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Extending the learning from the Prevention and Early Intervention Initiative

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Editorial

Suzanne Guerin and Ruth Geraghty

We are delighted to present this special edition of the Children's Research Digest which reports on new research that has been generated by the Prevention and Early Intervention Research Initiative (PEI-RI) at the Children's Research Network. This archiving project was funded by the Atlantic Philanthropies (AP) during 2015-18 and the publication of this special edition of the Digest marks the conclusion of the PEI-RI project at the Network. The PEI-RI had two central aims; firstly, to archive data from the evaluation of Prevention and Early Intervention services that were funded under AP's Prevention and Early Intervention Initiative (PEII; 2004-16) and secondly, to support new analyses of this data through a series of research grants. During 2017-18 the Network awarded grants to sixteen projects, and the papers presented here capture just some of the insights generated by a sample of these projects. The papers include both articles and research summaries, with several of the pieces reporting work in progress towards a variety of peer reviewed dissemination activities. In this way, the papers capture the dynamic nature of the research that has been funded by this pioneering grant scheme.

Exactly one year ago, Jane Gray and Maja Haals Brosnan introduced the 2017 special edition of the Digest which focused on the process of archiving the PEII data in the two public data archives in Ireland; the Irish Social Science Data Archive[1] and the Irish Qualitative Data Archive[2]. Gray and Haals Brosnan (2017) highlighted recent and relevant developments that promote open access to data, including the FAIR data guidelines, the promotion of open access data in the EU Framework Programme for Research and Innovation, Horizon 2020 and the development of the Health Research Board (HRB) Open Research Policy. This theme was echoed in a subsequent chapter that was co-authored by our two guest editors, Jane Gray and Suzanne Guerin, on archiving data within the applied research context (Murphy, O'Carroll, Guerin and Gray, 2018). The book was produced by the Research Evaluation Policy and Practice (REPP) project group and captured the accounts, and more importantly the lessons learned, of researchers and practitioners who were actively involved in prevention and early intervention programmes that received funding from AP and the Department of Children and Youth Affairs during the period of the PEII investment. This chapter notes the many benefits of archiving, including the availability of data for further validation of findings, the reduction of costs and of burden on participants, and the promotion of data reuse in the future. It is interesting to note that, less than a year later, researchers in Ireland are considering the implications of both the General Data Protection Regulation (2016) and the Health Research Regulations (2018) for the archiving and reuse of data. While there may be initial challenges in adapting to the requirements of these recent changes, ultimately researchers will incorporate them into their practices.

One reason that the archiving and the reuse of research data should, and indeed will continue to be promoted and practiced by researchers, within the boundaries of new legislation, is that re-use and secondary analysis is essentially ethical. The contribution of participants and the knowledge generated from those contributions is maximised through reconsideration of the data far beyond the limited time frame of the original research project. The value of being able to return to existing data and extend its utility is clear from the papers presented in this issue. For example, Comiskey, Banka, Hyland and Hyland extend the learning from the Healthy Schools Project in Dublin to wider international contexts, while Rodriguez builds on the lessons learned from the Big Brothers Big Sisters evaluation to highlight the positive impact of meaningful participation by young people in secondary data analysis and dissemination.

Several projects that are reported in this issue involved the analysis of research data that were accessed via the archives, including, for example, the quantitative data from the Preparing for Life dataset (see for example, Buggy, O'Neill, Kearney and Matvienko-Sikar; Simms et al.) which was archived as part of the PEI-RI in 2017. Other projects that are reported here analysed data that have limited accessibility due to ethical constraints in the design of the project, but are suitable for further investigation and secondary analysis (see for example, Brady and Silke; Doyle, Hegarty and Owens). The evaluations from which these data are drawn were developed, in some cases, over long periods of time and it is not surprising that questions about the ethics of data archiving simultaneously emerged, as the value of the PEI data became apparent. Since its commencement in 2016, the PEI-RI project has contributed to a conversation amongst the Irish research community on ethical requirements for open science within the social and health sciences, especially around participant consent. The experience from the PEI project has taught us that we must consider from the outset of each new research project the steps that can be taken to ensure data can be retained, and where possible, made available for further analysis. With the developments in data protection and research governance noted above, it is even more important that researchers are prepared and positioned to consider the ethical arguments for archiving and, as highlighted by this special edition, the significant benefits of secondary analysis of archived datasets.

