Experiencing Life Events and Childhood Subjective Wellbeing: A Longitudinal Analysis of Growing Up in Scotland

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Scottish Government
Riaghaltas na h-Alba

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The findings of this report are not valid due to an error in the analysis. If you require further information, please email the Growing Up in Scotland mailbox at: GUS@gov.scot.

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Introduction and Background

Growing Up in Scotland (GUS) is a longitudinal study following the lives of young people. This report presents analysis of several data sweeps of Birth Cohort 1 (BC1) and looks at the impact of some key life events on measures of subjective wellbeing.

The report includes;

- A review of relevant background literature;

- An overview of the analytical methodology and created variables;

- The results from the modelling;

- Discussion and conclusion.

Background

Life changes and significant life events have been linked to various negative long-term health and social consequences for children. It is widely acknowledged that growing up in contexts of socioeconomic disadvantage impact on children's health and wellbeing in complex ways, which can be exacerbated by the experience of stressful or negative life events. These findings highlight the need for whole family support to help families to meet their individual needs during or following a period of stressful or negative life events. We know from the literature that such life events include the following, all of which can be explored using data available in the *Growing Up in Scotland* (GUS) study:

1. Parental Separation

2. Bereavement

3. Accident or illness within the family

Growing Up in Scotland (GUS) is a large-scale longitudinal cohort study which tracks the lives of children and their families, beginning from when the cohort children were 10 months old. The study has collected data on three cohorts of children over the years; two birth cohorts and one child cohort. This project uses data from Birth Cohort 1 (BC1). BC1 consists of a nationally representative sample of 5,271 children born between June 2004 and May 2005. The data were first collected in 2005/06 when the children were 10 months old. GUS data are predominantly collected through bi-annual face-to-face interviews with children and

their parents. GUS therefore has the ability to track actual changes over time as each sweep builds on the previous sweep. A large amount of data is available on each participant as the study is multidisciplinary and includes information on aspects of participants' family life, household circumstances, education experiences alongside other domains of their lives. For more information on the study design and methodology, please see the study website.[1]

Throughout the report, we have used 'children' when referring to GUS participants and other research subjects between the ages of 6 and 14.

Research Questions

The analysis detailed in this report uses multinomial logistic regression modelling and sensitivity analysis across four sweeps of GUS data. The analysis aims to answer the following questions:

- Does experiencing **parental separation** between the ages of 7 and 15 have an observable impact on changes in the subjective wellbeing of children during this period?

- Does experiencing the **death of a family member** between the ages of 7 and 15 have an observable impact on changes in the subjective wellbeing of children during this period?

- Does the experience of an **accident or illness within the family** between the ages of 7 and 15 have an observable impact on changes in children's subjective wellbeing during this period?

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[1] Study design (growingupinscotland.org.uk)

Literature Review

Life Events

The literature on life events commonly classifies these as being either 'normative' or 'non-normative'. Normative events are expectable and often scheduled life changes whereas non-normative events occur unexpectedly, are often undesired, and are often associated with severe effects (McCubbin et al. 1980). While some events may be statistically normative at given ages, such as the illness or death of a person in later life, these are still considered to be non-normative as they are both negative and non-routine (McCubbin et al. 1980). The life events that this analysis explores - parental separation, bereavement and family accidents and illnesses - are all considered to be non-normative in nature due to being considered undesirable and being associated with negative outcomes.

Previous literature on children's outcomes has identified the ages of 6 to 14 as the optimal years of study to aid our understanding of children's outcomes. These years are considered to be a time of key developmental advances in which young people establish a sense of their own identity (Eccles 1999). During these years, preparation for adulthood occurs which can involve developing competence, self-awareness and involvement in society more generally. During this developmental stage, children are thought to make significant advances in their development of self-esteem and individuality, gaining an awareness of themselves within wider contexts which involves comparing themselves with peers (Eccles 1999). This is particularly important when using a self-reported outcome measure, as the process of self-rating requires making an evaluation of one's own circumstances relative to others. The development of young people's ability to do this is key.

The 'transitional events' model - developed to help understand children's adaptation following significant events - suggests that children's adjustment following a major stressful life event is heavily influenced by the events that follow. Therefore, reducing children's exposure to further stressful changes such as separation from family members or exposure to financial difficulties is recommended where possible to buffer the adverse effects of negative events (Haine et al. 2008). The model further recommends work to strengthen child and family protective resources such as self-esteem and coping skills. Previous longitudinal studies have evidenced a heightened vulnerability for girls following significant stressful life events that persists over time (Schmiege et al. 2006).

Children's Wellbeing

The concept of wellbeing has come to be widely used because of its perceived benefits over a traditional, individualistic medical model of health (Commission on the Social Determinants of Health 2008, Crawshaw 2008). Understanding wellbeing has the potential to draw attention to how children's wellbeing is shaped by the

social contexts in which significant life events occur. Wellbeing is defined in this project as a concept which incorporates aspects of happiness, satisfaction with life, self-esteem, and morale (Bowling 2005).

While there is no fixed or universally agreed definition of the exact meaning and scope of children's wellbeing, it is widely acknowledged that there are many aspects to a child's life and an adequate understanding of children's wellbeing must be able to do justice to this multidimensionality (Ben-Arieh et al. 2014). The wellbeing of children concerns many elements of their lives and occurs at the intersection between individual agency and its cultural and social embeddedness (Schweiger and Graf 2015). Therefore, external factors such as household, social and economic factors are important to consider, as they may have an influence on subjective wellbeing.

Many argue that the perspectives of children themselves should be considered when studying their wellbeing outcomes (Alderson 2008). Judgements about children's wellbeing are often made without acknowledging the children themselves. Wellbeing demands that mental, physical and emotional needs are met which makes it likely that there is a degree of overlap between mental health, physical health and subjective wellbeing outcomes. Research findings indicate that stressful life events are associated with deficits in levels of satisfaction among young people in the form of lower positive affect and higher negative affect (McKnight et al. 2002). Positive affect refers to the frequency of positive emotions such as joy or affection in an individual whereas negative affect refers to the frequency of negative emotions such as sadness or anxiety (McKnight et al. 2002).

McKnight and colleagues (2002) argued that understanding children's wellbeing should not be achieved through studying the absence of negative psychological symptoms. Instead, it should emphasise what makes life good, how youth remain resilient during adverse experiences and what can be done to enhance the aspects of life that children find positive.

It is acknowledged that children's wellbeing is a highly subjective concept as it requires their perceptions and evaluations which could be subject to reporting bias. To substantiate the findings on children's outcomes, this project will apply a sensitivity analysis to explore the impact of life changes on children's physical and mental health to incorporate more objective measures of children's outcomes.

Parental Separation

Parental separation is linked to multiple negative health and wellbeing outcomes for children. This could be caused by two possible mechanisms. The first being a selection process through which negative outcomes are not a result of parental

separation directly, rather they are due to other factors which also influence parents propensity to separate such as financial difficulties. Alternatively, this can occur through a causal relationship between parental separation and negative outcomes for children. The latter has been evidenced in longitudinal studies with study designs which control for additional confounding factors such as socio-economic factors (Seijo et al. 2016).

