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Income effects on children's life satisfaction: Longitudinal Evidence for England

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Non-technical summary

It is often claimed that money does not buy happiness, yet when we ask people what is important for their quality of life their financial situation is mentioned by most people. That money is important is also supported by a great number of studies which have examined how life satisfaction – a popular measure of people's experienced quality of life – varies with income. The gold standard for that research is to follow the same people over time and it found that people got more satisfied with life when they got more income, and that poorer people value extra money more than richer people.

Children tend to find themselves in the lower part of the household income distribution and their satisfaction with life may improve the most if their family received more money. Yet, as governments around the world are looking to increase national wellbeing and have identified children as a particular group of concern, the association between family income and children's satisfaction with life has not much been examined. Children are typically interviewed in the context of their school where it is difficult to also obtain detailed information about their household financial situation, and few studies follow a large number of children over time and ask children about their satisfaction with life repeatedly. One of these studies is exploited here: Understanding Society, the UK Household Longitudinal Study.

Using information from more than 9000 children aged 10-15 living in England in the period 2009-2014, we show that children are more satisfied with life the more income their family has, and that income effects are larger the less income the family has. These effects are, however, only statistically significant for children who are 13 or older. We argue that younger children may not be aware of their family's financial situation so we also investigated whether they mind if the family is more visibly financially stretched, i.e., whether it is deprived of goods or activities that a majority of the population considers necessary to participate in mainstream society. We find some empirical evidence that children who experience greater deprivation are less satisfied with life. The family not being able to afford a holiday away from home for at least 1 week stood out as making children unhappier and the results also suggest that children are generally unhappier when they happen to be interviewed during the school holidays. The income effects overall are small and governments aiming to increase population well-being in this group may expect greater returns from addressing satisfaction gaps experienced during school holidays and focussing on British/Irish white males and females from ethnic minority backgrounds.

Income effects on children's life satisfaction: Longitudinal Evidence for England

Gundi Knies (ISER University of Essex)*

Abstract

Using longitudinal data for children aged 10-15 years living in England in 2009-2014 we test the hypothesis that income matters for children's life satisfaction. The results suggest that children are more satisfied with life the more income their family has. Income effects are larger the less income the family has and statistically significant for children from the age of 13. Overall, the effects are small and governments aiming to increase population well-being in this group may expect greater returns from addressing satisfaction gaps experienced during school holidays and focussing on British/Irish white males and females from ethnic minority backgrounds.

Keywords: Childhood, Children, Life satisfaction, Happiness, Quality of Life research, Panel data analysis

JEL classification: I31, J13, J17, C23

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Background

Following recommendations by world leading economic advisors (Stiglitz, Sen and Fitoussi 2010) governments around the world are looking to increase national well-being. Life satisfaction has become a key performance indicator to this end: It is widely accepted as an indicator of people's overall experienced utility (e.g., van Praag, Frijters and Ferrer-i-Carbonell 2003), an outcome of social systems and a factor in their functioning (Veenhoven 2008), and satisfaction reports have served to legitimise policies already four decades ago (see Ipsen 1975). But what is important for life satisfaction and how can government affect it? The life satisfaction research has ascertained a number of interesting and consistent relationships between individual characteristics and life satisfaction (for comprehensive overviews, see, Bruni and Porta 2007; Dolan, Peasgood and White 2008; Layard 2005; Lyubomirsky, King and Diener 2005). First, life satisfaction is u-shaped in age, typically being at its lowest in mid-life (e.g., Blanchflower and Oswald 2008). Second, unemployment (Clark and Oswald 1994) and a lower level of financial well-being (see, e.g., Easterlin 1974; Frijters, Haisken-DeNew and Shields 2004) are associated with lower life satisfaction. Third, people who are married are more satisfied with life than never-married singles, divorcees (including those living in separation) and widowers (see, e.g., Shapiro and Keyes 2008). People who belong to a religion are more satisfied with their life (Lim and Putnam 2010), and poor health is a significant factor in explaining lower life satisfaction (Brief et al. 1993; Diener et al. 1999). Intriguingly, satisfied people also go on to live longer healthier lives (Diener and Chan 2011; Kahneman and Krueger 2006). Life satisfaction thus is a desirable outcome for persons at all stages of the life-cycle, and for policymakers aiming to create policies that deliver the greatest happiness to all.

Despite life satisfaction being important at all stages in life, the bulk of the happiness research has examined correlates of life satisfaction during adulthood, treating age either as a mediator in determining the effects of socio-economic factors (e.g., George, Okun and Landerman 1985), focusing on whether life satisfaction is U-shaped in age (e.g., Blanchflower and Oswald 2008) or on life satisfaction specifically in old age (mainly in health and psychology, see, e.g., Palmore 1981). Life satisfaction in childhood also has been examined since the mid-1990s (mainly in education and social policy, see, e.g., Antaramian, Huebner and Valois 2008), however, many of the aspects of life that have been implicated in adult life satisfaction have not been analysed in this group, leaving many questions unanswered. The evidence gap on what affects children's life satisfaction appears to be widest with respect to the effect of income. Whilst a plethora of research has examined the relationship between income and life satisfaction in adults (for reviews see, e.g., Biswas-Diener 2008; Clark, Frijters and Shields 2008), reviews of the fast-growing child subjective well-being literature do not discuss family income as a relevant correlate of child life satisfaction (Antaramian, Huebner and Valois 2008; Proctor, Linley and Maltby 2009) or rely exclusively on adult perspectives (Holder 2012). But reliance on adult perspectives may be misleading. Recent studies, for instance, produced the, at first sight, puzzling result that childhood circumstances are not important for life satisfaction in adulthood (Frijters, Johnston and Shields 2014; Layard et al. 2014; Stafford et al. 2016). This contradicts a plethora of research in the fields of child development that suggests that childhood economic circumstances do matter for structural outcomes in adulthood -educational attainment, earnings and marital status (Blau 1999); outcomes, which the life satisfaction research documents are important correlates of life satisfaction in adulthood (Dolan, Peasgood and White 2008). Whilst examining how the past affects the future is legitimate and important,

childhood is a stage in itself (Ariès 1962) and not just a life stage we pass through on our way to become adults (Ben-Arieh 2006). Economic circumstances may well matter for children's life satisfaction during childhood, and the lack of association with life satisfaction in adulthood may be less surprising, when we consider that past successes and failures affect current behaviour (Clark et al. 2008), and that people's satisfaction with life tends to adapt to the good and bad things that happen to them after a relatively short time (Lucas et al. 2003).

Against this background, this research makes a number of important contributions. From the perspective of the adult-focused happiness research this paper explores whether contemporaneous factors associated with adult life satisfaction are also associated with life satisfaction in children, focussing on income which has been among the most researched factor in adult happiness but has been mostly overlooked by the child happiness research. From the perspective of the child well-being literature, this research is among the first to report results on child life satisfaction using comprehensive happiness models, adding detailed information on family income, and no study has exploited the full range of methodological advantages afforded by exploiting longitudinal life satisfaction data for children: such data simply did not exist. Given the current focus of many national governments on measuring population well-being, a positive association between family income and child satisfaction would suggest that re-distribution of income to families with children could play an important role in maximizing population well-being, hence reinvigorate the focus on (cost) effective policy interventions to aid disadvantaged children.

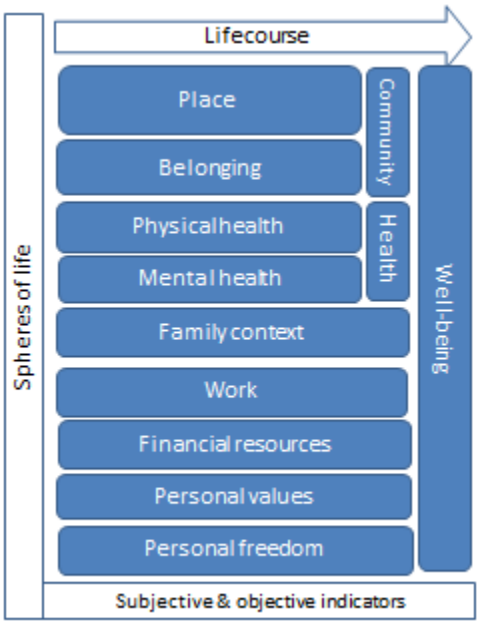
Life satisfaction as a construct and it correlates

Life satisfaction is typically used as a catch-all measure to assess people's quality of life. It is "a reflective appraisal, a judgment, of how well things are going, and have been going" (Argyle 2001). The happiness research suggests that adults consider seven key aspects of their life when reporting their life satisfaction: their family-living context, health, financial situation, work-life, community and friends, personal values and personal freedom (Layard 2005), see Figure 1, and that external factors play an important role when people make this appraisal.[1]

The relevance of external factors can be linked to the philosophical assumption that there are universal needs which have to be met in order for people to be happy, and people who find themselves in a 'good situation' for the fulfilment of needs are happy, while those who find themselves in a 'bad situation' are unhappy (e.g., Diener et al. 1999). For instance, marital status is a robust indicator of satisfaction in adults, and living with both biological parents is a key predictor of child subjective well-being (see, e.g., Antaramian, Huebner and Valois 2008; Keung 2006; Powdthavee and Vignoles 2008), i.e., irrespective of the subjective evaluation of the quality of the relationship to the other family members.

