



**The impact of inequalities in the early
years on outcomes over the life course:
Using international evidence to
identify creative policy solutions**

Contents

03	Introduction Professor Susan McVie, Director of the Understanding Inequalities project, The University of Edinburgh
05	Overview from the Chair Professor Carol Tannahill, Chief Social Policy Advisor to the Scottish Government and Director of The Glasgow Centre for Population Health
06	Inequality and adversity in early childhood The transition to primary school: How family background and childcare experiences influence children's skills on school entry Professor Emer Smyth, Economic and Social Research Institute, Dublin, and Dr Adriana Duta, Moray House School of Education, Edinburgh
07	Mind the gap – unequal from the start: addressing inequalities utilising evidence from Growing Up in New Zealand Professor Susan Morton, University of Auckland, New Zealand
08	Poverty, problem behaviour and policy: conduct disorder among ten-year olds in Scotland Dr Kath Murray, The University of Edinburgh
10	Policy response Dr Louise Scott, Head of Children and Families Analysis, Scottish Government
11	The effect of childhood inequality and adversity in adolescence Poverty and family income in early childhood and later cognitive achievements in Israel Professor Yossi Shavit, Tel Aviv University
12	Adverse childhood experiences and adolescent development in a high-risk sample Dr Abigail Fagan, University of Florida
13	Policy response Dr Lauren Supplee, Deputy Chief Operating Officer, Child Trends, USA
14	Long term impacts of early inequality and adversity into adulthood Inequalities in achieving a university degree: Using a sibling design to disentangle the importance of individual and family factors Professor Cristina Iannelli and Dr Adriana Duta, Moray House School of Education, The University of Edinburgh, and Professor Richard Breen, Nuffield College, University of Oxford
16	Adult life success and the impact of poverty Dr Tara Renae McGee, Griffith University, Australia
17	How do early inequalities and adverse experiences impact on offending and criminal convictions over the life-course? Professor Lesley McAra and Professor Susan McVie, The University of Edinburgh
18	Policy response Dr Leon Feinstein, Director of Evidence, Children's Commissioner for England
19	Key themes raised during the symposium Dr Adriana Duta, Dr Babak Jahanshahi and Dr Ben Matthews, Understanding Inequalities Research Fellows, The University of Edinburgh
22	Key learning for policy Professor Adam Gamoran, William T Grant Foundation, USA



Professor Susan McVie, OBE FRSE

Director of the Understanding Inequalities project, The University of Edinburgh

Introduction

Inequality in early life is one of the most significant risk factors throughout childhood and into adulthood across a range of domains, including poverty, poor health, low educational attainment, unemployment, reduced wellbeing, criminal behaviour and early death. A growing body of evidence from across a range of international jurisdictions supports the proposition that policy efforts to eradicate exposure to inequality during the earliest stages of life could have a dramatic effect on reducing negative outcomes across the life-course and improving longevity, wellbeing and life success.

These stark facts were the inspiration for a symposium on 'The impact of inequalities in the early years on outcomes over the life course: Using international evidence to identify creative policy solutions'. The event was supported financially by the Economic and Social Research Council's international networking fund and hosted by the Scottish Parliament in Edinburgh on the 11th of February 2019. This report presents an overview of the symposium.

The main aim of the symposium was to share international evidence on the impact of inequalities in the early years on outcomes at different stages of the life course and to enable a full and frank discussion of the implications of this for policy decision making and developing effective modes of practice. We assembled an international group of world leading academics, all actively researching the impact of disadvantage and inequality in the early years, and brought them together with a group of policy makers from different portfolio

areas and jurisdictions but with a shared interest in developing creative and effective solutions. The participants represented Scotland, England, Ireland, the US, Australia, New Zealand and Israel – a diverse mix of jurisdictions with very different political, social and policy contexts, and yet very similar issues in terms of deep rooted social problems stemming from childhood poverty and inequality.

During the course of the event, we heard detailed findings from a variety of research projects – many of them cohort studies – about the problems of low and inconsistent income, household mobility and churn, and economic instability that limit the capacity of parents to support and protect their children and lead to a variety of negative outcomes during childhood, adolescence and adulthood. Importantly, however, this symposium also focused on a range of inequalities that were not economic in nature, but related to a range of other forms of capital.

We learned about the distinct importance of the early years – especially the first 1000 days – as a key stage in the life-course for planning prevention and intervention, and the potential impact on other key stages in the life-course that act as key tipping points for longer term adversity. We learned about the dangers of focusing on one single risk metric, such as the number of individual ACEs, without considering the broader context and multi-faceted nature of both individual and family adversity and its impact across the life-course. And we learned about the positive effects of resilience which highlighted the need to learn more about the people who are born into adversity but thrive in spite of it.

A key priority for our symposium was to share experiences and learning from different policy arenas and identify opportunities for improving strategic and operational decision making that could have significance internationally. Having a range of different organisations represented, and hearing about the challenges of taking research evidence and putting it into practice, highlighted the sobering realities of trying to tackle stubborn and engrained problems. It raised key questions from policy respondents around how researchers could contribute more to the development of effective interventions and prevention work.

In particular, policy makers highlighted the need for research to start doing more to tackle inequality rather than just understand it, to address the problem of inequality across its multiple facets rather than from a one-dimensional viewpoint, and to start considering the relative value of differential policy responses to inequality that weigh up the financial cost with the potential outcomes.

This report summarises some of the most up to date international literature on early inequalities in childhood and identifies key priorities for policy makers and practitioners working in this field. It is clear that there are still many gaps in our knowledge about what can be done to create feasible and politically appealing strategies to reduce inequality gaps in childhood. There are significant challenges to achieving change through developing effective interventions, especially where the aim is to impact on different stages of the life-course. Nevertheless, the growing body of research evidence on early childhood shows that this is the place to start if we are to have a sustained and significant influence on reducing inequality. The report demonstrates the value of research projects such as Understanding Inequalities and others like it in contributing to these aims.





Overview from the Chair

Professor Carol Tannahill, OBE

Chief Social Policy Advisor to the Scottish Government and Director of The Glasgow Centre for Population Health

The work of the Understanding Inequalities programme is both important and timely and it was a pleasure to be asked to chair this international symposium.

In particular, it was refreshing to see the commitment from such a diverse group of participants to working hard at reducing the gap between research and policy. It was a very worthwhile endeavour to organise this event, both in terms of the breadth and depth of the research presented and the range of expertise and insights from around the table.