While it has been previously shown that children from married couple families have better outcomes on several domains including social and emotional wellbeing and physical health (Zinn 2010), it is assumed that children are affected by changes to family structure as much as, or more than, the type of family structures they experience. The disruption experienced by changes in family structure can undermine children's senses of security and trust, which can in turn affect their social and emotional development (Fomby and Cherlin 2007). The disruption in family structure has been identified as leading to several adverse effects (Behere et al. 2017). Greater emotional and behavioral problems have been observed in children whose families have been disrupted by parental separation than those who have experienced other significant events such as the loss of a parent (Behere et al. 2017). Some long-term consequences for children following parental separation include: adjusting to new living situations, dealing with ongoing parental conflict and experiencing feelings of alienation, all of which can have adverse effects on wellbeing (Cohen et al. 2016). Furthermore, children may also experience less effective parenting or limited contact with one parent (D'onofrio and Emery 2019) following separation which can also exacerbate negative outcomes.

Studies have found that following parental divorce, girls are more likely to experience poor parent-child relationships (Caspi and Elder 1988). Children from more socio-economically advantaged families have been found to experience a two-times larger 'separation penalty' than the children of less advantaged parents which is thought to be dueto a larger decline in household income when parents separate (Martin 2012). This contrasts with what studies have shown in terms of children's outcomes following life events in general, with those from more advantaged backgrounds often being less affected (Bernardi 2014). While more advantaged families often have greater economic resources following separation, having high pre-separation resources can result in large absolute losses when parents separate (Martin 2012). Highly educated parents have been found to be more likely to re-partner and to be in conflict more frequently post-separation (Kalil et al. 2011), both of which can be worse for the psychological wellbeing of children involved (Martin 2012). While parental separation is considered to be a major public health problem to some, it can also be seen as positive in cases where children have been exposed to high levels of parental conflict and tension pre-separation as wellbeing outcomes could improve following the separation (D'onofrio and Emery 2019).

Bereavement

Bereavement is one of a range of difficult life events that children may face which can have adverse effects on a variety of key outcomes. Several studies on the influence of bereavement (Dowdney, 2000, Haine et al. 2008) report that children experience a wide range of emotional and behavioural symptoms following the loss of a parent. Children often experience an increase in anxiety with a focus on concerns about further loss as well as depressive symptoms which have been found to persist for at least a year (Ackerman and Statham 2011).

Multiple studies have found bereaved children to be at risk of adverse mental health outcomes in both the near and long term (Melhem et al. 2008). The effects of early losses in life such as a brother or sister can have a profound and long-term impact on the surviving sibling (Porterfield et al. 2003). Many aspects of this impact are normal manifestations of grief, some can be disruptive to a child's wellbeing, while others can be positive in nature (Koehler 2010), for example, as many bereaved children demonstrate resilience and stress-related growth (Christ 2010). Children from the lowest income households are known to be at the greatest risk of being bereaved of a parent or sibling (Paul and Vaswani 2020). Furthermore, experiencing a bereavement may add to family stress, instability, inequality and disadvantage, with those who are already vulnerable experiencing most of the bereavement burden (Paul and Vaswani 2020).

The death of a grandparent is often the first death experience that a child experiences (Ens & Bonds, 2005). Fewer children experience the death of a parent or sibling which has been found to place children at risk of many negative outcomes, including depression, anxiety, loneliness, peer isolation and lower self-esteem (Christ 2010, Haine et al. 2008, Koehler 2010). Although familial interactions and obligations are thought to occur primarily in the nuclear family, children and their grandparents may play important roles in one another's lives (Ens & Bonds, 2005). Experiencing the death of a household member, or someone who has a caring role, may have a more severe or long-term effect than another family member such as one who lives elsewhere (Paul and Vaswani 2020).

Accident or illness within the family

Family routines, family dynamics and future plans can all be affected when someone in the family suffers an accident or becomes ill (Lummer-Aikey and Goldstein 2020). This can influence children's daily routines and alter the pre-determined roles within the family which can cause distress. Research that has examined the effects of parental illness on youth suggests that these children are at greater risk of negative mental health outcomes compared with the children of 'healthy' parents (Pakenham and Cox 2014). Children of parents with a mental illness are more likely to experience difficulties in other aspects of their lives, for instance peer relationships, school performance, social interaction and day-to-day living (Singleton 2007). A challenge of having an injured or ill parent is dealing with

changes within interpersonal relationships between the child and the parent, as well as with the non-injured or ill parent, as their time may become preoccupied with caring roles (Dawes et al. 2022). The other parent may struggle to adjust and therefore may not be well equipped to provide their child with support (Dawes et al. 2022). Poor family coping has been linked to poorer rehabilitation and recovery which can have adverse effects on parenting and children's adjustment (Dawes et al. 2022). Additionally, children with an unwell or injured family member may be reluctant to ask for support for fear of burdening family members (Rohleder et al. 2017).

Despite the growing evidence baseon the adjustment of children in cases of ill parents or other family members, it remains relatively small and suffers from several limitations such as small sample sizes, a reliance on parent reporting of children's outcomes and a lack of comparison with the outcomes of the children of 'healthy' parents (Pakenham and Cox 2014). Furthermore, there is currently a lack of research which extends beyond parents to examine cases where a non-parent family member is ill (Pakenham and Cox 2014). Sibling illness can also have adverse effects as challenges in adjustment can involve impaired psychological functioning and cognitive development as well as behavioural difficulties (Bellin and Kovacs 2006).

The link between socio-economic factors and youth outcomes when a family member has experienced, or is experiencing, an accident or illness has not been widely examined. However it is widely acknowledged that lower socio-economic status often offers fewer resources for coping with the challenges associated with family accidents and illnesses (Pakenham and Cox 2014). Sieh et al.(2010) found that lower socio-economic status was associated with greater emotional problems for children who experienced the illness of a parent. Further to this, being from a single parent family was identified as a risk factor for youth behavioural and emotional problems in the context of parental illness.

Some factors have been identified as protective of children's outcomes following the illness or accident of a family member such as family support (Saetes et al. 2017). While the adverse effects of experiencing an illness or accident within the family are well established, the potential positive outcomes for children are less well researched (Lummer-Aikey and Goldstein 2020). Lummer-Aikey and Goldstein (2020) highlighted that experiencing the illness or accident of a family member can also provide opportunities for socio-emotional growth and can facilitate the development of empathy, compassion, and maturity. It has been found that children require early and ongoing support to assist them in regaining control following disruption to their family routines (Dawes et al. 2022).

Methodology

Data overview

Data from Sweeps 7 to 10, inclusive, of the GUS study was used for this analysis, as the children themselves are asked about their own life satisfaction from Sweep 7 (aged 7-8) onwards. The sample consisted of 4,069 respondents, 50.5% of which were boys and 49.5% were girls. The sample included those who were present in the data in at least two sweeps, with some being present at two, three and four of the four sweeps captured by this analysis. This decision not to restrict the analysis to only those present in all four sweeps was made to ensure that enough participants were present in the data to provide a meaningful analysis. Restricting the analysis to only those present at all four sweeps would have resulted in a sample size which was too small to draw significant results. Additionally, the most recent data available was used in order to capture the most up-to-date picture of children's wellbeing in Scotland, informing the decision to use the latest sweeps of GUS. Information about when GUS sweeps took place can be found in the data documentation for each sweep [2]and on the study website[3].

Table 1 provides an overview of the sample, showing the number of participants which were present in each sweep along with the age of the participants when each sweep of data was collected. The table also displays the gender composition at each of the four sweeps, showing that the sample was split evenly between boys and girls.