Another point to note regarding the papers included in this special edition is the breadth of experience and expertise represented in and supported by the PEI-RI research grants. The funding had an explicit focus on capacity building and sought to support early career researchers to work collaboratively with senior mentors. The aim was to increase the capacity for high quality evaluation research, and indeed secondary analysis in prevention and early intervention research, by supporting the development of up-and-coming academic researchers. Grants enabled master's and doctorate students to work directly with data from the PEI evaluations, for example, one grant enabled a student to analyse the PFL data for the award of a master's degree in Public Health (Buggy et al.). The involvement of early career researchers in almost all of the funded projects demonstrates the educational contribution of the PEI-RI grant scheme, and of secondary analysis more generally. The grants were not limited to early career researchers and three awards were made under the Senior Scholars scheme to support more established academics to reengage with existing datasets and address novel questions (see for example Brady and Silke; Comiskey et al; Hayes and Irwin).

A final point to note, before we move on to the papers, relates to the diversity of dissemination activities by the research teams included in this edition. The broad topic of knowledge transfer and exchange stresses the need for engagement in a diverse range of activities that promote the sharing of research and maximise the potential for learning to impact on practice (Hayes and Duiganan, 2018). The preparation of this special edition reflects one form of dissemination however, it is important to note that these papers are one of a range of dissemination activities by these authors. The research reported here has been presented internationally at academic and practitioner conferences, across a range of disciplinary areas and has resulted in a wide array of outputs beyond traditional published reports, including online videos (Rodriguez), methodological workshops (Hanna and O'Hare, not included in this edition), and guidance leaflets for parents/teachers (Simms et al.). For researchers to promote the effective implementation of research in practice it is essential that we develop the skills required to communicate key messages from our work via a diverse range of activities that engage multiple audiences, through meaningful and effective communication channels.

We would like to thank all of the authors for their contributions to this issue. Special thanks are also due to those who helped with reviewing and proof reading this edition, and to AAD for providing the design and layout.

[1] https://www.ucd.ie/issda/
[2] https://www.maynoothuniversity.ie/iqda

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Leadership, sustainability and extending the learning from the Healthy Schools programme to other national and international contexts

Catherine Comiskey, Prakashini Banka, John Hyland and Pauline Hyland

Introduction

A Health Promoting School is defined by the World Health Organisation (WHO, 1998, p. 2) as a school that constantly strengthens its capacity as a healthy setting for living, learning and working. It focuses on fostering learning in health, engaging all school stakeholders, from pupils to education officials; it strives to create a healthy, sustainable environment; and it implements relevant policies and practices and takes a lead within its setting on striving to improve the health of its community members (ibid, p. 3). For over a decade, the Healthy Schools programme has been evaluated internationally. In Hong Kong, a study by Lee, Cheng, Fung and St. Ledge (2006) demonstrated that the programme improved the health of young people. In their study, data were collected from nine schools, representing 962 primary and 1,221 secondary school children who received The Health Promoting School programme for two years. The study found that children's school performance increased post-intervention and this increase was significant among secondary school children ($p<.001$). Significant improvement was also reported on children's dietary patterns among both primary and secondary school children post-intervention. Antisocial behaviours, mental health and smoking were among other outcomes that improved for both primary and secondary school children. However, alcohol consumption increased for both primary and secondary school children post-intervention. In Canada, the concept of a health promoting school, entitled Healthy Schools BC[3], was first introduced in 1933. Since then, the association has evolved to become Physical and Health Education Canada (PHE Canada) and aims to support schools in becoming 'Health Promoting Schools', and to foster healthy school communities.

Within Ireland, the WHO Healthy Schools programme was originally implemented and evaluated in an urban disadvantaged region of Dublin from 2008 to 2012 (Comiskey et al., 2012). Comiskey et al. (2012) examined how the programme was implemented in schools and assessed the baseline results from the primary school children's physical and mental health status. The key findings from the baseline data reported no significant changes in children's overall health and well-being for both the intervention and comparison schools. However, a later report (Comiskey et al., 2015) highlighted the challenges of school-based, local implementation and the impact of this design on evaluation results. For example, schools felt they were not equipped to identify the health needs of the children. They also reported concerns of being held responsible if the programme did not work and expressed concerns with the expectation that they would lead the programme implementation. These challenges negatively impacted on the overall programme and as a result no positive impacts were found on the children's overall health outcomes by the end of evaluation. Hyland, Hyland, Banka and Comiskey (under peer review) also found that children experienced high levels of victimisation in schools; and Banka, Hyland Hyland and Comiskey (under peer review) found relationships between depression and children's body mass index.

The aim of the present study was to explore these challenges in more depth from an international perspective and to share the findings with both practitioners and academics. The objectives were to compare victimisation, depression and body mass index among school children internationally and to share the findings from an Irish context with a view to sustaining and extending this learning internationally. This research was supported by the Children's Research Network Prevention and Early Intervention Research Initiative Senior Scholars Grant Scheme in 2018.

Within the first objective, seven work packages (WP) were designed, as described in Table 1.