Inequality is high on the agenda in Scotland, given the persistence of inequalities in outcomes across a range of policy areas. This is why it is essential that we have access to up-to-date evidence and experience from other countries in order to inform our policy and delivery approaches. While the challenge of reducing inequalities is not a new one, given changing contexts and changing population compositions, it is invaluable to have new evidence and evaluations of contemporary approaches.

The evidence discussed at the symposium comes into a supportive policy context. Scotland has shown a clear commitment to tackling poverty, most particularly with the commitments and targets within the Child Poverty (Scotland) Act 2017. This legislation presents an ambitious set of challenges that will require effective, evidence-informed action across a range of Ministerial portfolios and delivery organisations.

The Scottish Government is also committed to the National Performance Framework, which sets out the outcomes that we are seeking to achieve in Scotland, and the values that are central to our approach. The overall purpose is to create a more successful country with opportunities for all of Scotland to flourish through increased wellbeing. Key to this is a focus on all groups and people in Scotland, not simply aggregate improvements for the country as a whole. But children and young people feature prominently within that Framework, with specific ambitions to ensure that they

grow up loved, safe and respected so that they can realise their full potential.

What has become very clear is that cross-portfolio, cross-sectoral, and cross-disciplinary working will all be required to impact on poverty and inequality. There are a set of technical challenges (for example in relation to research methods) and also a set of cultural and behavioural challenges (for example in relation to implementation practice). There is also a need to re-set the balance between research that helps us to understand inequality and research that helps to reduce inequality, including through evaluations, place-based change and attention to the life-course.

This symposium enabled us to share learning about the life-course effects associated with early adversity and gave us the opportunity to explore the extent to which experience in particular countries is generalisable to others. This report, which summarises the presentations and discussions on the day, contains a wealth of information that will be of interest and significance to a wide range of scholars, policy makers and practitioners with an interest in reducing early inequality and adversity.



Inequality is high on the agenda in Scotland, given the persistence of inequalities in outcomes across a range of policy areas. This is why it is essential that we have access to up-to-date evidence and experience from other countries in order to inform our policy and delivery approaches.

Inequality and adversity in early childhood

The transition to primary school: How family background and childcare experiences influence children's skills on school entry



Professor Emer Smyth
Economic and Social
Research Institute, Dublin



Dr Adriana Duta
Moray House School of
Education, Edinburgh

There has been extensive research on the transition to secondary school but relatively little evidence on integration into primary education, especially from a comparative perspective.

We sought to address this gap using data from Growing Up in Ireland (GUI) and the Millennium Cohort Study (MCS) for Scotland to explore the factors influencing inequalities in children's skills on entry to primary school. Whereas previous research has generally focused on mother's education or social class, instead, we take a multidimensional approach looking at social class, mother's education and household income.

Our research looked at the extent to which cognitive skills (such as linking sounds and letters, and number skills) and non-cognitive skills (such as attitudes and dispositions) among five year olds in the two countries reflect their family circumstances in terms of household income, social class and maternal education. We examined whether social inequalities could be explained by differences in the home learning environment and experience of non-parental care and whether the scale of social inequalities is different in the two countries, reflecting the policy context or broader societal factors.

Our findings showed significant differentiation by household income, in both Scotland and Ireland, for all outcomes at age 5, particularly between top and bottom categories (i.e. families with incomes in the highest quintile versus those within incomes in the lowest quintile). In Ireland, all outcomes differed by mother's education and social class but this was the case for only some outcomes in Scotland.

Overall, our analysis indicated that inequalities in household income make more of a difference to skills

development in early life than has previously been assumed. In particular, it demonstrated that household income level when a child is 9 months old continues to influence their cognitive skills four years later.

In both countries, there was a very high level of participation in preschool provision between the ages of 3 and 5, with almost all children starting primary school having experienced a centre-based setting. However, government funding covers only part-time places and take-up of additional hours of childcare is strongly differentiated by family background.

We found that children from more advantaged families experienced stimulating home learning activities (including being read to) on a more frequent basis than those from more deprived households. This explained some, but by no means all, of the social background differences in later child outcomes. Even taking account of preschool education and the home learning environment, we showed that social inequalities remain an important determinant of the skills that children bring to the early school context. These inequalities may relate to the quality of preschool provision or the home learning environment (e.g. the type or complexity of reading material).

From a policy perspective, the relatively strong effect of income on early child outcomes highlights the importance of supporting measures to address educational inequality with broader policies around taxation and social welfare. This research provides crucial evidence on the way in which different dimensions of social background result in educational inequalities on school entry and offer insights into the way in which policy can ameliorate or reinforce such inequalities.

Mind the gap – unequal from the start: addressing inequalities utilising evidence from Growing Up in New Zealand



Professor Susan Morton
University of Auckland, New Zealand

New Zealand has unacceptably high rates of poor child health and wellbeing compared to other developed countries.

Overall population wellbeing statistics conceal wide inequalities in outcomes for Maori and Pasifika children. These groups experience a disproportionate burden of poor social, educational, health and economic outcomes throughout their life course. Understanding why we see these persistent gaps in wellbeing, and what context-relevant strategies might be implemented to reduce the burden, has been an explicit objective of the contemporary longitudinal cohort study, Growing Up in New Zealand, since its inception in 2008.

Longitudinal information has been collected from an ethnically and socioeconomically diverse cohort of 6,853 New Zealand children and their families from before birth to school entry (0 to 5 years) to date. A key aim of the study is to use the evidence from analyses to inform context-relevant strategies to reduce inequalities from early life. In particular, we focussed on the differences by ethnicity in exposure to persistent poverty over the first 1000 days of life, as well as how these contribute to early gaps in serious childhood illnesses, abnormal child behaviour, obesity and readiness for school.

The findings from the Growing Up in New Zealand study demonstrate that Maori and Pasifika children experience the highest burden of socioeconomic disadvantage in their early years as well as an unequal burden of significant co-morbidities in terms of health and development throughout their life course. By the time they start school (at age 5 years) many are already falling behind their peers in terms of preparedness for formal education and readiness to engage in learning.

The study has shown that inequalities in developmental opportunities and outcomes have their origins in early in life. Risk factors for early vulnerability cluster and there is no one single proxy marker of disadvantage. Additionally, morbidity and poor outcomes cluster. Persistent

adversity is associated with a graded likelihood of poor outcomes (across the population). Further service use is not meeting measured need. Currently, access to early life universal services may be widening inequalities. A proportional-universalism approach to services is required if they are to meet real need and reduce inequalities.