Table 1 – Sample Overview

Sweep	Age	Number of participants	Gender composition (%)	
			Boys	Girls
7	7-8	3456	50.5 %	49.5 %
8	9-10	3150	50.4 %	49.6 %
9	12-13	3419	50.4 %	49.6 %
10	14-15	2943	50.6 %	49.4 %

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[2] Data documentation (growingupinscotland.org.uk)

[3] Study design (growingupinscotland.org.uk)

Life Events Variables

Parental Separation

Parental separation was measured through an indicator of a change in family type at some point across the four sweeps. This variable was created from a question to the main carer about whether the family type was 'lone parent' or 'couple family'. Those who previously belonged to a 'couple family' and were later reported to belong to a 'lone parent family' were categorised as becoming a lone parent family.Those who previously belonged to a 'lone parent family' and were later reported to belong to a 'couple family' were categorised as becoming a couple family. Those who remained a lone parent family throughout and those who remained a couple family throughout were both categorised as having no change in family type.

Table 2 shows the frequency distribution for the 'family type change variable'. The majority of the sample (86.1%) experienced no change in family type at any point across the four sweeps, however 320 participants (9%) experienced becoming a lone parent family indicating that they experienced parental separation. A further 175 participants (5%) experienced becoming a couple family.

Table 2 - Frequency Distribution of Family Type Change

Family type change	Frequency	Percentage
Becomes lone parent family	320	9.0%
No change in family type	3065	86.1%
Becomes couple family	175	4.9%
Total	3560	100%

Bereavement

Main carers were asked about whether their child had experienced the loss of a parent, sibling or grandparent since the previous sweep. Due to the low number of participants who experienced the loss of a parent or sibling, these indicators were combined to form a 'loss of a parent or sibling' variable. As the loss of a grandparent is typically more likely to occur between the ages of 7 and 15 than that of a parent or sibling, and grandparents are often less likely to be co-resident, being bereaved of a grandparent was treated separately.

Table 3.1 shows the frequency distribution for the variable indicating the loss of a grandparent. Almost 50% of participants had experienced the loss of a grandparent

at some point across the four sweeps, indicating that being bereaved of a grandparent was the most common of the life events explored in this project.

Table 3.1 - Frequency Distribution of Loss of a Grandparent

Loss of a grandparent	Frequency	Percentage
No	2133	52.4%
Yes	1936	47.6%
Total	4069	100%

Table 3.2 shows the frequency distribution of the variable indicating the loss of a parent or sibling. Consistent with what was expected, the majority of participants (96.8%) did not experience the loss of a parent or sibling. A total of 129 participants (3.2%) experienced the loss of a parent or sibling at some point across the four sweeps.

Table 3.2 - Frequency Distribution of Loss of a Parent or Sibling

Loss of a parent or sibling	Frequency	Percentage
No	3940	96.8%
Yes	129	3.2%
Total	4069	100%

Accident or illness within the family

Main carers were also asked whether their child had experienced an accident or illness within the family. An accident or illness involving a parent or of a sibling were combined to form an indicator of an 'accident or illness of a family member. Due to small numbers experiencing each, these were combined into one variable 'family accident or illness'.

Table 4 shows the frequency distribution for this variable, indicating that 17.6% of participants experienced a family accident or illness at some point in the four sweeps. The majority of the sample (82.4%) did not experience any family accident or illness.

Table 4 - Frequency Distribution of Family Accident or Illness

Family accident or illness	Frequency	Percentage
No	3352	82.4%
Yes	717	17.6%
Total	4069	100%

Participants were also asked about other other life events including experiencing having a parent in prison, family experiences of crime and drug taking or alcoholism in the family, all of which were not included in this analysis either due to a small number of participants experiencing them or a lack of consistency in their measurement over time.

Outcome Variables

Subjective wellbeing

The outcome variable used for this project was an indicator of subjective wellbeing, measured by an indicator of life satisfaction. The measure of life satisfaction was created from four quesitons asked ofthe GUS participants about their satisfaction with their lives:

- How often do you wish your life was different?
- How often do you feel that your life is just right?
- How often do you feel you have what you want in life?
- How often do you feel you have a good life?

As these questions were asked to the children directly, they are self-reported items. Responses to these questions were ordered, with the categories ranging from 'never' to 'always'. As these response options were ordered in a structured way, an average score on all four items was generated to create an 'overall life satisfaction' score. To capture changes in this variable over time, the overall satisfaction score was used to create a binary variable indicating 'low' and 'high' life satisfaction. Participants who initially had a high life satisfaction score and who had a low score in a subsequent sweep were categorised as having 'deteriorating life satisfaction'. Participants who initially had a low life satisfaction score who later had a high score were categorised as having 'improving life satisfaction'. Those who continued to have low satisfaction throughout and those who continued to have high satisfaction throughout were categorised as 'staying constant' as they did not experience a change in life satisfaction over the sweeps.

Table 5 shows the frequency distribution for the change in life satisfaction variable. Over half of the participants (52%) experienced no change in life satisfaction over time. A total of 953 participants (32.1%) experienced a deterioration in life satisfaction and 473 (15.9%) experienced an improvement.

Table 5 - Frequency Distribution of Change in Life Satisfaction

Change in Life satisfaction	Frequency	Percentage
Deteriorates	953	32.1%
Remains constant	1546	52%
Improves	473	15.9%
Total	2972	100%

Body Mass Index – Sensitivity outcome

Body Mass Index (BMI) is a score that adjusts a person's weight for their height. Individuals are placed into bands to show where they stand in relation to the rest of the population, in particular whether they have high or low BMI. Life adversities are a known risk factor for emotional overeating as well as restrained eating in children (Thomas et al. 2020). Only those height and weight measurements considered by the interviewer to be reliable were used to calculate the BMI scores available in the GUS data. Across the four sweeps, those who were either overweight/obese or a healthy weight initially and became underweight were categorised as 'becoming underweight'. Those who were either underweight or a healthy weight and then became overweight/obese were categorised as 'becoming overweight'. Those who remained underweight, remained overweight or remained a healthy weight were categorised as experiencing no change in BMI over time.

Table 6 shows the frequency distribution for the BMI change variable. The majority of the sample (83.1%) did not experience becoming either overweight/obese or underweight at any point in the four sweeps. A total of 83 participants (2.5%) experienced becoming underweight and 489 participants (14.5%) experienced becoming overweight/obese indicating that becoming overweight was more likely than becoming underweight.

Table 6 – Frequency Distribution of Change in BMI

BMI change	Frequency	Percentage
Becomes underweight	83	2.5%
BMI remains constant	2808	83.1%
Becomes overweight/obese	489	14.5%
Total	3380	100%

Physical health and disability – Sensitivity outcome

Experiencing changes in physical health was explored using a measure which captured the presence of a physical health condition or disability. This variable comes from a question to the main carer asking if the child has developed a new illness or disability since the previous sweep. These included: visual impairments, hearing difficulties, mobility issues, learning difficulties, stamina or breathing difficulties, social and behavioral issues or any other impairments. Participants who were reported to have one of these at an earlier sweep and were later reported to have no illness were categorised as 'physical health improving'. Participants who were initially reported to have no conditions and were reported to have one or more at a subsequent sweep were categorised as 'physical health deteriorating'. Participants who had no condition throughout the sweeps and who had a condition continually throughout the sweeps were categorised as their physical health remained constant. This variable is referred to as 'physical health' for the remainder of the report.

