.1007/s12187-017-9479-2>
- Rees, G., & Bradshaw, J. (2018). Exploring low subjective well-being among children aged 11 in the UK: An analysis using data reported by parents and by children. *Child Indicators Research*, 11(1), 27–

56. <https://doi.org/10.1007/s12187-016-9421-z>

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5–14. <https://doi.org/10.1037//0003-066X.55.1.5>

Sharp, C., Goodyer, I. M., & Croudace, T. J. (2006). The Short Mood and Feelings Questionnaire (SMFQ): A unidimensional item response theory and categorical data factor analysis of self-report ratings from a community sample of 7-through 11-year-old children. *Journal of Abnormal Child Psychology*, 34(3), 365–377. <https://doi.org/10.1007/s10802-006-9027-x>

Sullivan, A., Moulton, V., & Fitzsimons, E. (2017). *The intergenerational transmission of vocabulary*. Centre for Longitudinal Studies.

Takizawa, R., Maughan, B., & Arseneault, L. (2014). Adult health outcomes of childhood bullying victimization: Evidence from a five-decade longitudinal British birth cohort. *American*

Journal of Psychiatry, 171(7), 777–784. <https://doi.org/10.1176/appi.ajp.2014.13101401>

The Children's Society (2006). *Good childhood? A question for our times*. The Children's Society.

The Children's Society (2013). *The Good Childhood Report 2013*. The Children's Society.

The Children's Society (2018). *The Good Childhood Report 2018*. The Children's Society.

UNICEF (2007). *Child poverty in perspective: An overview of child well-being in rich countries*. Innocenti Report Card 7. UNICEF Innocenti Research Centre.

Westerhof, G. J., & Keyes, C. L. M. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of Adult Development*, 17(2), 110–119. <https://doi.org/10.1007/s10804-009-9082-y>

AUTHOR'S PRESENTATION

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