The findings on resilience in the preschool years from the Growing Up in New Zealand study have been used to inform the co-design of a significant community based strategy to tackle inequalities in one of the most deprived communities in New Zealand. Strengths-based approaches such as these are particularly relevant to the New Zealand government's bold new cross-sectoral wellbeing strategy.

Through this research, we have found that to effectively influence and inform policy, research evidence needs to go beyond looking only at risk factors and also take into account an understanding of what shapes resilience among communities, diverse families and for individuals over time. Partnerships between researchers and policymakers create opportunities to facilitate robust scientific research with capacity to provide policy relevant outputs. Working across policy sectors acknowledges that cross-sectoral solutions will be required to address the most entrenched social and wellbeing problems from early life onwards.



Poverty, problem behaviour and policy: conduct disorder among ten-year olds in Scotland

Dr Kath Murray

The University of Edinburgh

This research explored the impact of socio-economic inequality on the risk of conduct disorder (CD) amongst a cohort of children aged 10 years in Scotland, and examined its policy implications.

Children with CD generally have a difficult time following rules and behaving in a socially acceptable way. CD and associated antisocial behaviours are the most common behavioural problems in children and young people, although many will grow out of it. For those with persistent CD, there are potentially serious negative outcomes in later life including involvement in anti-social and offending behaviours, and poor educational outcomes and fewer labour market opportunities.

The condition is not particularly well understood. In part this is likely to reflect the range of factors associated with the condition, which range from low IQ and school achievement at the individual child level, to low income and living in a high crime neighbourhood at the structural level. For analytical purposes, this means it is difficult to establish whether the various factors are causal, or act as proxies for other factors. For instance, it is difficult to disentangle factors such as parental drug and alcohol abuse, or having a younger mother from socio-economic determinants.

Equally, these observations present a challenge to policy-makers insofar as it is difficult to identify the appropriate intervention. For example, predictive individualised approaches may draw in or target the wrong children, given that many children will grow out of CD. Thus, while NHS Education for Scotland advise that, if caught early enough, CDs are 'very treatable, with significant gains benefiting not only individual children, but also improving maternal mental health and representing significant cost savings for the taxpayer', there is also a risk that targeting individual children or families at an early age may result in misidentification, with stigmatising effects.

While CD is recognised as a clinical diagnosis, the breadth and complexity of associated factors suggest that in some respects it might also be understood as a "wicked problem", insofar as it is difficult to define or diagnose, underpinned by multiple causes, symptomatic of other problems, hard to solve and approachable in different ways. As well as highlighting the analytical complexity underpinning CD, conceptualising the problem in this way also points towards the need for a more holistic policy response.

Using data from the Growing Up in Scotland (GUS) longitudinal study, we examined the impact of socio-economic equality on the risk of CD among children in Scotland. Consistent with existing research, early findings from the project identify a range of significant factors associated with CD, across different explanatory levels. Looking at data from sweeps 1 to 8, at the child and family level, these include additional support needs, lower standards of parental discipline and supervision, poor parental mental health and a low maternal age (nineteen years or younger). Other significant factors include a history of two or more Adverse Childhood Experiences (ACEs), and a history of CD. Protective factors include being an only child, and higher levels of participation in structured after-school activities.



The analysis also found that unstable parental employment and growing up in a deprived neighbourhood were significantly and independently associated with a higher risk of problematic behaviour in childhood. From a policy perspective, these findings are particularly important because they suggest that a more holistic response is required, which addresses structural inequalities, as well as family or child level factors. With this point in mind, the research also examines relevant policy and legislative measures to address deprivation and child poverty in England and Wales, and Scotland from 1997 onwards, including the introduction of Sure Start Local Programmes in 1999, and more recently, the passing of the Child Poverty (Scotland) Act 2017, as well as progress on the commitments in the Act to date.

The findings to date support a policy response that recognises the effects of larger structural inequalities, including the stresses associated with inconsistent or insecure employment, as well as more individualised factors. A more holistic approach that provides support across different levels, including greater financial and employment security should not only lead to better outcomes around conduct disorder, but also help to reduce wider societal inequalities in Scotland.



A more holistic approach that provides support across different levels, including greater financial and employment security should not only lead to better outcomes around conduct disorder, but also help to reduce wider societal inequalities in Scotland.



Policy response



Dr Louise Scott

Head of Children and Families Analysis, Scottish Government

The research findings presented in this session highlight some important issues for government – not only in Scotland, but internationally.

As a policy maker working in the field of children and families, I drew three key messages from the presentations which were of particular relevance to the direction of policy in this important area.

First, if we are to make effective policy, it is vital for us to understand the factors and processes that shape different outcomes for children. Policy makers need to be aware of new and emerging evidence from a range of data sources in order to examine the clustering of risk factors in early life, and better understand how and why these go on to impact on people over their life course. The findings from the research presented in this session suggests that there are a number of factors – including, but not restricted to, economic circumstances – that require different policy responses at different stages of development, but that early intervention is a key determinant of success.

Second, the value of longitudinal evidence was very clear from these three presentations. The home environment operates in different ways and at different stages, but it is not easy to understand the dynamic interactions at play. The research points to economic inequality as a determinant of negative outcomes, but it also suggests that the movement in and out of poverty can be equally damaging. To create effective and sustainable policy solutions, we require good quality data that helps us to understand both the static and the dynamic factors at play in determining success and wellbeing across the life-course.

And third, it is critical that policy makers and practitioners work collaboratively because of the diversity of factors at play. For example, conduct difficulties among children potentially have implications for health, children's services, police and youth justice, and education. No one agency, and no one policy domain alone can resolve these intractable and

stubbornly persistent problems. Therefore, multi-agency planning and working are essential if we are to truly tackle childhood inequality.

The presentations discussed in this session spoke to a number of aspects of the current policy context in Scotland that are relevant to addressing inequalities among children and which we hope will be successful in reducing this problem. The Getting it Right for Every Child (GIRFEC) policy framework adopts a holistic, cross-sectoral approach with key principles that are child-focused, have child wellbeing as a shared goal, support early intervention and are implemented through joined up thinking. GIRFEC features a single model of assessment, a single point of contact and a single planning process which result in a plan for each child. Scotland also has targeted provision of early learning and childcare for some two year olds and universal provision for 3 year olds which aims to promote child wellbeing and to support parental outcomes (working or studying). And current policy recognises the importance of supporting family relationships (e.g. through involving parents in preschool activities).