Table 7 shows the frequencies for the change in physical health variable. Most participants (71.9%) did not experience a change in physical health. Only 8.9% of participants experienced an improvement in physical health whereas 19.2% experienced a deterioration, indicating that they developed or experienced an illness or disability at some point across the four sweeps.

Table 7 – Frequency Distribution of Change in Physical Health

Physical health change	Frequency	Percentage
Deteriorates	781	19.2%
Remains constant	2923	71.9%
Improves	362	8.9%
Total	4066	100%

Mental health – Sensitivity outcome

Changes in mental health were measured by changes in strengths and difficulties questionnaire (SDQ) scores[4]. The SDQ is asked of the children and captures five aspects of mental health: emotion, conduct, hyperactivity, peer problems and prosocial behavior. Previous literature has established clinical cut-off scores, with scores above 17 traditionally being considered to be 'abnormal' (Bryant et al. 2020). Therefore this predetermined cut-off was used for this variable to differentiate between those with 'normal' and 'abnormal' functioning. Participants who initially

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[4] https://www.sdqinfo.org/a0.html

had SDQ scores considered to be 'normal' who later had an 'abnormal' score were categorised as having deteriorating mental health. Participants who initially had SDQ scores considered to be 'abnormal' who later had a 'normal' score were categorised as having improving mental health. Those who had 'abnormal' scores throughout and those who had 'normal' scores throughout were both categorised as experiencing no change in mental health.

Table 8 shows the frequency distribution for the change in mental health variable. Most participants (79.4%) experienced no change in their mental health over time, whilst 9.6% experienced a deterioration and 10.9% experienced an improvement in mental health.

Table 8 – Frequency Distribution of Change in Mental Health

Mental health change	Frequency	Percentage
Deteriorates	319	9.6%
Remains constant	2627	79.4%
Improves	362	10.9%
Total	3308	100%

Additional Covariates

Gender

There is a lack of conclusive evidence regarding gender differences in subjective wellbeing, as some research studies have found that boys and girls show different patterns whereas others have indicated no differences (Chen et al. 2020). Studies which have found differences in subjective wellbeing between boys and girls have found that different aspects of wellbeing matter depending on gender. For example, self-awareness and self-esteem have been found to be more important for girls' wellbeing whereas achievements and feeling successful were more important for boys (Kaye-Tzadok et al. 2017). However, results are clearer in terms of mental health outcomes as large number of studies show that girls start to manifest higher rates of depression than boys between the ages of 13 and 15 years old (Ge et al. 2001).

Household socio-economic position

Two indicators of household socio-economic position were included in the analysis: household income and household education. Previous research has evidenced that household income has a positive causal effect on children's health outcomes, including cognitive and behavioural development (Lindeboom et al. 2009). Household income is also shown to indirectly influence children's outcomes through other aspects which are important for their development, such as maternal mental health, parenting and the home environment (Cooper and Stewart 2021). Household income is measured in GUS by a variable with four categories, '£7999 or less', '£8K-£14,999', '£15K-£28,999' and '£29K+'. This was used to create a binary measure of household income, indicating those who had an annual household income of over £29,000 compared with those who had less than this.

Parental education can also affect children's health as higher levels of education are associated with positive parenting styles and an increased ability to make informed health decisions (Lindeboom et al. 2009). Higher levels of education can also lead to higher earnings and these resources could be used to invest in health and to act as a buffer for the potential negative impact of adversities (Case et al. 2002). A measure of highest household education was also constructed, consisting of the categories 'degree', 'higher', and 'standard grade'.

Number of adults present in the household

A measure of the number of additional adults - other than the main carer respondent - present in the household was also included in the analysis as an indicator of the potential support available to both the young person and their main carer. Having more than one adult in the household could help to mitigate adverse effects following a significant life event. Social support is used to refer to the extent to which someone has access to, or perceives they have access to, resources provided by social network connections. A substantial body of research supports the idea that social support plays an influential role in the relation between stressful life events and children's outcomes (Jackson and Warren 2000). In particular, it is

often regarded as an important protective factor for positive mental health outcomes at all ages including during both childhood and adolescence (Bauer et al. 2021).

Multinomial logistic regression modelling

Multinomial logistic regression is an extension of binary logistic regression which allows for more than two categories of the outcome variable (Starkweather and Moske 2011). This regression modelling approach allowed the two categories 'life satisfaction deteriorates' and 'life satisfaction improves' to be compared with the third category 'life satisfaction remains constant', capturing changes in subjective wellbeing in both directions. To ease interpretation of the model results, the reference category was set to 'life satisfaction remains constant', allowing this to act as the baseline to which a deterioration and an improvement could be compared. Directly comparing the outcome remaining constant with it improving and deteriorating allows us to capture not only the presence of a change in health but also the direction of the change. The categorisation of the outcome variable follows a similar method to that of Rajmil et al. (2009), who explored changes in children's mental health outcomes using strength and difficulty questionnaire (SDQ) scores. The authors measured a change in SDQ scores over time by respondents membership in one of three categories; improves, remains stable and worsens (Ramjil et al. 2009).

Sensitivity Analysis

It is acknowledged that children's wellbeing is highly subjective as it requires their own perception and evaluation which could be subject to reporting bias (Camerini and Schulz 2018). To further support the findings on children's subjective wellbeing, this project applied a sensitivity analysis by also looking at different outcome measures to explore the impact of life events on indicators of both physical and mental health to incorporate more objective measures of children's outcomes. Furthermore, modelling the health outcomes separately allows for an exploration of whether experiencing significant life events impacts upon different aspects of health in meaningfully different ways.

Results

Changes in subjective wellbeing

This analysis sought to explore the relationship between three key life events and changes in children's subjective wellbeing, to establish whether parental separation, bereavement and the experience of a family accident or illness causes any observable change in wellbeing.

Table 9.1 shows the changes observed in life satisfaction by changes in family type across the four sweeps. The majority of participants did not experience either a change in family type or a change in life satisfaction over time. Of those who experienced parental separation, 15% experienced an improvement in life satisfaction whereas 38.7% experienced a deterioration. Almost half (46%) did not experience a change in life satisfaction.

Table 9.1 – Change in Life Satisfaction by Change in Family Type

Family type change	Life satisfaction change			Total
	Deteriorates	Stays constant	Improves	
Becomes lone parent	106 (38.7%)	127 (46.4%)	41 (15%)	274 (100%)
No change in family type	788 (31%)	1344 (53%)	406 (16%)	2538 (100%)
Becomes couple	58 (37.9%)	71 (46.4%)	24 (15.7%)	153 (100%)
Total	952 (32.1%)	1542 (52%)	471 (15.9%)	2965 (100%)

Table 9.2 shows the changes in life satisfaction for those who experienced the loss of a grandparent and those who did not. For those who experienced the loss of a grandparent, the majority (52.1%) did not experience a change in life satisfaction. A small percentage (15.7%) had an improvement in life satisfaction whereas (32.2%) had a deterioration in life satisfaction.

Table 9.2 - Change in Life Satisfaction by Loss of a Grandparent

Loss of a grandparent	Life satisfaction change			Total
	Deteriorates	Stays constant	Improves	
No	449 (31%)	730 (51.9%)	228 (16.2%)	1407 (100%)
Yes	504 (32.2%)	816 (52.1%)	245 (15.7%)	1565 (100%)
Total	953 (32.1%)	1546 (52%)	473 (15.9%)	2972 (100%)

Table 9.3 shows the changes in life satisfaction for those who experienced the loss of a parent or sibling and those who did not. For those who experienced the loss of a parent or a sibling, 43.3% did not experience a change in life satisfaction, 22.2% experienced an improvement in life satisfaction and 34.4% experienced a deterioration in life satisfaction. These numbers should be treated with caution due to low base sizes.