[1] For alternative philosophical theories see Brief, Arthur P., Ann Housten Butcher, Jennifer M. George, and Karen E. Link. 1993. "Integrating bottom-up and top-down theories of subjective well-being: The case of health." *Journal of Personality and Social Psychology* 64(4):646-53.

Figure 1 Components of Well-being



Source: Own illustration.

The bulk of the empirical research investigating objective factors associated with life satisfaction is based on adult populations, partly owing to the lack of nationally representative longitudinal data on children's subjective well-being (Goswami, Fox and Pollock 2016). The research reporting associations with child life satisfaction suggests that many of the aspects of life that are important to adult satisfaction also matter to children. In particular, satisfaction with school, friends and the immediate family play a paramount role for child life satisfaction. When asked about one thing they would like to change in their life for it to improve, many children mention interpersonal relationships with family and friends: they would like their parents to reunite, live with the absent parent or have less conflicts with siblings and friends (Scott and Chaudhary 2003). The importance of family characteristics is marked by the finding that not living in a household with both biological parents and with more other children is associated with lower child life satisfaction (see, e.g., Powdthavee and Vignoles 2008). Basic characteristics such as age and gender, too, appear to be responsible for differences in happiness from an early stage in life. Among all children in the UK, it is those aged 13-15, and among them girls in particular, who are unhappier with their life (Bradshaw and Keung 2010; Scott and Chaudhary 2003). Burton and Phipps (2010b) identified a negative relationship between minority ethnic background and life satisfaction, which the authors suggest may be attributable to the lower income position of minority ethnic groups (cf. Knies, Nandi and Platt 2016). Lack of activities in the home and neighbourhood and living too far from friends is another recurring theme in the child subjective well-being literature (see, e.g., Fattore, Mason and Watson 2009). The neighbourhood context experienced in childhood has also been linked to a number of structural inequalities in adulthood, through socialisation by adults, local social networks, peer influences, quality of local services, exposure to crime and violence, and physical distance and isolation from, in particular, economic opportunities (Ellen and Turner 1997) but its immediate consequence for children's satisfaction with life has, to our knowledge, not been examined longitudinally (cf. Drukker et al. 2003 for cross-sectional analyses). Similarly, there is to our knowledge no research that links objective indicators of their school performance to children's life satisfaction. A promising study that could be extended in this direction has been presented by Gibbons and Silva (2011), albeit, the authors found no statistically significant associations

between past school performance and life satisfaction at age 14. A further gap in the literature on child life satisfaction is in the area of health. Bradshaw and Richardson (2009) noted that children in the UK report to be of poorer health than their international peers, and they tend to be unhappier, but there is to our knowledge no study investigating the link using objective measures of health.

Childhood economic circumstances and childhood outcomes

There is a wealth of research that documents the socio-psychological consequences of growing up in poverty (see, e.g., Klocke and Hurrelmann 1998) and inequalities in structural outcomes for children living in households with different levels of economic resources are a source of extensive research within and across countries and disciplinary boundaries (Behrman and Knowles 1999; Grantham-McGregor et al. 2007). The bulk of the research has focused on the effects of family income on structural outcomes such as cognitive and behavioural development (see, e.g., Blau 1999; Hardy 2014; Khanam and Nghiem 2016; Mayer 1997) and concluded that children in lower-income households have worse outcomes: Income effects are greater the lower the income, and outcomes are worse the more time has been spent in low-income households and the earlier in life the income shortfalls occurred (Cooper and Stewart 2013). The effects of socio-economic disadvantage manifest in structural outcomes assessed during childhood and adulthood suggesting that policies aimed at increasing child well-being may have a large and lasting impact well into the future. However, recent empirical work examining the impact of childhood socio-economic circumstances on life satisfaction in adulthood has not corroborated that childhood economic circumstances are important in adulthood (Layard et al. 2014; Stafford et al. 2016).

The comprehensive analysis of the relationship between life satisfaction and family income (and other markers of material well-being) for children is still in its infancy. Burton and Phipps (2008) used a cross-sectional, nationally representative sample of children aged 12-17 living in Canada and showed that family income (measured in broad categories) is associated with low but not with high child satisfaction. Also focussing on a Canadian sample, Gadermann et al. (2016) found no association between income and children's satisfaction with life. The study used the median household income in the local neighbourhood as a proxy for unobserved family income, however, and research on adult samples has shown that neighbourhood income matters for life satisfaction in its own right (Clark, Westergård-Nielsen and Kristensen 2009; Knies 2012a; Shields, Price and Wooden 2009). Using a similar school-based sample of Canadian children aged 8-12, Holder and Coleman (2008) found that the children's estimate of their family income position was positively related to child satisfaction. In a similar vein, analysis of data from six countries in the first wave of the International Survey of Children's Well-Being show that children with higher levels of material well-being report higher subjective well-being (Sarriera et al. 2015). Levin et al. (2011) examined the association between national income and income inequality and children's life satisfaction across 35 countries, and found that national income and income inequality predicted high satisfaction. Gudmundsdóttir et al. (2016) compared average levels of child satisfaction before and after the financial crisis in Iceland and found that children were, on average, happier following the crisis despite household incomes being lower. The authors argue that this may be because parents are now working less and have more time to spend with their children. A British study using data from the first wave of the UK Household Longitudinal Study reported that there was no association between family income and children's satisfaction with life, and provided suggestive evidence that deprivation of adults and children in the household may be better at capturing what really matters to children (Knies 2012b).

Against the background of this research, the aim of this research is to provide for the first time longitudinal evidence on what objective characteristics of life are important for children's life satisfaction, focussing in particular on family income and other measures of material well-being.

Hypotheses

What would we expect to find? To the extent that a basic sustainable income is essential if individuals are to have access to resources needed to fulfil basic needs and participate in mainstream society, we may expect a positive relationship between income and life satisfaction for people at all life stages. The positive association has been documented in the research on life satisfaction in adults (Diener et al. 1993; Ferrer-i-Carbonell 2005). And although income differences play only a small role in explaining satisfaction gaps, they appear to matter at levels of material wellbeing that are beyond the sheer necessary (Biswas-Diener 2008). The relationship between income and life satisfaction may not be that strong for children though. Unlike adults, they may not view the family income as a sign of their personal success (Burton and Phipps 2010a). Moreover, there is empirical evidence that parents shield their children from financial hardship by spending on their children rather than on themselves (Lister 1996; Middleton, Ashworth and Braithwaite 1997). This shielding may mislead the children in their assessment of their family's financial situation and consequently blur the association between family income and life satisfaction.

Family income and its association with quality of life may become more relevant and more visible though as children get older. Not only do their consumption needs grow (Hirsch, Sutton and Beckhelling 2012), older children may understand the value of money better, in particular, as they start contributing to meeting their income needs by doing part time work, and as they get taxed for it by their parents who reduce their pocket money (Holford 2016). As children gain more agency they may also be less likely to evaluate life as good if it objectively is not: As opportunities for changing one's situation increase, people are less likely to accept inferior situations without resentment (Ipsen 1975). Against this background, we hypothesise that household income is not associated with child life satisfaction because children have no knowledge of how much income the family has or how it changes over time (Hypothesis 1, or: *H1*). By contrast, older children may be more satisfied the more income their family has, be it because they have the cognitive ability to make the link between family income and their own pocket money or that they start having more agency and greater needs (*H2*).

For children of all ages, when lack of income means that families cannot afford to engage in activities or consume things that others have no problems affording, this may not go unnoticed and affect their quality of life, particularly, if they themselves are excluded from activities and goods enjoyed by others in their age group. In the empirical analysis we will be able to investigate this hypothesis by focussing on levels of material deprivation of the adults and children in the household. Material deprivation associated with income shortfalls may explain the finding that children's estimates of their family's economic position (rather than income itself) and the parent's own account thereof are correlated (Holder and Coleman 2008). Hence, we hypothesize that material deprivation is visible to children of all ages (*H3*) and the higher the deprivation the lower children's satisfaction. Secondly, household material deprivation will affect child life satisfaction less than child material deprivation because the latter is experienced personally whilst the former is only observed (*H4*). Last but not least, we hypothesise that the associations with household and child material deprivation will be more

marked when the adults (children) go without items that a greater share of the population enjoy (*H5*).