The research presented in this session reinforced Scotland's ambition to ensure that policies dovetail to support children and families now and in the future to reduce the issue of inequality and its long term negative consequences.



...if we are to make effective policy, it is vital for us to understand the factors and processes that shape different outcomes for children.

The effect of childhood inequality and adversity in adolescence

Poverty and family income in early childhood and later cognitive achievements in Israel



Professor Yossi Shavit
Tel Aviv University

There is an increasing interest in understanding the consequences of being born in poverty for children's later cognitive achievements and whether poverty experienced at certain points in life are more influential in shaping children's cognitive outcomes.

It is well known that disparities in scholastic achievement between children belonging to different socioeconomic strata appear in early childhood, even before they enter the formal education system.

Young children, who grow up in poverty, when the brain is particularly malleable, may suffer from strong deprivation in intellectual stimuli that can slow down their cognitive development. Moreover, persistent exposure to poverty has a cumulative effect over time such that achievement gaps between children born into families in more and less advantaged social strata expand from early childhood to early adolescence.

This presentation provided new evidence on the relationship between the experience of early childhood poverty and scholastic achievements in later childhood and adolescence based on Israeli longitudinal data for birth cohorts between 1990 and 1995. The study used

linked records for subjects and their families from the 1995 and 2008 population censuses, and Ministry of Education files that include standardized test scores for grades five and eight, and grades in the secondary school matriculation examinations. Poverty was measured as household disposable income per capita in the bottom quintile at two age intervals: between ages 0-2 and between ages 3-5. Additional socio-demographic factors such as gender, age, number of siblings and parental education were also taken into account in the analysis.

Our findings show that family income from birth to age 2 is positively associated with all measures of scholastic achievement even when keeping families' income in later ages constant. Moreover, the effects of economic circumstances experienced at ages 0-2 were found to be stronger than those experienced at ages 3-5.

The policy recommendations highlighted by this research stress the importance of reducing income inequality, increasing access to high quality early childhood education and care (ECEC) and boosting child support among families with children between ages 0-2.

[Note: This paper was co-authored with Dana Vaknin and Isaac Sasson, Tel Aviv University and The Taub Centre for Social Policy]



Adverse childhood experiences and adolescent development in a high-risk sample



Dr Abigail Fagan
University of Florida

Research has shown that adverse childhood experiences (ACEs) affect physical, mental, and behavioural health outcomes, but most research has focused on the long-term impact of ACEs among adults and few studies have examined how ACEs influence adolescent behaviours.

This presentation examined the relationship between ACEs and adolescent arrest, violence, marijuana use, and victimisation using prospective data from 831 youth and families living in five regions across the U.S. who participated in the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN).

This study included information on ten ACEs, including five types of abuse and neglect and five types of household dysfunction, such as caregiver criminality, substance use/abuse and depression, as well as violence between parents and death or serious illness of a parent or sibling. ACEs were measured as occurring at least once between birth and age 12, based on reports from child protective services, caregivers, and children. Outcomes were assessed at age 16 and included whether or not adolescents reported having been arrested, committed at least one violent offence, or smoked marijuana at least once in the past year (i.e. since age 15), and if they had been physically hurt by a peer since age 12. Analysis examined the relationship between the number of ACEs experienced and the likelihood of reporting any subsequent problem behaviour, as well as racial and gender differences in these relationships.

The findings from this study showed that ACEs were very prevalent in this high-risk sample of youth. Of the 831 respondents, 92% had experienced at least one ACE from ages 0 to 12 and the average number of ACEs experienced was 3.3. The number of ACEs experienced before age 12 predicted a greater likelihood of arrest, violence perpetration, victimization, and marijuana use at age 16. These associations were moderate in size. Every additional ACE increased the odds of arrest by 12%,

violence perpetration by 7%, marijuana use by 18%, and victimization by 15%.

The study also found that ACEs had similar effects on outcomes for females and males, but differed in their impact on Black and White youth for some behaviours. ACEs had a stronger effect on arrests for Blacks compared to Whites, but the impact of ACEs on victimization was greater for Whites.

Collecting data on ACEs and outcomes is important to highlight the prevalence and impact of adversities across the population and for particular groups. The fact that ACEs increase multiple problem behaviours emphasizes the need for prevention and intervention services. Recommended strategies to prevent the occurrence of ACEs include 1) reducing social inequalities and 2) implementing family-focused, evidence-based programs, practices, and policies.

Based on this research, we recommend that children who are exposed to ACEs receive interventions to help bolster their social skills and their ability to recognize and cope with adversity and the negative emotions produced by stress. In addition, young offenders should receive treatment services to help them cope with adversity and trauma.



Based on this research, we recommend that children who are exposed to ACEs receive interventions to help bolster their social skills and their ability to recognize and cope with adversity and the negative emotions produced by stress.

Policy response



Dr Lauren Supplee
Deputy Chief Operating Officer, Child Trends, USA

In my opinion, the US is not a model for the world on eliminating inequalities.

We have large and growing disparities and a comparably small investment in social programs to address these disparities. Nevertheless, the National Academy of Sciences, a leading research organization in the US, recently published 'A Roadmap to Reducing Child Poverty'¹ which presents causal evidence that poverty, particularly when it begins and persists in early childhood, causes negative outcomes. The report focused on the action that would be needed to reduce child poverty in the US by 50%, but failed to some extent to address the problem of wider adverse circumstances and inequalities that can have a powerful impact on the long term future of children.

In addition to discussing poverty and economic inequality, the research shared in this symposium included the topic of adverse childhood experiences (or ACEs). There is growing evidence to suggest that many children have ACEs, and the number they accumulate grows as they age. There may be some points in early childhood where children may be more vulnerable to experiencing certain ACEs. For example, data from the US suggests that child maltreatment is vastly higher in the first year of life compared to all other years. We need to establish policies and programs that address vulnerabilities before they occur.



It is important to clarify that just because a child has an ACE it does not condemn them to negative outcomes – it varies by the type, developmental timing, severity, and resilience of the child.

It is important to clarify that just because a child has an ACE it does not condemn them to negative outcomes – it varies by the type, developmental timing, severity, and resilience of the child. In addition, there are problems with the way ACEs are measured, as they do not include some things we know to be severe negative experiences, such as forced separation of children from parents, extreme poverty, racism, or community-level trauma such as neighbourhood violence. The actual prevalence of ACEs is likely to be far higher than estimated. Nevertheless, the importance of good parenting – the ability of parents to have warm, responsive interactions with their children and build quality attachments – is paramount. Programmes that support the development of these skills are critical for reducing inequalities.