Table 9.3 - Change in Life Satisfaction by Loss of a Parent or Sibling

Loss of a parent or sibling	Life satisfaction change			Total
	Deteriorates	Stays constant	Improves	
No	922 (32%)	1507 (52.3%)	453 (15.7%)	2882 (100%)
Yes	31 (34.4%)	39 (43.3%)	20 (22.2%)	90 (100%)
Total	953 (32.1%)	1546 (52%)	473 (15.9%)	2972 (100%)

Table 9.4 shows the changes in life satisfaction for those who experienced a family accident or illness and those who did not. 48.3% of those who did experience a family accident or illness experienced no change in life satisfaction, 16.4% experienced an improvement and 35.3% experienced a deterioration in life satisfaction.

Table 9.4 - Change in Life Satisfaction by Accident or Illness Within the Family

Accident or illness within the family	Life satisfaction change			Total
	Deteriorates	Stays constant	Improves	
No	742 (31.3%)	1257 (59.2%)	375 (15.8%)	2374 (100%)
Yes	211 (35.3%)	289 (48.3%)	98 (16.4%)	598 (100%)
Total	953 (32.1%)	1546 (52%)	473 (15.9%)	2972 (100%)

The tables shown below display the model output results, using changes in life satisfaction as the outcome. The reference category for the outcome was set to 'life satisfaction stays constant' to allow a deterioration and an improvement in the outcome to be compared to no change as the baseline.

The results shown in Table 10.1 indicate that becoming a lone parent family at some point across the four sweeps was statistically significantly associated with a deterioration in life satisfaction in comparison with life satisfaction remaining constant. Life satisfaction was also more likely to improve than to stay constant when experiencing parental separation however this result was not statistically significant. Compared with boys, girls were more likely to experience a deterioration in life satisfaction and less likely to experience an improvement in life satisfaction following parental separation.

Table 10.1 – MLR model – Parental Separation

Number of Observations = 2792

Life Satisfaction Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Becomes lone parent family	.318*	.139	.046	.590
Household income £29k+	-.099	.093	-.281	.084
Household education - degree - higher - standard grade	.582* .647* .607*	.151 .151 .162	.287 .352 .289	.878 .943 .925
2+ adults in household	.116	.083	-.047	.278
Girl	.414*	.083	.251	.576
Remains constant	(base outcome)			
Improves				
Becomes lone parent family	.071	.185	-.293	.434
Household income £29k+	-.054	.119	-.288	.180
Household education - degree - higher - standard grade	.465* .323 .439*	.180 .183 .196	.112 -.037 .055	.819 .634 .823
2+ adults in household	.129	.106	-.080	.337
Girl	-.318*	.108	-.530	-.106

* indicates statistical significance (<0.05)

Table 10.2 shows the impact of both the loss of a grandparent and of a parent or sibling on the likelihood of experiencing changes in life satisfaction. Negative values can be seen for both deteriorating and improving life satisfaction for those who experienced the loss of a grandparent, indicating that those who experienced this life event were more likely to experience no change. For the loss of a parent or sibling, the model shows a statistically significant positive value for health improving indicating that life satisfaction was more likely to improve than to stay constant. However, the small sample size should be noted here. Experiencing the loss of a parent or sibling was also associated with health deteriorating compared with staying constant, however this was not statistically significant.

Table 10.2 – MLR model – Bereavement

Number of Observations = 2972

Life Satisfaction Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Loss of a grandparent	-.028	.085	-.195	.140
Loss of a parent or sibling	.241	.254	-.257	.739
Household income £29k+	-.134	.070	-.324	.056
Household education - degree - higher - standard grade	.590* .662* .620*	.160 .159 .172	.277 .349 .283	.903 .976 .957
2+ adults in household	.118	.088	-.054	.291
Girl	.415*	.088	.242	.588
Remains constant	(base outcome)			
Improves				
Loss of a grandparent	-.051	.108	-.263	.160
Loss of a parent or sibling	.572*	.289	.006	1.14
Household income £29k+	-.043	.125	-.288	.203
Household education - degree - higher - standard grade	.473* .333 .443*	.191 .195 .208	.097 -.049 .036	.848 .716 .851
2+ adults in household	.128	.113	-.093	.349
Girl	-.323*	.115	-.584	-.098

* indicates statistical significance (<0.05)

Table 10.3 shows the results for the impact of experiencing a family accident or illness on changes in life satisfaction. Positive coefficient values for both deteriorating and improving indicate that those who experienced this life event at some point across the four sweeps were more likely to have either deteriorating or improving life satisfaction as opposed to it remaining the same, however neither result was statistically significant.

Table 10.3 – MLR model - Accident or Illness Within the Family

Number of Observations = 2972

Life Satisfaction Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Family accident or illness	.176	.110	-.040	.392
Household income £29k+	-.133	.101	-.332	.065
Household education - degree - higher - standard grade	.581* .653* .614*	.167 .167 .180	.253 .325 .261	.910 .981 .967
2+ adults in household	.113	.092	-.067	.294
Girl	.414*	.092	.234	.595
Remains constant	(base outcome)			
Improves				
Family accident or illness	.118	.141	-.157	.394
Household income £29k+	-.057	.131	-.106	.357
Household education - degree - higher - standard grade	.463* .321 .438*	.200 .204 .218	.070 -.079 .012	.856 .722 .865
2+ adults in household	.125	.118	-.106	.357
Girl	-.319*	.120	-.555	-.083

* indicates statistical significance (<0.05)

Across all the models measuring changes in subjective wellbeing, the results indicated that, compared with boys, girls were more likely to experience a deterioration in life satisfaction and less likely to experience an improvement in comparison to life satisfaction remaining constant. This result was consistent across the subjective wellbeing models and was statistically significant.

Changes in BMI

Table 11.1 shows the changes in BMI variable by changes in family type across the four sweeps. Of those who experienced parental separation, 51 participants (17.4%) experienced becoming overweight or obese whereas only 8 participants (2.7%) experienced a becoming underweight. These findings should be treated with caution due to small base sizes.

Table 11.1 – Change in BMI by Change in Family Type

Family type change	BMI change			Total
	Becomes underweight	Stays constant	Becomes overweight/obese	
Becomes lone parent	8 (2.7%)	234 (79.9%)	51 (17.4%)	293 (100%)
No change in family type	73 (2.7%)	2211 (82%)	412 (15.3%)	2696 (100%)
Becomes couple	2 (1.3%)	134 (84.3%)	23 (14.5%)	159 (100%)
Total	83 (2.6%)	2579 (81.9%)	486 (15.4%)	3148 (100%)

Table 11.2 shows the changes in BMI for those who experienced the loss of a grandparent and those who did not. For those who did experience the loss of a grandparent, the majority (83%) did not experience a change in BMI, 14.1% became overweight or obese and 2.9% became underweight.

Table 11.2 – Change in BMI by Loss of a Grandparent

Loss of a grandparent	BMI change			Total
	Becomes underweight	Stays constant	Becomes overweight/obese	
No	33 (2%)	1391 (83.2%)	248 (14.8%)	1672 (100%)
Yes	50 (2.9%)	1417 (83%)	241 (14.1%)	1708 (100%)
Total	83 (2.5%)	2808 (83.1%)	489 (14.5%)	3380 (100%)

Table 11.3 shows the changes in BMI for those who experienced the loss of a parent or sibling and those who did not. The majority of those who experienced the loss of a parent or a sibling (82%) did not experience a change in BMI, 16% became overweight or obese and only 2% of the participants who lost a parent or sibling became underweight.