Data and Methods

This research draws on data from the first five waves of Understanding Society, the UK Household Longitudinal Study (UKHLS). UKHLS is a multi-focus multi-topic longitudinal household panel study that started in 2009 with a nationally-representative stratified, clustered sample of 40,000 households living in the United Kingdom. Fieldwork takes place over a period of 24 months, with a random sample of households issued for interview each month (permitting analysis to be split by calendar year, as we do here). Within each household, all those aged 10 and above were eligible for interview, and individuals and all members of their households are followed annually. Each wave, eligible children aged 10-15 are invited to complete a youth self-completion interview. By Wave 5 (covering the period 2009-2014) a total of 9,859 children had followed the request, providing a total of 22,054 interviews. Detailed information about Understanding Society is available on the study website www.understandingsociety.ac.uk and in its quality profile (Lynn and Knies 2015).

Measures

Our outcome variable, life satisfaction, is collected annually in the youth self-completion questionnaire on the basis of a 7-point scale running from 1 [very satisfied] to 7 [very dissatisfied] where categories are represented by more or less smiling faces. Children are asked to tick the box which best describes how they feel about their life as a whole. We will reverse-code this so higher values represent greater satisfaction with life.

Our key independent variable is a measure of net monthly household income (deflated using the modified OECD equivalence scale to allow comparisons of welfare positions across households with different numbers of adults and children). We exclude from the analysis households with zero or negative household income and those in the 1st or 99th percentile of the household income distribution. Incomes are converted to prices in December 2015 using monthly consumer price indices. The information is collected from adults in the household and prepared by the study team to account for item non-response, see Knies (2015).

To throw some more light at whether and how lack of financial resources affect children's satisfaction with life, we also use two indicators of material deprivation. The head of household is asked to report whether all adults (respectively, children aged 0-15) in the household have a range of goods and activities considered by a majority of the population as necessities for adults (respectively, children) to participate in mainstream society. To generate the household and child material deprivation indices, each unaffordable item is assigned a value of 1 (else 0), which is then summed and divided over the total number of items. We also compute "weighted" indices. For this, we multiply each lacked item by the proportion of the population that has the item, before summing and dividing over the total number of items. The idea behind weighting is that not having the good or activity may hurt more the more people have it. The weighted indices can range from 0 to 1, with 1 representing a household lacking all items that everybody else has.

Deprivation is only measured in Waves 1, 2 and 4 and we use the child's mean deprivation as imputes for Wave 3 and 5. To alleviate concerns that imputation affects the results, we also computed a deprivation score on the basis of characteristics available in all waves: household does not own a car (yes=1, else 0), lives in rented accommodation (yes=1, else 0), the accommodation does not have at least one room per person (yes=1, else 0), no 16-64 year old member of the household is in employment (yes=1, else 0), and the household is behind with paying bills (yes=1, else 0). As before, we generate an index running from 0 [household has all items] to 1 [household has none of the items] and compute a weighted index using the population shares that are not going without.

All models include objective controls for the domains of life that have been linked to life satisfaction in adults. Basic socio-demographic characteristics (age, sex, and ethnicity[2]) are included alongside two markers of the family composition (both biological parents in the household versus living in a step-family, living with a single-parent; log of number of children aged 0-15 in the household).[3] To absorb any effect of schools on children's wellbeing we include a proxy for whether or not the interview took place during school holidays[4]. The argument is that if the net effect of going to school is positive, the effect of holidays will be negative and vice versa. Last but not least, to absorb heterogeneity in children's community contexts, we used the ACORN 2013 classification of neighbourhoods (CACI 2013)[5], and the proportion of children aged 11-15 in the neighbourhood entitled to free school meals from the DfT Accessibility Statistics 2014. Both were combined with the UKHLS following the strategy employed by Knies and Menon (2014). We also include whether a child moved to a different neighbourhood (yes=1, else 0). Inclusion of controls for the school and neighbourhood context necessitated the analysis to be restricted to England and to the time period 2009-2014. Table 1, below, reports descriptive statistics of the variables used in the analysis. For exact question wording consult the study questionnaires which are provided on the study homepage, www.understandingsociety.ac.uk.

Given the complex design of the Understanding Society study[6] all models include the calendar year to capture the general trend in life satisfaction over the 2008 to 2014 period; a dummy for whether the interview took place in an even or uneven wave to remove any biases resulting from the questionnaire in uneven waves focussing on somewhat more negative aspects of children's life (1 if uneven year, else 0); and a dummy to allow for the effect of

[2] In cross-national research, ethnicity and, if available, citizenship are often used as indicators of personal freedom and for children we may argue that gender and age also capture aspects of personal freedom: Girls have, for instance, been suggested to be given less opportunities to engage in risky behaviours (Byrnes, J.P., D.C. Miller, and W.D. Schafer. 1999. "Gender differences in risk taking: A metaanalysis." *Psychological Bulletin* 125:367-83.).

[3] Children who were ever observed not to live with any biological parent (N=305) were excluded from the analysis. The vast majority of them have incomplete information (N=185), or were only observed in the first year (N=40). All other participation patterns have sample sizes of less than 10. Whilst this sample restriction does not affect the core results it means we get more precise estimates of the effects of transitions between the more common family living arrangements.

[4] Information on school holidays during 2008 to 2014 was sourced from a school in East Anglia. It should be noted that schools can set some of the holidays independently, for example for teacher training. This means there may be some misclassification of children having holidays when in fact it is term time for them because their school follows a slightly different schedule. Holiday information was only available for England, hence the analysis is restricted to England only.

[5] We use the 6-category version but dropped the few cases living at addresses classified as commercial addresses as the address in the survey database may not be the family's home address.

[6] Questionnaires differ for even and uneven waves, with just a handful of variables included in the annual core. The rotating cohort rotating instrument design means it is difficult to estimate panel models using information collected in the interview with children: at best, a child aged 10 can participate in the youth interview five times and answer the same set of questions twice.

participating for the first time in the interview (1 if first interview, else 0) which has been shown to exist in life satisfaction reports (Frick et al. 2006).

Table 1: Sample description

	Mean	S.D.	Min	Max
Life satisfaction	5.89	1.13	1	7
Household income	1,308	647	121	5,493
Household Material Deprivation Index	0.31	0.32	0	1
Household Material Deprivation Index - weighted	0.19	0.21	0	0.73
Child Material Deprivation Index	0.08	0.13	0	1
Child Material Deprivation Index - weighted	0.06	0.09	0	0.71
Material Deprivation Index	0.22	0.25	0	1
Material Deprivation Index -weighted	0.17	0.20	0	0.80
Age	12.59	1.67	10	15
Female	0.50	0.50	0	1
British/Irish white	0.72	0.45	0	1
Family type	0.64	0.48	0	1
Lives with both biological parents				
Step family	0.10	0.30	0	1
Single parent family	0.26	0.44	0	1
Number of children in household	2.18	1.11	1	10
Interviewed during term time	0.78	0.41	0	1
Easter holidays	0.04	0.20	0	1
Summer holidays	0.11	0.31	0	1
Other holidays	0.07	0.25	0	1
Neighbourhood type				
Affluent Achievers	0.23	0.42	0	1
Rising Prosperity	0.06	0.23	0	1
Comfortable Communities	0.27	0.44	0	1
Financially Stretched	0.22	0.41	0	1
Urban Adversity	0.22	0.41	0	1
Neighbourhood proportion free-school meals	0.17	0.16	0	1
Moved to different neighbourhood	0.02	0.15	0	1

Source: Understanding Society (2015), Wave 1-5, 2009-2014, linked with neighbourhood statistics at Lower Super Output Area level and public holiday tables. England only.