Recent research has shown that although there may be plasticity in the brain throughout life, the early years are the most vulnerable in terms of recovery from trauma. Adoption studies across different jurisdictions found that the first six to twelve months of life was a particularly sensitive period of development, during which good care and protection was essential to result in a complete recovery. All of this suggests that policy solutions that begin early in a child's life and focus on supportive warm environments are most likely to be effective in terms of preventing or ameliorating the impact of ACEs in adolescence and beyond, further reducing some inequalities.



Long term impacts of early inequality and adversity into adulthood

Inequalities in achieving a university degree: Using a sibling design to disentangle the importance of individual and family factors



(L-R) Professor Cristina Iannelli
and Dr Adriana Duta
Moray House School of Education,
University of Edinburgh



Professor
Richard Breen
Nuffield College,
University of Oxford

Reducing inequalities in educational attainment and access to higher education (HE) are key policy priorities in Scotland and beyond.

Most of the evidence informing this topic comes from the analysis of individual data for which only limited information about family of origin is known. This evidence is unable to capture the full extent to which family of origin matters for young people's chances of attaining higher levels of education.

Using a study which examined siblings living in the same households, this presentation provided new evidence on the overall influence of the family and the broader environment in which children grow up on academic achievement. Sibling designs are essential for measuring the family environment as they capture characteristics shared by siblings at birth and during their upbringing, such as genes, social environment and siblings' interactions. Thus, the analysis of sibling data allows us to obtain better estimates of the overall effect of the family of origin as well as to assess the relative importance of the different family background factors.

This study used data from the Scottish Longitudinal Study (SLS), a large-scale linkage study created using data from administrative sources. The SLS contains a

5.3% sample of the Scottish population and includes census data from 1991 to 2011. Our sample consisted of pairs of siblings among the SLS members who were aged between 25 and 50 at the 2011 Census and lived in the same household at the 1991 Census. People from more or less socially advantaged families were identified through measures of parental social class, parental education and housing tenure collected in 1991 when siblings were living in the parental home.

Our results showed that about 40% of the variation in the chances of attaining a university degree was explained by family-level characteristics shared by siblings, with the remaining 60% being explained by individual-level factors. This suggests that effective policies aimed at improving educational attainment and widening access to HE should target not only the individual but also their families. Parental social class, parental education and housing tenure explained about a third of the total family-level variance. This suggests that other family-level shared characteristics not available in the data play an additional role in predicting the chance of attaining higher education. These may include shared genetic factors, inter-sibling relationship, parenting practices, degree of family conflict and parental expectations.

When considering a broader definition of sibling similarity (which combines attaining and not attaining a university degree), the results showed that 73% of siblings achieved the same educational outcome, but in only 26% of these cases did *both* siblings achieve a university degree. However, when higher education was defined more broadly as attaining either sub-degrees or degrees, the percentage of siblings with similar outcomes who *both* obtained a HE qualification increased to 46%. Interestingly, our results based on siblings showed marked differences by socio-economic background.



For example, for siblings from more disadvantaged families there was a far lower chance that both of them obtain a degree (7-8%) than siblings from more advantaged families (57%). The figures were higher when using the broader definition of higher education (15% and 76% respectively), but still starkly different in relative terms. Therefore, simply widening access to HE of sub-degree level programmes may not be enough to compensate for this socio-economic gap.

There are two potential explanations for the patterns of inequalities emerging from these results. First, socially advantaged families may employ 'compensatory' investment strategies by providing additional resources to the less academically successful child to improve their educational achievement, thus leading to higher sibling similarity than in the case of less advantaged families. Second, less advantaged families may be more likely to employ a 'specialization' strategy in which parents are constrained to focus their limited resources on the education of their 'better endowed' child, thus increasing within-family inequality.

The differences by family socio-economic background raise questions that are worthy of further investigation and policy consideration. For example, should schools and universities do more to improve the educational outcomes of less advantaged people to *overcome* the effects of family background? Or should policies directly *address* the effects of family background by targeting families in need of support, thus in turn enhancing their children's prospects?



Our results showed that about 40% of the variation in the chances of attaining a university degree was explained by family-level characteristics shared by siblings, with the remaining 60% being explained by individual-level factors.



Adult life success and the impact of poverty



Dr Tara Renae McGee
Griffith University, Australia

The concept of ‘adult life success’ was developed by Professor David Farrington through his examination of around 400 men in the Cambridge Study in Delinquent Development. He followed these men up to age 61 and found that early life experiences were strongly associated with later life success.

Building on Farrington’s work, this study used data from the Mater University Study of Pregnancy and its Outcomes to assess the impact of family poverty and adversity on later life success in adulthood. The Mater Study began with 7,223 mother-child pairs born at the Mater Hospital in Brisbane, Australia between 1981 and 1983. The mothers and their children were followed up from the pre-natal period until the children were 30 years old.

The aim of this presentation was to examine patterns of family adversity and poverty measured from the prenatal period to adulthood, and to determine their impact on offspring life success at age 30. Guided by Farrington’s approach to examining life success, the measure at age 30 incorporated ten factors including school completion, employment status, accommodation status, residential stability, relationship status, relationship satisfaction, life satisfaction, police contact, physical violence and alcohol use. These were collapsed into categories of low (1-8), moderate (9-10) and high (11-13) life success.

Family income was measured from the first clinical visit to age 27 (indexed based on inflation rates). Trajectory analysis identified three broad groups based on household income – ‘low stable’, ‘low rising’ and ‘high stable’. Regression analysis showed that children from consistently low income families were significantly more likely to have moderate or low life success, but there was no effect of the other two income groups.

Family adversity was measured at the first clinical visit, and then at age 5, 14 and 21 years. A measure was constructed based on information about the mother’s employment, relationship problems, housing issues,

death or illness of a partner, serious disagreements, financial problems, physical or mental health problems, trouble at work, and marital breakdown. Trajectory analysis found three typical groups based on number of adversities experienced – ‘low stable’, ‘mid stable’ and ‘high declining’ groups. Regression analysis showed that children from the high declining group were significantly more likely to have low or moderate life success, while those from the mid stable group were more likely to have low life success. So early family adversity reduced the odds of having good life success to age 30.

This research highlights the long term impact of family poverty and other forms of adversity that start in childhood on life success in adulthood. In particular, it stresses the importance of developing policy and support systems aimed at ending cycles of poverty across generations, such as giving families access to a universal basic income.