Table 11.3 - Change in BMI by Loss of a Parent or Sibling

Loss of a parent or sibling	BMI change			Total
	Becomes underweight	Stays constant	Becomes overweight/obese	
No	81 (2.5%)	2726 (83.1%)	473 (14.4%)	3280 (100%)
Yes	2 (2%)	82 (82%)	16 (16%)	100 (100%)
Total	83 (2.5%)	2808 (83.1%)	489 (14.5%)	3380 (100%)

Table 11.4 shows the changes in BMI for those who experienced a family accident or illness and those who did not. Most (82.1%) of those who experienced a family accident or illness experienced no change in BMI, 16.3% became overweight or obese while only 10 participants (1.6%) who experienced this life event became underweight.

Table 11.4 – Change in BMI by Accident or Illness Within the Family

Accident or illness within the family	BMI change			Total
	Becomes underweight	Stays constant	Becomes overweight/obese	
No	73 (2.7%)	2289 (83.3%)	386 (14%)	2748 (100%)
Yes	10 (1.6%)	519 (82.1%)	103 (16.3%)	632 (100%)
Total	83 (2.5%)	2808 (83.1%)	489 (14.5%)	3380 (100%)

The results in table 12.1 show positive coefficient values for becoming a lone parent family for becoming both underweight and overweight. This indicates that BMI was more likely to change in either direction, to become either overweight/obese or underweight, than it was to remain constant following parental separation. Neither result was statistically significant therefore no conclusions can be drawn from this regarding the influence of parental separation on changes in BMI.

Table 12.1 – MLR model – Change in Family Type

Number of Observations = 3148

BMI Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Becomes Underweight				
Becomes lone parent family	.113	.366	-.604	.830
Household income £29k+	.191	.262	-.324	.705
Household education - degree - higher - standard grade	.012 -.132 -.099	.365 .382 .417	-.704 -.881 -.917	.728 .617 .719
2+ adults in household	.169	.230	-.281	.620
Girl	-.118	.228	-.565	.330
Remains constant	(base outcome)			
Becomes Overweight				
Becomes lone parent family	.121	.158	-.189	.431
Household income £29k+	-.019	.113	-.242	.203
Household education - degree - higher - standard grade	-.019 -.210 .067	.162 .163 .181	-.300 -.109 -.287	.337 .592 .421
2+ adults in household	.198*	.103	-.003	.400
Girl	-.082	.101	-.280	.116

* indicates statistical significance (<0.05)

Table 12.2 shows the model results for changes in BMI for those who experienced bereavement. No statistically significant results were observed for changes in BMI for those who experienced the loss of any family member. The model results show that those who experienced the loss of a grandparent were more likely to become underweight and less likely to become overweight compared with experiencing no change in their BMI. Those who experienced the loss of a parent or sibling were less likely to become underweight and more likely to become overweight compared with their BMI staying the same, however these results were not significant.

Table 12.2 – MLR model – Bereavement

Number of observations = 3380

BMI Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
<u>Becomes Underweight</u>				
Loss of a grandparent	.335	.248	-.132	.842
Loss of a parent or sibling	-.158	.787	-1.70	1.14
Household income £29k+	.174	.297	-.409	.757
Household education - degree - higher - standard grade	.297 .133 .168	.426 .445 .486	-.539 -.740 -.785	1.13 1.01 1.12
2+ adults in household	.158	.267	-.366	.681
Girl	-.105	.265	-.625	.415
<u>Remains constant</u>	(base outcome)			
<u>Becomes Overweight</u>				
Loss of a grandparent	-.105	.107	-.316	.105
Loss of a parent or sibling	.120	.303	-.475	.714
Household income £29k+	-.030	.128	-.281	.222
Household education - degree - higher - standard grade	.339 .524* .411*	.188 .188 .208	-.029 .155 .004	.707 .893 .818
2+ adults in household	.231*	.199	-.002	.463
Girl	-.070	.177	-.300	.159

* indicates statistical significance (<0.05)

The model results shown in table 12.3 indicate that those who experienced a family accident or illness at some point across the four sweeps were less likely to become underweight and more likely to become overweight than for their BMI to remain constant. However, the results observed were not statistically significant, therefore no conclusions can be drawn from these results regarding the influence of experiencing a family accident or illness on changes in BMI.

Table 12.3 – MLR model – Accident or Illness Within the Family

Number of Observations = 3380

BMI Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Becomes Underweight				
Family accident or illness	-.540	.350	-1.23	.146
Household income £29k+	.157	.282	-.395	.710
Household education - degree - higher - standard grade	.383 .219 .261	.409 .422 .458	-.409 -.609 -.637	1.18 1.05 1.16
2+ adults in household	.173	.253	-.324	.699
Girl	-.083	.251	-.575	.409
Remains constant	(base outcome)			
Becomes Overweight				
Family accident or illness	.108	.125	-.138	.353
Household income £29k+	-.029	.121	.007	.447
Household education - degree - higher - standard grade	.315 .500* .385*	.178 .178 .196	-.033 .152 .001	.663 .848 .796
2+ adults in household	.227*	.122	.007	.447
Girl	-.073	.111	-.138	.353

* indicates statistical significance (<0.05)

Changes in physical health

Table 13.1 shows the changes in physical health by changes in family type across the four sweeps. The majority of participants did not experience either a change in family type or a change in physical health over time. Of those who experienced parental separation, 10% experienced an improvement in life satisfaction whereas 22.6% experienced a deterioration.

Table 13.1 – Change in Physical Health by Change in Family Type

Family type change	Physical health change			Total
	Physical health deteriorates	Stays constant	Physical health improves	
Becomes lone parent	72 (22.6%)	215 (67.4%)	32 (10%)	319 (100%)
No change in family type	610 (19.9%)	2161 (70.6%)	292 (9.5%)	3063 (100%)
Becomes couple	40 (22.9%)	120 (68.6%)	15 (8.6%)	175 (100%)
Total	722 (20.3%)	2496 (70.2%)	339 (9.5%)	3557 (100%)

Table 13.2 shows the changes in physical health for those who experienced the loss of a grandparent and those who did not. For those who experienced the loss of a grandparent, the majority (70.5%) did not experience a change in physical health. A small percentage (9.8%) had an improvement in physical health whereas (19.7%) had a deterioration.

Table 13.2 – Change in Physical Health by Loss of a Grandparent

Loss of a grandparent	Physical health change			Total
	Physical health deteriorates	Stays constant	Physical health improves	
No	400 (18.8%)	1560 (73.2%)	172 (8.1%)	2132 (100%)
Yes	381 (19.7%)	1363 (70.5%)	190 (9.8%)	1937 (100%)
Total	781 (19.2%)	2923 (71.9%)	362 (8.9%)	4066 (100%)

Table 13.3 shows the changes in physical health for those who experienced the loss of a parent or sibling and those who did not. For those who experienced this life event, the majority (70.5%) did not experience a change in physical health. A small percentage (9.3%) had an improvement in physical health whereas (19.2%) had a deterioration.