[3]https://healthyschoolsbc.ca/program/424/physical-and-health-education-canada

Table 1: The seven work packages

WP1	Measure and describe health risks and victimisation of pre-teen children in Irish school settings – Trinity College Dublin (TCD) team to lead.
WP2	Measure and describe health risks and victimisation of similar aged children in another EU setting (The Netherlands) - Toegepast Natuurwetenschappelijk Onderzoek (TNO) team to lead on data extraction and analysis, with support from the TCD team.
WP3	Measure and describe health risks and victimisation of similar aged children in a wider, international, high income country setting (data from English children) - University of Technology Sydney (UTS) team to lead on data extraction and analysis to be supported by the TCD team.
WP4	Measure (if possible) and describe health risks and victimisation of similar aged children in a low to middle income setting (South Africa) - University of Western Cape (UWC) team to lead on data extraction, and analysis to be supported by the TCD team if required.
WP5	Provide a comparative analysis across the range of international settings - TCD team to lead on analysis with support from all other teams.
WP6	Provide a meta-analysis of outcomes across the settings if it is possible to obtain common outcome data across the country settings - TCD team to lead supported by all other teams.
WP7	Share the learning across the settings in terms of implications for school and national educational and health policies - each team to lead within country domain.

Method

Building on existing and new collaborations, the TNO, UTS and UWC[4], teams were invited to participate in a shared analysis of children's health and victimisation data. Regular Skype meetings were held; details and descriptions of the four international data sources were discussed; and details of the variables within their measurement instruments and choice of year(s) of data were decided. Permission to access the data was obtained and protocols for data extraction were drawn up.

[4]With regards to the UWC it was found that data was available on teachers only and not on individual schools, and while UWC were willing to participate they were not yet at a stage to progress and they hoped to engage at a later date.

The data from the urban disadvantaged region of Dublin were gathered among 449 children at baseline (when children were aged between eight to twelve years), representing fifty-five per cent of the estimated sample frames. Following this, data were collected from 428 children in Year 1, and 315 children in Year 2. Children completed the age appropriate self-report psychometric surveys to measure depressive symptoms and Health Related Quality of Life (HRQoL). Depressive symptoms were measured using the Children's Depression Inventory-Short (CDI-S; Kovacs, 1985). HRQoL was measured using KIDSCREEN-27 (KIDSCREEN Group Europe, 2006) which consists of twenty-seven items. Body Mass Index (BMI) [weight / (height) 2] was measured by a qualified children's nurse. Demographic information was also gathered, such as gender and age. Scores were converted

to age and gender specific z scores using AnthroPlus software to categorise weight using the WHO (2007) thresholds.

The dataset from UTS included data from 5335 young people aged eleven, thirteen and fifteen years (fifty-two per cent boys) who participated in the Health Behaviour in School-aged Children (HSBC; www.hbsc.org) study for England. Data from fifteen-year-olds were omitted, as the Irish data included children aged less than thirteen years. Only data from an urban disadvantaged population were extracted for comparison with the current study. The UTS England study used the Health Behaviour in School-aged Children (HBSC) questionnaire which collects data every four years on eleven, thirteen and fifteen-year-old children's health and well-being, health behaviours and social environments (Roberts et al., 2009). Data from TNO were sourced from the Local Health Services in Leiden and from the bullying intervention project at TNO. Currently, overall health status and demographic data are in the process of being extracted for urban disadvantaged children aged between eight and twelve years of age. Descriptive and correlational analysis, with mediation and moderation modelling will be conducted on this data.

Preliminary results

Findings on children

As of September 2018, data extraction was ongoing. To compare with the Irish participants from the Healthy Schools evaluation, the UK/UTS[5] and TNO teams will extract data by matching the profiles of the Irish children who were recruited through schools designated as urban and disadvantaged. Preliminary analysis of the Irish data on victimisation by Hyland et al. (under peer review) across three waves (baseline, Year 1 and Year 2) found that, relative to findings published recently on the baseline data of the Healthy Schools programme (Hyland, Hyland and Comiskey, 2017), the frequency of victimisation has decreased in Year 2 compared to earlier waves. This was observed for both single-item and multiple item measures of victimisation behaviour. The baseline data showed significantly impaired levels in all aspects of health-related quality of life, as well as increased levels of childhood depression in frequent or occasional victims compared to non-victims. Frequent or occasional victims are those who reported being bullied 'sometimes' and 'always', while non-victims are those who reported that they have never been bullied. However, only lower levels of autonomy and parental relationships, and social support and peer relations, were different across victim categories in Year 2, with no differences observed in Year 1.

In terms of childhood depression, Banka et al. (under peer review) found, using mediation models incorporating age, and controlling for gender, that health status did not change for these urban disadvantaged children. Children with initially poor or good health maintained their health status over the three-year period. In addition, increases in BMI and decreases in depressive symptoms were also observed.