[Note: This article was co-authored with Li Eriksson, James Scott, William Bor, David Farrington and Jake Najman]



This research highlights the long term impact of family poverty and other forms of adversity that start in childhood on life success in adulthood. In particular, it stresses the importance of developing policy and support systems aimed at ending cycles of poverty across generations, such as giving families access to a universal basic income.

How do early inequalities and adverse experiences impact on offending and criminal convictions over the life-course?



(L-R) Professor Lesley McAra CBE and
Professor Susan McVie OBE FRSE
The University of Edinburgh

There is a wealth of evidence to show that people who populate criminal justice systems have typically experienced multiple disadvantage, such as growing up in a poor home environment or living in a socially deprived neighbourhood.

In addition, they have commonly been processed through one or more social systems from an early age (on grounds of offending, care and protection, or neglect). Recent studies have shown that offenders also have high levels of adverse childhood experiences (ACEs).

In Scotland, a keen policy interest in ACEs has led to a strong focus on developing 'trauma informed practice', particularly within policing and prisons. However, the full extent of the relationship between ACEs and offending is not entirely clear; and there are some concerns that a narrow focus on ACEs may down-play the impact of wider structural factors, such as poverty, and systemic factors which serve to trap people within the criminal justice system. Furthermore, there has been little consideration given to the sex dynamics of any of these relationships.

This presentation drew on data from the Edinburgh Study of Youth Transitions and Crime, a prospective longitudinal study of 4,300 young people's offending and criminal conviction pathways. It examined the impact of three types of inequality in early childhood (experience of ACEs, poverty and early adversarial system contact) on patterns of serious offending in adolescence; and then assessed the extent to which these early inequalities and serious offending patterns impacted on criminal conviction trajectories into early adulthood. Importantly, it looked at whether these relationships were distinctly different for males and females.

Early findings showed that ACEs, early system contact and poverty in childhood were all significantly and independently influential in the development of serious offending pathways. ACEs and early system contact had similar impacts on males and females; however, growing

up in poverty was a stronger risk factor for females than males in terms of involvement in serious offending. This suggests more could be done to protect young women living in poverty from involvement in serious offending.

We also found that ACEs had a significant, positive effect on likelihood of criminal conviction; but the effect of poverty and early system contact were far stronger, especially for the most chronic convicted offenders. This suggests that early systemic labelling and structural disadvantage are more powerful predictors of criminal conviction than ACEs, even though ACEs are strong predictors of offending. This demonstrates similarities, but also some differences, in terms of early childhood inequalities as potential causal influences of offending on the one hand and criminal conviction on the other.

In terms of sex differences, males were more likely than females to offend seriously and to be convicted overall. Males with ACEs were more likely than females with ACEs to become persistent serious offenders; however, females with ACEs were more likely than males with ACEs to be convicted. In other words, policy responses aimed at tackling or preventing ACEs in the early years may reduce the most serious and persistent offending amongst males; however, there is a risk that drawing attention to ACEs may unnecessarily draw young women into the criminal justice system.



Policy response



Dr Leon Feinstein

Director of Evidence, Children's Commissioner for England

The three presentations in this session, along with the others we heard today, made me reflect on the value of cohort studies and the great strides they have made in terms of bringing new understanding about a range of social issues over the last 40-50 years.

But they also raised a number of questions and challenges about how these studies can be used to deliver more effective advice and guidance to policy makers and practitioners to enable them to put into practice.

Starting a cohort study is like planting a tree – you get the benefit of it many years later. This is certainly true in terms of understanding the complex relationships between various features of early life and later outcomes. In the UK, it is fairly widely accepted amongst policy makers that early life matters and that various types of adversity, poverty and assets matter. The cohort studies have been great at demonstrating this and they have enabled a shift in terms developmental thinking within policy. Although it would be fair to say that there is little happening in terms of national level for children within England at the moment, there is a lot of action going on at a local level – within local authorities, charities and people working within government – which is informed by developmental thinking.

Recently, the National Lottery Community Fund spent £240m on place based investments to support children from pregnancy to age 3 in 5 small areas, creating more integrated systems around the needs of children and carers and promoting real community engagement. This work is based on learning from developmental science and cohort studies over the last 50 years. The presentations in this session all demonstrated the value of longitudinal data analysis – from understanding between and within family differences, to showing the nature of trajectories and group average outcomes. Such findings illustrate the diverse range of social groups that policy makers and practitioners have to engage with, and demonstrate the importance of moving attention away from focusing on the 'average' person.

But policy makers want to know about what will work in different localities. They need reassurance that information from large-scale studies can be translated into a programme that can be delivered and will work at a local level. There is definitely a shift happening in terms of building knowledge from cohort data into policy and practice, but there are challenges that need further reflection.

The evidence ecology means we need different sorts of studies for different sorts of questions. We need the right evidence that is meaningful and relevant for policy questions. We need to ensure that evidence will help us build appropriate services that will work, and will enable us to deliver it to people who need it. We have to address structural inequality in a way that will help us get resources and high quality, good public services to the right people, in the right place and at the right time. We need to get a good handle on what multiple systems are doing and whether they are working efficiently and effectively together. We are a long way off that sort of understanding.

I'm optimistic that the thinking from developmental science and the cohort studies, such as those we heard today, are feeding into policy thinking; but we need to make a further shift towards operationalising that knowledge within policy systems in order to really tackle the causes and consequences of childhood inequality.



Starting a cohort study is like planting a tree – you get the benefit of it many years later. This is certainly true in terms of understanding the complex relationships between various features of early life and later outcomes.

Key themes raised during the symposium



(L-R) Dr Adriana Duta, Dr Babak Jahanshahi and Dr Ben Matthews

Understanding Inequalities Research Fellows,
The University of Edinburgh

During the course of the symposium, delegates were asked to reflect on key messages emerging from the research about the causes and consequences of inequalities across the life-course and what policy-makers could do to address them. A summary of the themes raised is presented below.

What do we know?

Economic disadvantage and turbulence

Economic inequality was one of the key themes identified throughout the day. Various presentations demonstrated how children from less affluent backgrounds fared worse across a wide range of outcomes, including cognitive skills, educational attainment and conduct disorder. In addition, it was clear that poverty in early childhood had a detrimental impact not only at this stage of the life-course, but throughout adolescence and into adulthood. An important distinction was raised between temporary and persistent poverty. While much previous research has associated the latter as having a long-lasting impact on children's lives, several of the presentations – especially those using cohort data – highlighted the negative impact of economic precarity. For example, unstable parental employment was found to be linked to poorer educational achievement and problematic behaviour in childhood. The interventional evidence presented here suggests that policy makers should pay heed not only to the existence and perseverance of income inequality, but the potential effects of short-term welfare measures that could plunge families in and out of financial crisis, and the impact of such economic turbulence on children during their early and later years.