Table 13.3 – Change in Physical Health by Loss of a Parent or Sibling

Loss of a parent or sibling	Physical health change			Total
	Physical health deteriorates	Stays constant	Physical health improves	
No	755 (19.2%)	2832 (71.9%)	350 (8.9%)	3937 (100%)
Yes	26 (20.2%)	91 (70.5%)	12 (9.3%)	129 (100%)
Total	781 (19.2%)	2923 (71.9%)	362 (8.9%)	4066 (100%)

Table 13.4 shows the changes in physical health for those who experienced a family accident or illness and those who did not. 62.7% of those who did experience a family accident or illness experienced no change in physical health, 13.7% experienced an improvement and 23.6% experienced a deterioration in physical health.

Table 13.4 – Change in Physical Health by Accident or Illness Within the Family

Accident or illness within the family	Physical health change			Total
	Physical health deteriorates	Stays constant	Physical health improves	
No	612 (18.3%)	2474 (73.9%)	264 (7.9%)	3350 (100%)
Yes	169 (23.6%)	449 (62.7%)	98 (13.7%)	716 (100%)
Total	781 (19.2%)	2923 (71.9%)	362 (8.9%)	4066 (100%)

Table 14.1 shows the model results for changes in physical health for those who experienced parental separation. Physical health was more likely to deteriorate or to improve than to stay constant over time for those who experienced parental separation, however these findings were not statistically significant.

Table 14.1 – MLR model – Change in Family Type

Number of Observations = 3557

Physical Health Condition Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Becomes lone parent family	.062	.161	-.253	.378
Household income £29k+	-.257*	.120	-.244	.165
Household education - degree - higher - standard grade	.488* .565 .708*	.162 .161 .172	.170 .249 .370	.806 .881 1.05
2+ adults in household	-.029	.099	-.244	.165
Girl	.183*	.098	-.009	.376
Remains constant	(base outcome)			
Improves				
Becomes lone parent family	.015	.222	-.421	.451
Household income £29k+	-.288	.156	-.594	.018
Household education - degree - higher - standard grade	.123 -.189 .081	.206 .217 .227	-.281 -.631 -.367	.528 .263 .529
2+ adults in household	.338*	.141	.062	.614
Girl	-.291*	.141	-.594	.018

* indicates statistical significance (<0.05)

The results displayed in table 14.2 indicate that experiencing the loss of a grandparent as well as of a parent or sibling were negatively associated with physical health deteriorating as opposed to remaining constant across the four sweeps. Experiencing the loss of a grandparent as well as of a parent or sibling were positively associated with physical health improving as opposed to remaining constant. These results were not statistically significant and were based on a small number of observations, reducing their reliability and generalisability.

Table 14.2 – MLR model – Bereavement

Number of Observations = 4066

Physical Health Condition Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Loss of a grandparent	-.009	.084	-.174	.156
Loss of a parent or sibling	-.007	.234	-.466	.452
Household income £29k+	-.263*	.101	-.461	-.064
Household education - degree - higher - standard grade	.609* .689* .833*	.142 .141 .151	.330 .413 .536	.887 .965 1.13
2+ adults in household	-.002	.092	-.182	.179
Girl	.187*	.092	.007	.368
Remains constant	(base outcome)			
Improves				
Loss of a grandparent	.210	.116	-.018	.438
Loss of a parent or sibling	.029	.321	-.601	.659
Household income £29k+	.285*	.145	-.596	.000
Household education - degree - higher - standard grade	.351 .027 .279	.189 .199 .211	-.021 -.363 -.134	.722 .417 .692
2+ adults in household	.358*	.133	.098	.618
Girl	-.272*	.133	-.532	-.011

* indicates statistical significance (<0.05)

Table 14.3 shows the model results for the likelihood of experiencing a change in physical health for those who experienced a family accident or illness. Statistically significant positive coefficient values indicate that those who experienced an accident or illness within the family were more likely to have a change, either an improvement or a deterioration, in physical health compared with their physical health staying the same over time.

Table 14.3 – MLR model – Accident or Illness Within the Family

Number of Observations = 4066

Physical Health Condition Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
<u>Deteriorates</u>				
Family accident or illness	.337*	.116	.110	.564
Household income £29k+	-.250	.113	-.471	-.030
Household education - degree - higher - standard grade	.581* .662* .806*	.157 .156 .168	.272 .355 .477	.890 .968 1.14
2+ adults in household	-.013	.106	-.214	.188
Girl	.181	.102	-.020	.381
<u>Remains constant</u>	(base outcome)			
<u>Improves</u>				
Family accident or illness	.681*	.148	.391	.971
Household income £29k+	-.248	.161	-.564	.069
Household education - degree - higher - standard grade	.322 .000 .261	.210 .222 .234	-.090 -.435 -.198	.735 .434 .719
2+ adults in household	.335*	.148	.045	.625
Girl	-.281*	.148	-.570	.009

* indicates statistical significance (<0.05)

Overall, having two or more adults present in the household was consistently positively associated with physical health improving compared to remaining constant. Additionally, health was more likely to deteriorate rather than stay the same for girls compared with boys and less likely to improve over time. These results were statistically significant across the models.

Changes in mental health

Table 15.1 shows the changes observed in mental health by changes in family type across the four sweeps. The majority of participants (80.8%) did not experience either a change in family type or a change in SDQ score. Of those who experienced parental separation, 16.8% experienced an increase in SDQ score whereas 14.1% experienced a decrease.

Table 15.1 – Change in Mental Health by Change in Family Type

| Family type change | SDQ score change | | | Total |
	SDQ score decreases	Stays constant	SDQ score increases	
Becomes lone parent	43 (14.1%)	210 (69.1%)	51 (16.8%)	304 (100%)
No change in family type	257 (9.1%)	2290 (80.8%)	287 (10.1%)	2834 (100%)
Becomes couple	17 (10.4%)	123 (75.5%)	23 (14.1%)	163 (100%)
Total	317 (9.6%)	2623 (79.5%)	361 (10.9%)	3301 (100%)

Table 15.2 shows the changes in mental health for those who experienced the loss of a grandparent and those who did not. For those who experienced the loss of a grandparent, the majority (78.9%) did not experience a change in SDQ score. Of those who were bereaved of a grandparent, 11.1% experienced an increase and 10% experienced a decrease in SDQ score.

Table 15.2 – Change in Mental Health by Loss of a Grandparent

Loss of a grandparent	SDQ score change			Total
	SDQ score decreases	Stays constant	SDQ score increases	
No	148 (9.2%)	1282 (80%)	173 (10.8%)	1603 (100%)
Yes	171 (10%)	1345 (78.9%)	189 (11.1%)	1705 (100%)
Total	319 (9.6%)	2627 (79.4%)	362 (10.9%)	3308 (100%)

Table 15.3 shows the changes observed in mental health for those who experienced the loss of a parent or sibling at some point across the four sweeps. For those who experienced this life event, the majority (67.6%) did not experience a change in SDQ score. Of those who did lose a parent or sibling, 13.3% experienced an increase and 19% of participants experienced a decrease in SDQ score.

Table 15.3 – Change in Mental Health by Loss of a Parent or Sibling

Loss of a parent or sibling	SDQ score change			Total
	SDQ score decreases	Stays constant	SDQ score increases	
No	229 (9.3%)	2556 (79.8%)	348 (10.9%)	3203 (100%)
Yes	20 (19%)	71 (67.6%)	14 (13.3%)	105 (100%)
Total	319 (9.6%)	2627 (79.4%)	362 (10.9%)	3308 (100%)

Table 15.4 shows the changes observed in mental health separately for those who experienced an accident or illness within the family at some point across the four sweeps and those who did not. Of those who did experience this life event, most did not experience a change in SDQ score (73.3%), whereas 13.8% experienced an increase and 13% of participants experienced a decrease in SDQ score.