Empirical strategy

To analyse the association between life satisfaction and family income we will first examine bivariate relationships. We will then estimate life satisfaction models which control for objective heterogeneity in those aspects of children's life that have been linked to their life satisfaction. In statistical terms, the model can be written as

$$y_{it} = \beta' X_{it} + \gamma' \bar{X}_i + \epsilon_{it} + \omega_i$$

with i $(= 1, \ldots, 6222)$ denoting individuals and t $(= 2008, \ldots, 2014)$ denoting time. The outcome variable y_{it} denotes life satisfaction for child i at time t, X is a vector of exogenous

characteristics that are held to influence life satisfaction of child i at time t. $\bar{X}$ is a vector of the means of the exogenous characteristics for child i over the observation period 1,..,T. Moreover, there is an unknown component comprised of a random error term (ε_{it}) and a person fixed effect (ω_i). The model assumptions are that ω_i is normally distributed with mean zero and standard deviation σ_w and uncorrelated with $\bar{X}_i$ or with X_{it}. The model assumptions are that ω_i is normally distributed with mean zero and standard deviation σ_w and uncorrelated with $\bar{X}_i$ or with X_{it}. By adding the mean of the time-varying characteristics we effectively remove the cross-sectional variation from the coefficients of time-varying variables and the latter become the same as the coefficients we would have obtained had we used the fixed effects estimator (as shown by Mundlak 1978), whilst also retaining estimates of the differences in levels of life satisfaction between, say boys and girls. The model, referred to as correlated Random Effects (RE) model is, therefore, a middle ground between the so-called Fixed Effects (FE) model that is flawed in a case such as ours when we only have a small number of observation points per respondent, and the (uncorrelated) RE model which is flawed by the assumption that the error terms are uncorrelated with the observed regressors. Our outcome variable life satisfaction is measured on an ordinal scale; however, we treat it as continuous for parsimony[7]. Estimation of these models is straightforward using the 'xtreg' command in Stata, see StataCorp (2009). All standard errors are adjusted to account for heteroscedasticity and within person serial correlation.

Analysis proceeds in two stages. To set the scene, we provide population estimates about children's life satisfaction and their living circumstances over the observation period. We then estimate multivariate longitudinal panel models to test empirically the five specific hypotheses set out above. The null hypothesis in all cases is that there is no (causal) association, and we will accept the alternative hypothesis if the coefficient of interest (or the difference in the variance of the estimates that are being compared as indicated by the appropriate Wald tests), is statistically significant (at conventional levels of α=0.1).

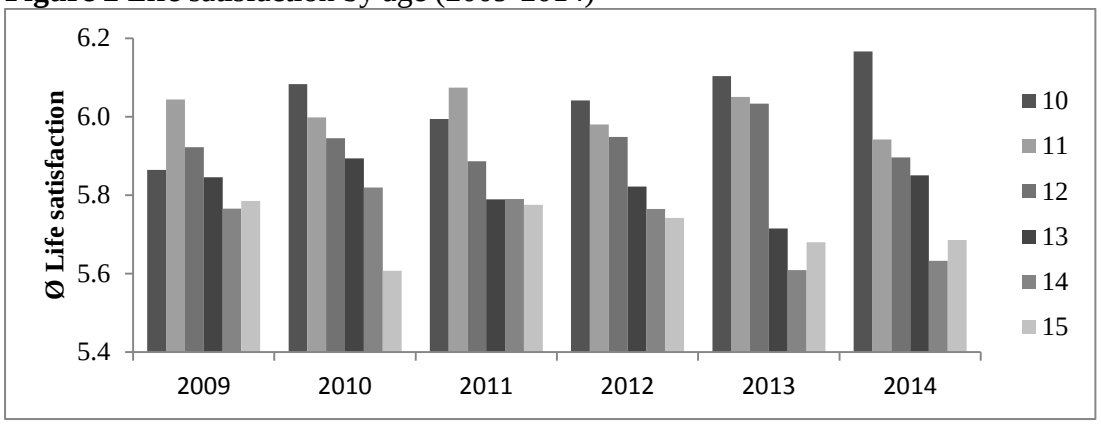
Results

Children's life satisfaction over time

Figure 2 shows the average life satisfaction for children aged 10-15 over the observation period, 2009-2014. It can be seen that children aged 10, 11 or 12 are more satisfied with their life than older children in all years. Differences in average scores for children of different ages at the same point in time, and for children of the same age in different years, are not statistically significant though, unless when we group those aged 10-12 with the group of 13-15 year-olds.

[7] It has been shown that the substantive results from these continuous and ordinal life satisfaction models are very similar. Ferrer-i-Carbonell, Ada, and Paul Frijters. 2004. "How important is methodology for the estimates of the determinants of happiness?" *Economic Journal* 114:641-59. Continuous models lend themselves more easily to interpretation and ordinal models require the parallel regressions assumption to be met; this is often violated in empirical data.

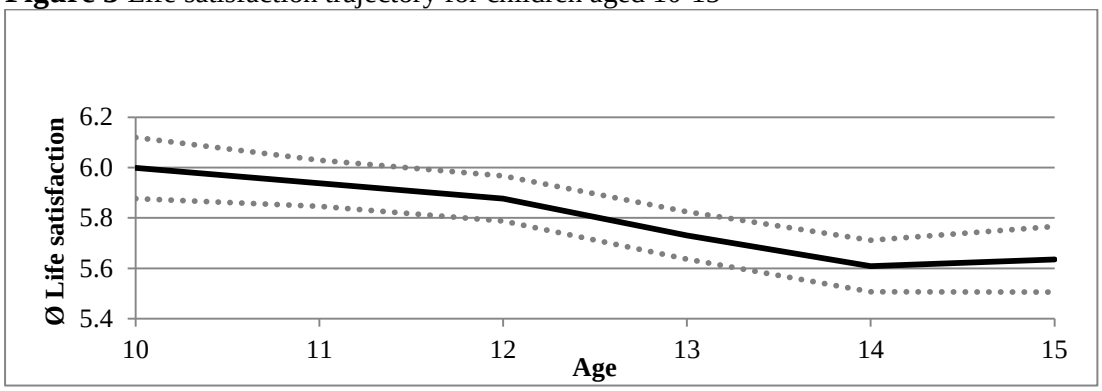
Figure 2 Life satisfaction by age (2009-2014)



Source: See Table 1.
Weighted population estimates.

The decreasing life satisfaction during the early teens becomes more pronounced when we follow the life satisfaction trajectory of children who were aged 10 in 2009 or 2010 and who participated in all five youth interviews for which they were eligible. Figure 3 shows that children's life satisfaction at age 10 reduces from an average of just over six points to 5.6 points when they are aged 15. The satisfaction loss over the course of the early teens is statistically significant, with children being happier on average when they are 10-12 rather than 13-15 years-old.

Figure 3 Life satisfaction trajectory for children aged 10-15



Source: See Table 1.
Sample restricted to children who were observed in all five waves.

Our identification strategy depends on observing change in life satisfaction and children's living circumstances. Table 2 presents basic information about stability and change in our main variables of interest. (See Appendix 1 for additional variables). Children experienced a considerable degree of change in household income over the observation period, with 77.9 (3rd decile) to 55.8 (bottom decile) of them moving from one decile of the income distribution to another decile within the span of a year. By contrast, movement into and out of high material deprivation – defined here as lacking more than 25 per cent of the listed items and dubbed 'deprived'- is rather low. Almost every other child lives in household (47 per cent; weighted: 37 per cent) household in which the adults are deprived, and the vast majority of them (84.1 per cent; weighted: 74.8 per cent) are still faced with deprivation in the following year. The proportion of children facing high levels of child deprivation is considerably lower

(13.9 per cent of children lack more than 25 per cent of the items) and 46.7 per cent of them no longer experience thus high a level of deprivation in the following year. A smaller proportion of children experience high deprivation when individual items are weighted (5.6 per cent) and a greater share of those who do are no longer experiencing this high level of deprivation the following year (62.4 per cent). Whilst high rates of mobility out of high deprivation suggest that children's quality of life might have improved, it is also true, that 13.8 per cent (weighted: 10.6 per cent) of children start experiencing adult and 5.3 per cent (weighted: 2.6 per cent) child material deprivation in the family.

Table 2 Stability and change in children's life circumstances 2009-2014

Child characteristic in year t	Pooled cross-section (N=14,429)	Transitions from year t to t+1 (N=7,523)	
		$x_t = x_{t+1}$	$x_t \neq x_{t+1}$
Household income			
Bottom decile	9.4	44.2	55.8
2nd decile	11.1	28.6	71.4
3rd decile	11.9	22.1	77.9
4th decile	12.8	26.3	73.7
5th decile	12.2	24.8	75.2
6th decile	11.3	26.5	73.5
7th decile	9.6	25.4	74.6
8th decile	8.8	30.9	69.1
9th decile	7.0	40.8	59.2
Top decile	6.0	61.3	38.7
Total	100	30.8	69.2
Adult material deprivation >25%			
not deprived	53.0	86.2	13.8
deprived	47.0	84.1	15.9
Total	100	85.2	14.8
Adult material deprivation (weighted) >25%			
not deprived	66.0	89.4	10.6
deprived	34.0	74.8	25.2
Total	100	84.6	15.4
Child material deprivation >25%			
not deprived	86.1	94.7	5.3
deprived	13.9	53.4	46.6
Total	100	89.1	10.9
Child material deprivation (weighted) >25%			
not deprived	94.4	97.6	2.4
deprived	5.6	37.6	62.4
Total	100	94.4	5.6

Source: See Table 1.