Other forms of capital

While economic disadvantage is a commonly-considered source of inequality within existing research, the studies presented here identified other types of capital-based inequalities that could have a negative impact on children's life outcomes. For example, a lack of high

quality learning-focused childcare (either centre-based or through provision of stimulating activities at home) was likely to result in diminished vocabulary, numeracy and other linguistic skills amongst children at their point of entry into primary school. These research findings emphasise that differences in outcomes cannot simply be attributed to the impact of economic inequality during early life. In fact, a stimulating environment was found to directly improve children's skills regardless of the level of family income. However, the research findings also suggested that, on average, families that were more affluent employ more beneficial practices for their children, which feeds into unequal outcomes. Overall, policy makers would do well to examine various forms of individual, family and community capital in terms of understanding how inequalities impact in the early years.

Adverse Childhood Experiences (ACEs)

It was widely acknowledged that ACEs play an important role in terms of determining early development, recognising the additive nature of adverse conditions, with a person experiencing four or more ACEs being particularly vulnerable. However, concentrating only on the number of ACEs rather than on the type of adverse factors included in the ACEs index might prevent identifying the specific factors in a more fine-grained manner. For instance, certain adverse circumstances may be more important in terms of impacting on some outcomes than others and, therefore, treating all adverse circumstances equally could prevent the development of really effective and targeted interventions. It was noted that the increasing popularity of ACEs within policy maker and practitioner discussions risks narrowing the definition of disadvantage and adversity in childhood, which could leave other important vulnerabilities out of public debate. Nevertheless, it is important to look at areas of policy making where ACEs are not used as the only measure of vulnerability. For example, the development of child health policy in Scotland has been successful in differentiating the impact of ACEs from a range of other factors, such as homelessness and bullying.

Resilience

While much of the discussion focused on negative outcomes, there was a lively debate around the importance of understanding why many people from disadvantaged or difficult backgrounds experience positive outcomes and life success. Such evidence is crucial in terms of building individual resilience in young people who experienced adverse circumstances, especially for schools which play such a central role in developing these skills in children. It was acknowledged that too much emphasis on individual resilience could risk fuelling a discourse which blames individuals who do not prove to be resilient. This may highlight the need for a broader definition of resilience: at family, community and policy level. A more practical suggestion would be to enable support networks within the systems and services already in place. For example, improving the quality of teacher-pupil day-to-day interactions could make a difference if attachment to at least one caring adult could potentially act as a protective factor, which could in turn help to develop resilience. There is much more to be understood about resilience, both from a research and a policy perspective, so this would be a vital area of further investigation.

A case for complementarity of multiple data sources

Intertwined with the discussion of what we know about the long-term impact of inequalities was a discussion about *how* we know what we know. It was agreed that the evidence that we require in order to better understand the impact of childhood inequalities on long-term outcomes needs to come from a range of sources, including quantitative data from administrative systems and surveys, the lived-experiences of children and families who have both experienced and have been resilient to the impacts of disadvantage and evidence from professionals and practitioners.

Understanding the factors that drive positive outcomes is a necessary first step for effective policy development. However, using single data sources in isolation to understand inequalities is severely limited. For example, whilst administrative data is extremely valuable for many purposes, it may be misleading in some situations. For example, when data is based on service use and the most in-need children do not use a particular service as often as other children, there are gaps in knowledge that could lead to poor service delivery. This phenomenon is well known in health research as the 'inverse care law'.



The richness of cohort and longitudinal studies and the challenge of changing times

This symposium highlighted the high value of cohort studies in understanding inequalities over the life-course. However, there are many challenges around translating the evidence from cohort studies into clear policy recommendations. Moreover, societal changes and period effects mean that the findings from an older cohort study may not be relevant to a younger generation. Making the results of cohort studies policy-relevant requires careful extrapolation of results from past studies into current cohorts by comparing results across multiple cohorts. In addition, more could be done to use repeated cross-sectional studies in a longitudinal way to identify similarities and differences in the inequalities experienced by young people today with those from the past. This is a methodological challenge for researchers but it demonstrates the value of continually building the evidence base and synthesising evidence from multiple existing sources.

Finding out what works

A more evaluation based research agenda

A key theme of discussion was the need for robust evaluations of intervention programmes implemented by governments. Those who work in policy sector have a great need for good evaluation evidence, and academics could do more to use data for evaluation purposes. This would require strengthening the links with policy-makers and sharing expertise, but it would also require more specific funding allocation. Despite the significant potential benefit in developing programmes of evaluation, these would need to be very complex in design to take account of the differential and cross-cutting impact of overlapping policy initiatives. If this could be achieved, it may allow researchers to make a more demonstrable shift away from understanding the patterning of inequalities to understanding what works to reduce them.

Examples of current approaches to reduce inequalities in Scotland

A number of specific policy recommendations were discussed, based on the impact of early child poverty on subsequent life success, including the potential benefit of introducing some form of Universal Basic Income (UBI). Work is already being undertaken in Scotland to assess the feasibility of UBI in the Scottish context. Since March 2019, four Local Authorities in Scotland (Fife Council, City of Edinburgh Council, Glasgow City Council and North Ayrshire Council) have been working to establish the feasibility of a basic income pilot in

Scotland and will report back to Scottish Government later in 2019.ⁱⁱ There were also discussions around measures for supporting other forms of capital in the early years. Delegates mentioned the “Stay, Play and Learn” program that aims to develop parent-child relationships as well as to provide an opportunity for parents to develop their social network.ⁱⁱⁱ

How to turn research into policy?

The role of context and the challenge of transferring policy and research ‘lessons’

Practitioners often ask how they can be sure that an intervention will work in their local context. This presents a challenge to researchers who may need to spend more time thinking through the implications of studies based on nationally-representative samples to areas with particular contexts, which may not be similar to other parts of the country or to the country as a whole.

A life-course approach to designing interventions

Developing interventions represents a significant challenge, especially one that builds in a life-course approach. A key theme raised was the importance of the first 1000 days in influencing later life outcomes, which suggests that early intervention should be a priority. However, experiences in later childhood (or throughout childhood and adolescence) can also influence long-term outcomes. It is difficult to identify the key stage in the life course during which to support children, as this may depend both on the outcome of interest and on the individual needs of the child. Overall, it appears that early interventions are important, but on their own they may not be effective in reducing the risk of poor life outcomes. There is much more to be learned about interventions and the life course.