Table 15.4 – Change in Mental Health by Accident or Illness Within the Family

Accident or illness within the family	SDQ score change			Total
	SDQ score decreases	Stays constant	SDQ score increases	
No	235 (8.8%)	2153 (80.9%)	273 (10.3%)	2661 (100%)
Yes	84 (13%)	474 (73.3%)	89 (13.8%)	647 (100%)
Total	319 (9.6%)	2627 (79.4%)	362 (10.9%)	3308 (100%)

Table 16.1 shows the model results for changes in mental health for those who experienced parental separation. The results indicate that those who experienced parental separation were more likely to experience a deterioration in mental health compared with no change over time. However, those who experienced parental separation were also more likely to experience an improvement in mental health compared with experiencing no change in mental health. Both results were statistically significant, indicating that those experiencing this life event were more likely to experience a change in either direction.

Table 16.1 – MLR model – Change in Family Type

Number of Observations = 3308

SDQ Score Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Becomes lone parent	.333*	.199	-.058	.725
Household income £29k+	-.536*	.159	-.848	-.233
Household education - degree - higher - standard grade	-.128 .182 .606*	.222 .217 .219	-.242 -.563 .176	.607 .307 1.04
2+ adults in household	.035	.141	-.241	.311
Girl	.270*	.140	-.066	.541
Remains constant	(base outcome)			
Improves				
Becomes lone parent	.454*	.187	.087	.821
Household income £29k+	-.421*	.145	-.705	-.137
Household education - degree - higher - standard grade	.540* .830* 1.05*	.219 .216 .225	.110 .406 .604	.969 1.25 1.49
2+ adults in household	.052	.131	-.205	.308
Girl	-.262*	.132	-.521	-.004

* indicates statistical significance (<0.05)

Table 16.2 shows the model results for changes in mental health for those who experienced bereavement at some point across the four sweeps. The results indicate that those who experienced the loss of a grandparent or of a parent or sibling were more likely to experience either a deterioration or an improvement in mental health compared with mental health remaining the same across the four waves. However, the only statistically significant result was for those who lost a parent or sibling being more likely to experience a deterioration in mental health.

Table 16.2 – MLR model – Bereavement

Number of Observations = 3308

SDQ Score Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Loss of a grandparent	.086	.127	-.163	.335
Loss of a parent or sibling	.682*	.279	.135	1.23
Household income £29k+	-.559*	.153	-.859	-.260
Household education - degree - higher - standard grade	-.118 .202 .609*	.216 .211 .214	-.541 -.211 .190	.306 .615 1.03
2+ adults in household	.034	.137	-.234	.303
Girl	.260*	.137	-.009	.529
Remains constant	(base outcome)			
Improves				
Loss of a grandparent	.007	.120	-.227	.242
Loss of a parent or sibling	.280	.317	-.342	.902
Household income £29k+	-.478*	.138	-.749	-.207
Household education - degree - higher - standard grade	.558* .859* 1.07*	.213 .210 .219	.140 .447 .639	.976 1.27 1.49
2+ adults in household	.058	.128	-.192	.308
Girl	-.258*	.128	-.509	-.006

* indicates statistical significance (<0.05)

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Table 16.3 shows the model results for changes in mental health for those who experienced an accident or illness within the family at some point across the four sweeps. The results indicate that those who experienced this life event were statistically significantly more likely to experience either a deterioration or an improvement in mental health compared with mental health remaining the same across the four waves.

Table 16.3 – MLR model – Accident or Illness Within the Family

Number of Observations = 3308

SDQ Score Change	Coefficient Value	Standard Error	Confidence Interval (95%)	
Deteriorates				
Family accident or illness	.448*	.156	.143	.754
Household income £29k+	-.565*	.163	-.884	-.246
Household education - degree - higher - standard grade	-.140 .180 .604*	.231 .225 .228	-.593 -.262 .157	.312 .621 1.05
2+ adults in household	.023	.147	-.264	.311
Girl	.270*	.146	.143	.754
Remains constant	(base outcome)			
Improves				
Family accident or illness	.348*	.150	.053	.642
Household income £29k+	-.472*	.147	-.761	-.183
Household education - degree - higher - standard grade	.540* .841* 1.06*	.231 .224 .234	.093 .401 .598	.986 1.28 1.51
2+ adults in household	.045	.137	-.222	.313
Girl	-.259*	.137	-.527	.010

* indicates statistical significance (<0.05)

Across the models, those who had a household income of £29,000 per year and above were more likely to experience no change in their mental health as can be seen from the negative values for both mental health improving and deteriorating. Additionally, girls were more likely than boys to experience a deterioration in mental health and less likely to experience an improvement.

Discussion

Across three of the four health and wellbeing outcomes explored in the analysis, girls were found to be more likely to experience a deterioration in the outcome as opposed to remaining constant. The finding that girls are more likely to have negative wellbeing outcomes compared with boys is consistent with the existing literature (Caspi and Elder 1988, Schmeige et al. 2006) which indicates that girls are more susceptible to adverse effects following significant life events. Girls were more likely to experience deteriorating life satisfaction, mental health and physical health with the only outcome in which this was not the case being changes in BMI, where girls were more likely to experience their BMI staying the same over time.

Life events in general were found to be the most influential for mental health compared with the other health and wellbeing outcomes examined. In terms of the three life events examined in the analysis, parental separation was found to be the most influential on children's outcomes. For subjective wellbeing, mental health and physical health, the most influential effect was observed for parental separation which was both consistent across the models and statistically significant. This finding is consistent with previous literature which has observed greater emotional problems in children who experienced parental separation compared with those who experienced other significant life events such as bereavement (Behere et al. 2017).

Conclusion

This project sought to explore the impact of experiencing life events between the ages of 7 and 15 on changes in subjective wellbeing to establish whether parental separation, bereavement or family accidents and illnesses cause any observable change in wellbeing over time. The findings indicated that, between the ages of 7 and 15, experiencing parental separation did have an observable negative impact on changes in subjective wellbeing.

The findings indicated that experiencing the death of a family member between the ages of 7 and 15 did not have an observable impact on changes in the subjective wellbeing of children. A statistically significant positive effect was observed for parental and sibling bereavement, however this result could be attributed to low

participant numbers in the sample who experienced this life event. While previous literature exists which supports the notion that bereaved youth can experience positive effects such as resilience and personal growth (Sandler at al. 2008, Koehler 2010, Christ 2010), further analysis, with larger samples, is needed to confirm this.

Finally, experiencing an accident or illness within the family between the ages of 7 and 15 was not found to have an observable impact on changes in children's subjective wellbeing.

The findings from this analysis therefore conclude the following key points:

- Those who experienced parental separation were more likely to have a deterioration in life satisfaction, which was the same for subjective wellbeing, physical health and mental health.

- Those who experienced a family accident or illness were more likely to have a positive or negative change in life satisfaction , which was the same for subjective wellbeing, physical health and mental health.

- Life events in general were found to be the most influential for mental health compared with the other health and wellbeing outcomes.

- Across three of the four health and wellbeing outcomes, girls were more likely to experience a deterioration in the outcome compared with boys.

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