Table 3 Multivariate longitudinal regressions of exogenous life circumstances on children's satisfaction with life (N=14,429)

	Pooled OLS		Random effects (RE)		Fixed effects (FE)		Correlated RE	
	β-coeff.	S.E.	*β-coeff.*	S.E.	*β-coeff.*	S.E.	*β-coeff.*	S.E.
Household income (log)	0.05	(0.023)	0.05	(0.024)	0.04	(0.051)	0.04	(0.038)
Age	-0.04	(0.012)	-0.05	(0.011)	0.06	(0.098)	0.06	(0.067)
Female	-0.16	(0.036)	-0.19	(0.046)	.	.	-0.19	(0.046)
British/Irish white	-0.05	(0.031)	-0.08	(0.039)	.	.	-0.08	(0.040)
Female # British/Irish white	0.08	(0.042)	0.12	(0.053)	.	.	0.12	(0.053)
Aged 10-12	0.1	(0.039)	0.09	(0.032)	0.08	(0.045)	0.08	(0.034)
Family type (Ref: both biological parents)								
Step family	-0.22	(0.034)	-0.22	(0.042)	-0.09	(0.243)	-0.09	(0.170)
Single parent family	-0.18	(0.024)	-0.2	(0.029)	-0.2	(0.148)	-0.2	(0.101)
Number of children in household	0.03	(0.021)	0.03	(0.025)	0.09	(0.082)	0.09	(0.059)
School holidays (REF: term time)								
Easter holidays	-0.12	(0.046)	-0.11	(0.043)	-0.1	(0.070)	-0.1	(0.053)
Summer holidays	-0.04	(0.030)	-0.06	(0.032)	-0.09	(0.056)	-0.09	(0.043)
Other holidays	-0.09	(0.037)	-0.07	(0.034)	-0.06	(0.055)	-0.06	(0.040)
Neighbourhood type (REF: Comfortable Communities)								
Affluent Achievers	0.05	(0.026)	0.06	(0.032)	0.1	(0.171)	0.1	(0.123)
Rising Prosperity	0.08	(0.039)	0.08	(0.050)	-0.03	(0.306)	-0.03	(0.206)
Financially Stretched	-0.04	(0.029)	-0.02	(0.036)	0.08	(0.223)	0.08	(0.151)
Urban Adversity	-0.04	(0.033)	-0.02	(0.041)	0.37	(0.240)	0.37	(0.158)
Neighbourhood proportion free-school meals	0.04	(0.086)	0.05	(0.099)	0.14	(0.287)	0.14	(0.200)
Moved to different neighbourhood	-0.02	(0.061)	-0.06	(0.056)	-0.06	(0.084)	-0.06	(0.062)
Design & time trend	yes		yes		yes		yes	
Mean values of context variables	no		no		yes		yes	
Constant	6.16	(0.262)	6.43	(0.255)	6.48	(0.506)	5.76	(0.490)

Source: See Table 1.

Multivariate regression analysis

Table 3 shows the results of multivariate regressions on children's life satisfaction. We demonstrate the mechanics behind our preferred model - the correlated Random Effects (RE) model - by comparing its results with those from the more familiar pooled Ordinary Least Squares (OLS) and Generalised Least Squares (GLS) Random Effects and Fixed Effects models. The pooled OLS model yields the results we may expect to see in cross-sectional analyses, the current practice in children's life satisfaction research. The RE model produces virtually the same results as pooled OLS but has higher standard errors.[8] By contrast, the coefficients in Fixed Effects (FE) models express how much a unit change in x changes the outcome. Whilst resonating well with the notion of causality, only those characteristics that change over time have a coefficient in the FE framework and we cannot, e.g., examine whether females or children with minority ethnic backgrounds are less satisfied with life than their male and majority ethnic group counterparts. The correlated RE model strikes the middle ground in this situation: for characteristics that do change over time (such as household income) it produces the same coefficients as the FE model and for fixed characteristics (such as gender and ethnicity) it reports the cross-sectional effects yielded in the RE specification.

What do we find then? Before focussing on the effect of family income, let us examine how other circumstances affect children's satisfaction with life. The results confirm a number of associations ascertained in the cross-sectional research with children. First, children are happiest when they live with both biological parents and although there is indication that children living in a step-family are unhappier this is not statistically different from living with both biological parents when we control for unobserved individual characteristics. Living with just one biological parent is however, diminishes life satisfaction. With respect to age, gender and ethnicity we fully interacted these fixed characteristics in the first instance and then collapsed the groups such that only the statistically significant associations stand out. It can be seen that females, and among them ethnic minorities in particular, are less satisfied with their life than males. By contrast, British/Irish white males are less satisfied with their life than males who self-classify as ethnic minorities, resonating with findings from research into structural inequalities which suggest that White British males are falling behind in domains such as education (Shaw et al. 2016). As noted above, we do not have any information about children educational attainment or their school context (cf. Gibbons and Silva 2011 who found no associations between the school context and children's life satisfaction in a sample of British children aged 14). We do find, however, that children are unhappier during school holidays. The effect showed for long holidays such as Easter and summer vacations as well as for shorter (up to 1 week) public holidays. Thus, however good or bad school may be, removal from the school context is associated with satisfaction losses, *ceteris paribus*. Last but not least, neighbourhoods have been suggested to be important contexts for well-being (Brooks-Gunn et al. 1993; Curtis, Dooley and Phipps 2004) and our results suggest that this may be the case also for children's evaluation of their quality of life overall. In particular we find that children who move into (or out of) neighbourhoods classified as "Urban Adversity" are more (less) satisfied with their life. Whilst the former type is characterised as 'middle Britain' with most people being comfortably well off, i.e., they are neither wealthy nor do they have major financial worries, the latter describes areas with high levels of deprivation, debt, and social issues. All aforementioned predominantly

[8] In fact, had we used a balanced sample (i.e., had all children contributed the same number of time) the coefficients would be exactly the same and only the standard errors would be greater.

longitudinal effects are very stable across model specifications and we will therefore focus on the main effect of interest: that of family income.

Results of main hypothesis tests

The results of the cross-sectional models suggest that children who have a higher family income are more satisfied with life than children whose family income is lower. This association is highly statistically significant. When we control for unobserved individual heterogeneity, however, focusing on individual trajectories, the effect of household income on life satisfaction remains positive and of the same size – i.e., children are happier at times when their household income is higher, and vice versa – but, in line with our first hypothesis, this effect is not statistically significant.

Table 4: Multivariate correlated random effects regressions of children's satisfaction with life on material well-being

	x		$\bar{x}$	
	β-coeff.	S.E.	*β-coeff.*	S.E.
Household income interacted with age				
Household income (log)	0.08	(0.045)	0.02	(0.060)
*Household income (log)*aged 10-12*	-0.08	(0.049)	-0.06	(0.079)
Constant	5.37	(0.515)		
Adult and Child Deprivation				
Adult Material Deprivation Index	-0.04	(0.082)	-0.19	(0.101)
Child Material Deprivation Index	-0.13	(0.170)	-0.31	(0.235)
Constant	6.2	(0.442)		
Adult and Child Deprivation - weighted				
Adult Material Deprivation Index	-0.07	(0.117)	-0.26	(0.148)
Child Material Deprivation Index	-0.17	(0.230)	-0.53	(0.321)
Constant	6.24	(0.443)		
Child deprivation items – weighted				
Holiday away from home	-0.12	(0.067)	-0.06	(0.088)
Own bedroom	0.12	(0.094)	0.04	(0.125)
Celebrations at special occasions	-0.04	(0.083)	-0.08	(0.121)
A hobby/ leisure activity	-0.09	(0.117)	-0.11	(0.175)
Have friends around for tea	-0.12	(0.096)	-0.15	(0.149)
Go on school trips	0.12	(0.114)	-0.38	(0.174)
Leisure item such as a bicycle	0.53	(0.557)	-0.06	(0.846)
Constant	6.13	(0.441)		
Alternative deprivation index				
Deprivation Index	0.08	(0.135)	-0.3	(0.152)
Constant	6.14	(0.442)		
Deprivation Index -weighted	0.09	(0.160)	-0.37	(0.183)
Constant	6.14	(0.442)		

Source: See Table 1.

Notes: All models also control for all characteristics reported in Table 2. Household income not included in models that include material deprivation indices. N=14,429.