Stronger partnership working

Knowing the most suitable level at which to target policy interventions is a further challenge; however, the evidence seems unequivocal in terms of the value of multi-agency and multi-level working. For example, to increase a child’s resilience to experiencing a range of economic and social adversities is likely to require a multi-faceted response that incorporates social services, education and welfare-based supports at not only the individual level, but also the family and community level. There was a consensus that reducing inequalities and improving people’s lives will require a complex and coordinated response, stronger partnerships between policy makers and academic researchers and other stakeholders working towards a shared set of goals.

Key learning for policy



Professor Adam Gamoran
William T Grant Foundation, USA

The final session of the symposium drew together key learning around the development of research strategies to support innovative and creative policy making aimed at reducing inequality in early childhood and throughout the life course.

Efforts to reduce inequality under the current US Government administration cannot be described as forward thinking. Nevertheless, there have been positive steps forward. Key staff in many agencies, such as the Institute of Education Sciences in the US Department of Education, are committed to producing and using evidence to make smarter policy decisions.

Of particular importance in this area, the Foundation for Evidence-Based Policymaking Act has recently been implemented to facilitate and encourage the generation of useful evidence at the federal level. This Act, which codifies many of the recommendations of the Commission on Evidence-Based Policymaking, requires federal agencies to inventory the data they collect, and encourages agencies to make data public. It also encourages agencies to use government data to generate evidence about the programs and policies they support. The Act also calls for a common application system for researchers who wish to pursue access to restricted data, and an advisory committee to review data coordination and access across agencies. Hence, the climate for better use of evidence in policy making within the US has improved, just as it has in Scotland and the wider UK as evidenced by the many government officials from a variety of agencies and allied groups that attended the symposium.

Recent findings on reducing inequality

There have been a number of important reports published recently about reducing inequality within the US. The William T. Grant Foundation part-funded the National Academies of Sciences, Engineering, and Medicine to produce 'A Roadmap to Reducing Child Poverty', edited by Greg Duncan and Suzanne Le

Menestrel. The roadmap tackled a fundamental question: what will it take to cut child poverty in half within ten years? The report starts by making the case that such a task is feasible, noting that in 1999 child poverty in the US and the UK were at similar levels but ten years later, child poverty in the UK had halved. Moreover, child poverty has declined in the US in the past, although it has been stubbornly persistent for the past 30 years. Based on sophisticated, research-driven simulations, the roadmap outlined four policy combinations that could achieve this goal, but noted that success would cost upwards of \$90 billion per year over the 10 years. Nevertheless, a much less costly combination of work-oriented policies would cut child poverty by nearly 20% and put a million people to work, a valuable goal in itself.

Another recent US study, by Rucker Johnson and Kirabo Jackson, compared the impact of investment in Head Start, a federally-supported early childcare program, and in standard public school funding, which varies by state and school district. They found dynamic complementary effects. In short, increased funding for each of these initiatives had benefits for educational attainment and earnings, but the effects of each individual initiative were greatly strengthened by additional investments in the other. These findings resonate very strongly with some of the lessons raised from the research discussed during the symposium, that to reduce the impact of childhood inequality would require sustained investment over time, not just in early care but throughout the school years, and a holistic approach to tackling multiple forms of adversity.

What research do we need?

To start to make a real difference to tackling childhood inequality, academic research needs to take three new directions.

First, researchers need to turn their attention from *understanding* inequality to *reducing* inequality. Of course, it is important to understand the sources and mechanisms of inequality before attempting to alter its

course, and there may well yet be areas of inequality that do not understand well enough. However, there are aspects of inequality we know enough about in terms of where they arise from and how they manifest to enable us to start building and assessing the effect of policy responses to inequality. This argument was made at various points throughout the symposium. For example, Susan McVie called for more evaluations of government efforts; Abby Fagan argued that we need to examine the intergenerational effects of efforts to fight poverty and reduce inequality; and Leon Feinstein called for researchers to consider how service provision fits with the specific needs of the recipients of that service – to examine not just what works for the ‘average’ person, but what works for whom and in what context, recognising local variation in program implementation.

Second, researchers need to move away from analysing the problem of inequality from a single standpoint and start disentangling the impact of complementary investments across the life course, as illustrated by Johnson and Jackson^{iv}. This approach will require more complex and multifaceted programmes of research, that bring together interdisciplinary skills and complementary

bodies of knowledge; however, if researchers are to make a transformational impact on policy making in the area of inequality this will be required. As raised by Kath Murray in her discussion of child conduct disorder, there is a need for action at several different levels and taking account of multiple contexts.

Third, research must do more to examine the effect of cross-system investment in children and youth. Most research, like most policy development, occurs in siloes and operates in a single domain only (such as education, social care, justice, or housing). But we know enough about inequality already to know that it is cross-sectoral and, therefore, we need policies that coordinate across public services. This means that research must examine such cross-sector coordination. During the symposium, Carol Tannahill highlighted the importance of working across portfolios and many of the participants welcomed the potential for developing more coherent policies across sectors. Susan Morton explicitly mentioned the importance of implementing cross-sector policies and, in her response, Louise Scott called for collaboration within and across service areas. Hence the conditions seem ripe for advancement on this issue.



References

- ⁱ www.nap.edu/catalog/25246/a-roadmap-to-reducing-child-poverty
- ⁱⁱ Universal Basic Income
<https://basicincome.scot/>
- ⁱⁱⁱ Stay, Play and Learn
www.playscotland.org/parents-get-involved-stay-play-learn-scottish-government/
- ^{iv} Johnson, R., & Jackson, K. (In press.) Reducing inequality through dynamic complementarity: Evidence from Head Start and public school spending. American Journal of Economics: Economic Policy. (Also NBER Working Paper no. 23489.)

Presentations from this symposium can be found online at the Understanding Inequalities website at:
<http://www.understanding-inequalities.ac.uk/UIMarch11th2019SymposiumSlides>

Acknowledgements

The Understanding Inequalities project is funded by the Economic and Social Research Council (ESRC), grant number ES/P009301/1 and this symposium was supported by an ESRC International Networking Award.

Cover photograph © Getty Images/Xavier_S

Report designed by:
Graphic Design Service, LTW, ISG, The University of Edinburgh
www.ed.ac.uk/is/graphic-design