Results of further tests about the effects of income and other markers of material wellbeing on children's happiness are reported in Table 4. To test Hypothesis 2 – i.e., that family

income itself will only affect older children, be it because they are more aware of the family finances or because they have greater agency, hence start being more disapproving of inequalities they are facing - we interacted family income with being aged 10-12; the main effect of income now captures the effect of income on older children's life satisfaction. In line with our hypothesis, the main effect of income is positive and statistically significant for older children. For (the otherwise happier) younger children, the income effect is negative, albeit not statistically significant.

Turning to our hypotheses regarding material deprivation, the results indicate weak support for the third and fifth hypothesis but no support for the other two hypotheses. Positive coefficients on the adult and child material deprivation indices suggest that children are unhappier when the adults and children in the household get more deprived, and vice versa, but the (longitudinal) effects are not statistically significant. In support with Hypothesis 3, however, we find sizeable statistically significant associations on the person-average material deprivation levels, indicating that children who find themselves in on average greater deprivation over the course of their early teens are unhappier than those who find themselves in less deprived circumstances. Hypothesis 4 is clearly rejected: Although the coefficient on child material deprivation is larger than that on adult material deprivation, this difference is neither statistically significant longitudinally [$\chi^2(1)=0.15$, $p=0.653$] nor when we compare the person-average effects [$\chi^2(1)=0.14$, $p=0.645$]. The same holds when we compare results from models including weighted indices (longitudinal effects: $\chi^2(1)=0.11$, $p=0.633$; person-average effects: $\chi^2(1)=0.44$, $p=0.746$). Last but not least, our fifth hypothesis posited that deprivation will hurt more when the adults and children lack more of those items that a larger number of others have than if we just consider how many items they cannot afford to have. Comparing coefficients across the weighted and unweighted deprivation indices, we find no statistically significant differences in the longitudinal effects (adult deprivation: $\chi^2(1)=0.14$, $p=0.705$; child deprivation $\chi^2(1)=0.17$, $p=0.683$). Differences in the person-average effects, however, do reach statistical significance (adult deprivation: $\chi^2(1)=14.29$, $p<0.001$; child deprivation $\chi^2(1)=21.49$, $p<0.0001$). When we further decompose the weighted child index into its seven constituent parts, we can see that only two factors appear to be associated with children's life satisfaction independently: Over the course of their early teens children are happier in years when they are not deprived of going on holidays (and vice versa), and there is also a statistically significant negative association between life satisfaction and not being able to afford to participate in school trips.

Discussion and outlook

Satisfaction with life is a desirable outcome for persons at all stages of the life-cycle and is increasingly used by policymakers to evaluate which policies work in delivering the greatest happiness to all. Although children's subjective well-being has been the focus of a plethora of research since the mid 1990s, empirical evidence that links their objective life circumstances to children's experienced quality of life is scarce. Longitudinal evidence – the gold standard in social research where experimental designs are unethical (we would not randomly assign children to contexts we suspect will impact their well-being negatively!) – is particularly scant as few panel studies asked nationally representative samples of a large number of children about their satisfaction of life whilst simultaneously providing information about all aspects of life that have been implicated in affecting people's life satisfaction. Moreover, many of the factors that have been shown to influence life satisfaction in adult samples are not at all or poorly measured in surveys with children. Among these overlooked factors is family income which could be directly influenced by policymakers (through income maintenance and tax policies) with a view towards increasing population well-being not

unlike when governments were committed to eradicating child poverty for its devastating effects on later life outcomes.

The aim of this paper was to examine empirically on the basis of longitudinal data whether household income and other indicators of material well-being are associated with child life satisfaction, controlling for all other aspects of children's life that may impact their well-being. We hypothesised that older children may be more aware of how much income their family has, and investigate this further by also examining whether children's satisfaction with life is affected by the material deprivation adults and children in the household are facing. Whilst it may be difficult for (younger) children to evaluate how much income their family has – let alone how it changed over time- they will likely notice when the lack of financial resources becomes visible, e.g., if there is not enough money to keep the home in a decent state of repair or if major electrical appliances cannot be replaced when broken. Visibility was expected to be higher still if the material deprivation affects the children directly, i.e., when the family cannot afford for them to have or do things children should be able to enjoy, according to national conventions. Last but not least, we hypothesised that children would mind more if they (or the adults members of their household) had to go without those goods and activities that a greater share of others had access to.

Focussing on a representative sample of children aged 10-15 living in England and participating in the first five waves of *Understanding Society*, the UK Household Longitudinal Study (UKHLS), we found some support for these hypotheses. First, we found that family income is not associated with children's life satisfaction across the whole age range, but that there is a positive association for older children. This finding is quite interesting against the background of a plethora of research into the effects of income on structural outcomes such as educational attainment and deviant behaviours which suggest that policy focus should lie on the youngest children. Second, in line with the hypothesis that material deprivation may hurt all children as it is visible, we find that deprivation of adults and children in the household are both negatively correlated with children's life satisfaction, the longitudinal estimates, however, did not achieve statistical significance. By contrast, we find strong and statistically significant negative associations with the average levels of deprivation experienced by the child over the course of their early teens. We may interpret this indicator as measuring the child's unobserved propensity to experience higher levels of deprivation over their life course and this may proxy for the (unobserved) effect of having parents who are less efficient in spending the money in ways which promote the well-being of their children. Comparison of estimates from models that used deprivation indices in which individual items were weighted by the population share that does not lack the item, suggest that not having items that more others have hurts children more, but results did not reach statistical significance. Different aspects may have contributed to these 'non-findings' on material deprivation. First, it is extremely difficult to identify fixed effects in short runs of panel data and many of the children in our sample are only observed twice in five years (and not necessarily in consecutive waves). In addition, parents shield their children from material deprivation which means that only a small number of children are affected by deprivation at any point in time (the mean level in our sample is 0.17). We were also limited by the design of the survey insofar as we had to use the average deprivation levels observed in the children's household across three waves of the survey as imputes for two waves of the survey in which material deprivation was not measured. In effect this removes a lot of change that we may have observed otherwise.

In addition to the main hypotheses explored here, the analysis suggests a number of avenues for future research. In order to absorb as much heterogeneity as possible among children and in order to comprehensively control for all aspects of life that have been linked to life

satisfaction, we made use of two unique features of the Understanding Society data: that interviews take place over the whole year and that it is possible to augment the data with a great deal of annual neighbourhood context data. We used the survey interview dates and information over public holidays to compute whether the children were interviewed during term time – when the unobserved effect of school should be the largest- or during the holidays. Interestingly, we found that children are unhappier during the holidays, *ceteris paribus*. This could signify the effects of friends not being around, regular activities such as playing team sports not taking place, and opportunities to get about reducing (e.g., bus services are adjusted to lower demand), aspects which children have mentioned inhibits their quality of life. It could also be, however, that parents steer children who are struggling at school towards filling out the questionnaire during the holidays so they do not lose out on valuable study time. A focus on holidays and the effects on well-being will be able to throw more light on this. More immediately the results suggest that we will have to view with some scepticism the common practice of interviewing children at school, i.e. during term time. We linked annual neighbourhood indicators to the children's data to explore whether neighbourhood contexts play a role in children's evaluations of how well life is and has been and found that neighbourhood context is important. However, somewhat surprisingly we found that children are happier in areas where social and economic problems culminate, *ceteris paribus*. It may be that increased investments into such areas (as part of the New Deal for Communities which were in place from 1999 to 2011) impacted children's quality of life positively. Again, it is beyond the scope of this analysis to explore this further.

Overall, the results suggest a number of groups that governments looking to increase national well-being may target particularly: British/Irish white males, females (in particular those with ethnic minority backgrounds) and those in single parent households. Whilst governments may focus on redistributing income to families with older children in particular to increase children's subjective well-being, overall, the expected effect will be small (although we would expect there to be the additional small effect of having more income on the life satisfaction of adults in these households, too). Greater well-being impacts may be expected from providing children with more opportunities to do things, in particular during the holidays and if the family cannot afford to spend time away from home.

References

Antaramian, Susan P., E. Scott Huebner, and Robert F. Valois. 2008. "Adolescent Life Satisfaction." *Applied Psychology* 57:112-26.

Argyle, Michael. 2001. *The psychology of happiness*. Hove: Routledge.

Ariès, Phillippe. 1962. "Centuries of Childhood."

Behrman, Jere R., and James C. Knowles. 1999. "Household Income and Child Schooling in Vietnam." *The World Bank Economic Review* 13(2):211-56.

Ben-Arieh, Asher. 2006. "Measuring and monitoring the well-being of young children around the world." in *Paper commissioned for the EFA Global Monitoring Report 2007, Strong foundations: early childhood care and education"*.

Biswas-Diener, Robert M. 2008. "Material wealth and subjective well-being." Pp. 307-22 in *The science of subjective well-being*, edited by Michael Eid and Randy J. Larsen. New York: Guilford Press.

Blanchflower, David G., and Andrew J. Oswald. 2008. "Is well-being U-shaped over the life cycle?" *Social Science & Medicine* 66(8):1733-49.

Blau, David M. 1999. "The Effect of Income on Child Development." *Review of Economics and Statistics* 81(2):261-76.

Bradshaw, Jonathan, and Antonia Keung. 2010. "Trends in child subjective well-being in the United Kingdom." in *Social Policy Association Conference 2010- "Social Policy in Times of Change"*. University of Lincoln: http://www.social-policy.org.uk/lincoln/Bradshaw%20and%20Keung.pdf.

Bradshaw, Jonathan, and Dominic Richardson. 2009. "An index of child well-being in Europe." *Child Indicators Research*.

Brief, Arthur P., Ann Housten Butcher, Jennifer M. George, and Karen E. Link. 1993. "Integrating bottom-up and top-down theories of subjective well-being: The case of health." *Journal of Personality and Social Psychology* 64(4):646-53.

Brooks-Gunn, Jeanne, Gregg J. Duncan, Pamela Kato Klebanow, and Naomi Sealand. 1993. "Do neighborhoods influence child and adolescent development?" *American Journal of Sociology* 99(2):353-95.

Bruni, Luigino, and Pier Luigi Porta. 2007. *Handbook on the economic of happiness*. Cheltenham, UK: Edward Elgar Publishing Limited.

Burton, Peter, and Shelley Phipps. 2008. "Economic Resources, Relative Socioeconomic Position and Social Relationships: Correlates of the Happiness of Young Canadian Teens." *Child Indicators Research* 1(4):350-71.

—. 2010a. "In Children's Voices." Pp. 217-28 in *From Child Welfare to Child Well-Being*, edited by Sheila B. Kamerman, Shelley Phipps, and Asher Ben-Arieh: Springer Netherlands.

—. 2010b. "The well-being of immigrant children and their parents in Canada." in *31st General Conference of the International Association for Research in Income and Wealth*. St Gallen, Switzerland.

Byrnes, J.P., D.C. Miller, and W.D. Schafer. 1999. "Gender differences in risk taking: A metaanalysis." *Psychological Bulletin* 125:367-83.

CACI. 2013. "What is ACORN? http://acorn.caci.co.uk/."

Clark, Andrew E. , Paul Frijters, and Michael A. Shields. 2008. "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles." *Journal of Economic Literature* 46(1):95-144.

Clark, Andrew E., Ed Diener, Yannis Georgellis, and Richard E. Lucas. 2008. "Lags and Leads in Life Satisfaction: A Test of the baseline hypothesis." *Economic Journal* 118:F222-F43.

Clark, Andrew E., and Andrew J. Oswald. 1994. "Unhappiness and Unemployment." *The Economic Journal* 104(424):648-59.

Clark, Andrew E., Niels Westergård-Nielsen, and Nicolai Kristensen. 2009. "Economic satisfaction and income rank in small neighbourhoods." *Journal of the European Economic Association* 7(2-3):519-27.

Cooper, Kerris, and Kitty Stewart. 2013. "Does money affect children's outcomes?" in *CASEreports*, edited by Centre for Analysis of Social Exclusion. London, UK: The London School of Economics and Political Science.

Curtis, Lori J., Martin D. Dooley, and Shelley A. Phipps. 2004. "Child well-being and neighbourhood quality: evidence from the Canadian National Longitudinal Survey of Children and Youth." *Social Science & Medicine* 58(10):1917-27.

Diener, Ed, and Micaela Y. Chan. 2011. "Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity." *Applied Psychology: Health and Well-Being* 3(1):1-43.

Diener, Ed, E. Sandvic, L. Seidlitz, and M. Diener. 1993. "The relationship between income and subjective well-being: Relative or absolute?" *Social Indicators Research* 28:195-223.

Diener, Ed, E. M. Suh, Richard E. Lucas, and H. L. Smith. 1999. "Subjective well-being: Three decades of progress." *Psychological Bulletin* 125:276-302.

Dolan, Paul, Tessa Peasgood, and Mathew White. 2008. "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being." *Journal of Economic Psychology* 29:94-121.

Drukker, Marjan, Charles Kaplan, Frans Feron, and Jim van Os. 2003. "Children's health-related quality of life, neighbourhood socio-economic deprivation and social capital. A contextual analysis." *Social Science & Medicine* 57(5):825-41.

Easterlin, Richard. 1974. "Does Economic Growth Improve the Human Lot? Some Empirical Evidence." Pp. 89-125 in *National and Households in Economic Growth: Essays in Honour of Moses Abramovitz*, edited by P. David and M. Reder. New York and London: Academic Press.

Ellen, Ingrid Gould, and Margery Austin Turner. 1997. "Does neighborhood matter? Assessing recent evidence." *Housing Policy Debate* 8(4):833-66.

Fattore, Toby, Jan Mason, and Elizabeth Watson. 2009. "When Children are Asked About Their Well-being: Towards a Framework for Guiding Policy." *Child Indicators Research* 2(1):57-77.

Ferrer-i-Carbonell, Ada. 2005. "Income and well-being: an empirical analysis of the comparison income effect." *Journal of Public Economics* 89(5-6):997-1019.

Ferrer-i-Carbonell, Ada, and Paul Frijters. 2004. "How important is methodology for the estimates of the determinants of happiness?" *Economic Journal* 114:641-59.

Frick, Joachim R., Jan Goebel, E. Schechtman, Gert G. Wagner, and Shlomo Yitzhaki. 2006. "Using Analysis of Gini (ANoGi) for detecting whether two sub-samples represent the same universe: The German Socio-Economic Panel Study (SOEP) experience." *Sociological Methods & Research* 34:427-68.

Frijters, Paul, John P. Haisken-DeNew, and Michael A. Shields. 2004. "Money does matter! Evidence from increasing real income and life satisfaction in East Germany after re-unification." *American Economic Review* 94(3):730-40.

Frijters, Paul, D.W. Johnston, and Michael A. Shields. 2014. "Does Childhood Predict Adult Life Satisfaction? Evidence from British Cohort Surveys. ." *Economic Journal* 124(580):F688-F719.

Gadermann, Anne M., Martin Guhn, Kimberly A. Schonert-Reichl, Shelley Hymel, Kimberly Thomson, and Clyde Hertzman. 2016. "A Population-Based Study of Children's

Well-Being and Health: The Relative Importance of Social Relationships, Health-Related Activities, and Income." *Journal of Happiness Studies* 17(5):1847-72.
George, Linda K., Morris A. Okun, and Richard Landerman. 1985. "Age as a Moderator of the Determinants of Life Satisfaction." *Research on Aging* 7(2):209-33.
Gibbons, Stephen, and Olmo Silva. 2011. "School quality, child wellbeing and parents' satisfaction." *Economics of Education Review* 30(2):312-31.
Goswami, Haridhan, Christopher Fox, and Gary Pollock. 2016. "The Current Evidence Base and Future Needs in Improving Children's Well-Being Across Europe: is There a Case for a Comparative Longitudinal Survey?" *Child Indicators Research* 9(2):371-88.
Grantham-McGregor, Sally, Yin Bun Cheung, Santiago Cueto, Paul Glewwe, Linda Richter, and Barbara Strupp. 2007. "Developmental potential in the first 5 years for children in developing countries." *The Lancet* 369(9555):60-70.
Gudmundsdóttir, Dora G., Bryndís Björk Ásgeirsdóttir, Felicia A. Huppert, Inga D. Sigfúsdóttir, Unnur A. Valdimarsdóttir, and Arna Hauksdóttir. 2016. "How Does the Economic Crisis Influence Adolescents' Happiness? Population-Based Surveys in Iceland in 2000–2010." *Journal of Happiness Studies* 17(3):1219-34.
Hardy, Bradley L. 2014. "Childhood Income Volatility and Adult Outcomes." *Demography* 51(5):1641-65.
Hirsch, Donald, Liz Sutton, and Jacqueline Beckhelling. 2012. "The cost of a child in the twenty-first century." in *The Cost of a Child*, edited by Child Poverty Action Group. London: CPAG.
Holder, Mark D. 2012. *Happiness in Children. Measurement, Correlates and Enhancement of Positive Subjective Well-being*. Heidelberg: Springer.
Holder, Mark D., and Ben Coleman. 2008. "The contribution of temperament, popularity and physical appearance to children's happiness." *Journal of Happiness Studies* 9:279-302.
Holford, Angus. 2016. "Do Parents Tax Their Children? Teenage Labour Supply and Financial Support." *IZA Discussion Paper* 10040.
Ipsen, Detlev. 1975. "Das Konstrukt der Zufriedenheit." *Soziale Welt* 29(1):44-53.
Kahneman, Daniel, and Alan B. Krueger. 2006. "Developments in the Measurement of Subjective Well-Being." *Journal of Economic Perspectives* 20(1):3-24.
Keung, Antonia. 2006. "The impact of life events on the subjective well-being (SWB) of young people: Analysis of the British Household Panel Survey." in *Towards Quality of Life Improvement*, edited by W. Ostasiewicz. Wrocław: The Publishing House of the Wrocław University of Economics.
Khanam, Rasheda, and Son Nghiem. 2016. "Family Income and Child Cognitive and Noncognitive Development in Australia: Does Money Matter?" *Demography* 53(3):597-621.
Klocke, Andreas, and Klaus Hurrelmann. 1998. *Kinder und Jugendliche in Armut: Umfang, Auswirkungen unf Konsequenzen*. Opladen: Westdeutscher Verlag GmbH.
Knies, Gundi. 2012a. "Income comparisons among neighbours and satisfaction in East and West Germany." *Social Indicators Research* 106(3):471-89.
—. 2012b. "Life Satisfaction and Material Well-Being of Children in the UK." *ISER Working Paper* 2012-15.
—. 2015. *Understanding Society –UK Household Longitudinal Study: Wave 1-5, 2009-2014, User Manual*. Colchester: University of Essex.
Knies, Gundi, and Seetha Menon. 2014. "Understanding Society: Waves 1-3, 2009-2012: Special Licence Access, Geographical Accessibility. The UKHLS-Accessibility Data File User Guide

" *http://doc.ukdataservice.ac.uk/doc/7533/mrdoc/pdf/7533_ukhls_accessibility_userguide.pdf*.
Knies, Gundi, Alita Nandi, and Lucinda Platt. 2016. "Life satisfaction, ethnicity and neighbourhoods: Is there an effect of neighbourhood ethnic composition on life satisfaction?" *Social Science Research* 60:110-24.
Layard, Richard. 2005. *Happiness: Lessons from a New Science*: Penguin.
Layard, Richard, Andrew E. Clark, Francesca Cornaglia, Nattavudh Powdthavee, and J. Vernoit. 2014. "What Predicts a Successful Life? A Life-Course Model of Well-Being." *Economic Journal* 124(580):F720-F38.
Levin, Kate Ann, Torbjorn Torsheim, Wilma Vollebergh, Matthias Richter, Carolyn A. Davies, Christina W. Schnohr, Pernille Due, and Candace Currie. 2011. "National Income and Income Inequality, Family Affluence and Life Satisfaction Among 13 year Old Boys and Girls: A Multilevel Study in 35 Countries." *Social Indicators Research* 104(2):179-94.
Lim, Chaeyoon, and Robert D. Putnam. 2010. "Religion, Social Networks, and Life Satisfaction." *American Sociological Review* 75(6):914-33.
Lister, Ruth. 1996. "Back to the family: Family policies and politics under the Major Government." in *The Politics of the Family*, edited by Helen Jones and Jane Millar. Aldershot: Avebury.
Lucas, Richard E., Andrew E. Clark, Yannis Georgellis, and Ed Diener. 2003. "Reexamining adaptation and set point model of happiness: Reactions to changes in marital status." *Journal of Personality and Social Psychology* 84(3):527-39.
Lynn, Peter L., and Gundi Knies. 2015. "Understanding Society Quality Profile." in *Understanding Society Quality Profile*, edited by Peter L. Lynn and Gundi Knies. Colchester: ISER University of Essex.
Lyubomirsky, Sonja, Laura King, and Ed Diener. 2005. "The Benefits of Frequent Positive Affect: Does Happiness Lead to Success?" *Psychological Bulletin* 131(6):803–55.
Mayer, Susan. 1997. *What Money Can't Buy. Family Income and Children's Life Chances*: Princeton University Press.
Middleton, Sue, Karl Ashworth, and Ian Braithwaite. 1997. *Small fortunes: Spending on children, childhood poverty and parental sacrifices*. York, UK: Joseph Rowntree Foundation.
Mundlak, Yair. 1978. "On the pooling of time series and cross section data." *Econometrica* 6:69-85.
Palmore, Erdman 1981. *The Social Pattern of Normal Ageing*. Durham: Duke University Press Books
Powdthavee, Nattavudh, and Anna Vignoles. 2008. "Mental Health of Parents and Life Satisfaction of Children: A Within-Family Analysis of Intergenerational Transmission of Well-Being." *Social Indicators Research* 88(3):397-422.
Proctor, Carmel L., P. Alex Linley, and John Maltby. 2009. "Youth Life Satisfaction: A Review of the Literature." *Journal of Happiness Studies* 10(5):583-630.
Sarriera, Jorge Castellá, Ferran Casas, Lívia Bedin, Daniel Abs, Miriam Raquel Strelhow, Daphna Gross-Manos, and Jarod Giger. 2015. "Material Resources and Children's Subjective Well-Being in Eight Countries." *Child Indicators Research* 8(1):199-209.
Scott, Jacqueline, and Camilla Chaudhary. 2003. "Beating the odds: Youth and family disadvantage." in *Youth, Citizenship and Social Change*. Leicester: The National Youth Agency.
Shapiro, Adam, and Corey Lee M. Keyes. 2008. "Marital Status and Social Well-Being: Are the Married Always Better Off?" *Social Indicators Research* 88(2):329-46.

Shaw, Bart, Loic Menzies, Eleanor Bernardes, Sam Baars, Philip Nye, and Rebecca Allen. 2016. "Ethnicity, Gender and Social Mobility." edited by Social Mobility and Child Poverty Commission. London: Social Mobility Commission.

Shields, M. A., S. W. Price, and M. Wooden. 2009. "Life satisfaction and the economic and social characteristics of neighbourhoods." *Journal of Population Economics* 22(2):421-43.

Stafford, Mai, Diana L. Kuh, Catharine R. Gale, Gita Mishra, and Marcus Richards. 2016. "Parent–child relationships and offspring's positive mental wellbeing from adolescence to early older age." *The Journal of Positive Psychology* 11(3):326-37.

Stiglitz, Joseph E. , Amartya Sen, and Jean-Paul Fitoussi. 2010. *Mismeasuring our lives: why GDP doesn't add up: the report*. Paris: The New Press.

van Praag, Bernhard M. S., Paul Frijters, and Ada Ferrer-i-Carbonell. 2003. "The anatomy of subjective well-being." *Journal of Economic Behavior & Organization* 51(1):29-49.

Veenhoven, Ruut. 2008. "Sociological theories of subjective well-being." Pp. 44-61 in *The Science of Subjective Well-being: A tribute to Ed Diener*, edited by Michael Eid and Randy Larsen. New York: Guilford Publications.

Appendix

App 1: Stability and change in children's life circumstances 2009-2014

Child characteristic in year t	Pooled cross-section (N=14,439)	Transitions from year t to t+1 (N=7,526)	
		$x_t = x_{t+1}$	$x_t \neq x_{t+1}$
Deprivation Index >25%			
not deprived	68.3	97.1	2.9
deprived	31.7	89.9	10.1
Total	100	94.9	5.1
Family type			
both biological parents	63.8	98.8	1.2
step family	10.0	96.0	4.0
single parent	26.2	95.9	4.1
Total	100	97.8	2.2
Holidays			
no	77.9	43.8	56.2
yes	22.1	84.2	15.8
Total	100	75.5	24.5
ACORN type			
Affluent Achievers	23.5	98.2	1.8
Rising Prosperity	5.7	97.1	2.9
Comfortable Communities	26.9	98.2	1.8
Financially Stretched	21.9	97.8	2.2
Urban Adversity	22.0	97.5	2.5
Total	100	97.9	2.1
Deprivation of children in the neighbourhood			
Bottom decile	10.2	63.2	36.8
2nd decile	9.2	39.6	60.4
3rd decile	9.3	39.4	60.6
4th decile	9.2	42.2	57.8
5th decile	9.4	43.3	56.7
6th decile	9.6	54.9	45.1
7th decile	9.5	60.5	39.5
8th decile	10.4	59.9	40.1
9th decile	10.7	63.3	36.7
Top decile	12.6	80.1	19.9
Total	100	55.1	44.9

Source: Understanding Society (2015), Wave 1-5, 2009-2014. Linked with ACORN 2013 area classification and DfT Accessibility Statistics 2014 at the Lower Super Output Area (LSOA) level. England only.