Findings for practice

Key findings in terms of leading and sustaining a healthy school include: the importance of good leadership within a school; the importance of identifying a local school-based need that was endorsed and recognised by the whole school community, and the readiness of a school for local implementation (Comiskey et al., 2015). The importance of leadership, addressing a need and organisational readiness has been addressed by Fixsen, Naoom, Blase, Friedman and Wallace (2005) in their synthesis of the implementation science literature. Burke, Morris and McGarrigle (2012) have presented a clear framework to guide implementation across time and have provided a list of enablers and barriers organisations need to be aware of. Examples of enablers, from the framework designed by Burke et al. (2012) include leadership, resources, implementation teams, buy-in from stakeholders, and communication. Examples of barriers include vested interest, resistance to change, and external environment. Evidence of a desire to participate but a lack of current leadership, and hence readiness, was found within the UWC. Staff originally involved in their Healthy Schools project had retired and other staff were not directly involved in the original work with the teachers. This also demonstrated a need for not only leadership but distributable leadership within schools. 'Distributable leadership' recognises that the "collective interactions among leaders, followers, and their situation are paramount. The situation of leadership isn't just the context within which leadership practice unfolds; it is a defining element of leadership practice" (Spillane, 2006, p. 4).

Conclusions and implications for future research

While the UWC were not able to participate on this occasion, the learning from this international initiative has potential for African, EU and other countries. Banka, Comiskey and colleagues have initiated a pilot Healthy Schools project in Mauritius. Currently, the team from TCD and the University of Mauritius are applying for funding from the Mauritius Tertiary Education Commission to assess the physical and mental health outcomes among disadvantaged children in Mauritius. The data will be compared to the data from the Healthy Schools programme in Ireland. Furthermore, the work with local healthy schools in Ireland was instrumental in providing background experience for a further project by Galligan and Comiskey (2017) on young people and alcohol use and distribution in the region, which was supported by the Tallaght Local Drugs and Alcohol Task Force. This in turn has led to an international collaboration with the University of Valencia on the study of binge drinking by young people and associated hospital attendances and health consequences in the region. The sharing of learning from the original Healthy Schools programme has extended beyond the original project and practice and has contributed not only to the region, but also to international practice.

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Dr Sonam Prakashini Banka is a teaching fellow and post-doctoral researcher at Trinity College Dublin. She has a PhD in child physical and mental health, mainly looking at the relationship between depression, obesity and poor school performance among urban disadvantaged children. She currently lectures psychology, research methods, data analysis, and statistics. Sonam has worked extensively in disadvantaged and vulnerable populations. Sonam holds a bachelor's honours degree in psychology from Dublin Business School, a postgraduate certificate in innovation and entrepreneurship, and a postgraduate certificate in statistics from Trinity College Dublin.

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Dr Pauline Hyland is a lecturer in Psychology at Dublin Business School for almost ten years, and has been researching in the area of bully/victim problems throughout this time. She is a graduate member of the British Psychological Society and the Psychological Society of Ireland. Her PhD focused on some of the predictive factors and outcomes of involvement in traditional and cyberbullying, specifically the 'dark triad' of personality, mental health, social support, self-efficacy and coping. Her teaching centres on research methods and analysis, quantitative and qualitative analysis and project support. Her research interests include a strong emphasis on mental health, development of anti-bullying prevention and intervention strategies, issues concerned with teacher training and special education needs, aggression, and consequences of health-related illnesses.

Effect of the Preparing for Life programme on trajectories of behaviour, cognition and health

Sylvana M. Côté, Massimiliano Orri, Richard E. Tremblay and Orla Doyle

Introduction

The origins of adult mental and physical health problems can be traced to risk factors before birth and during early childhood (Barker, 1990; Goodman, Joyce and Smith, 2011; O'Donnell and Meaney, 2016). One of the most consistently identified risk factors for poor developmental outcomes is low family socio-economic status (SES) (Cobb-Clark, Salamanca and Zhu, 2016; Cunha, 2015). Early intervention programmes supporting low-SES families are recognised as a viable strategy for preventing long-term social and health problems (Heckman and Mosso, 2014). Typically, the mean impact of the intervention on all children is tested, thus ignoring one important source of variation: population heterogeneity (Nagin, 2005). By studying the differential impact of the intervention for children with different developmental profiles (i.e. population heterogeneity over time), it is possible to identify who benefits most from early intervention.

This study, published in full elsewhere (Côté, Orri, Tremblay and Doyle, 2018), addressed this issue by testing the differential impact of a multi-component early intervention programme in Ireland for subgroups of children defined by latent trajectories of skills. Two research questions were tested:

(1) Did the intervention impact the probability of following a better developmental trajectory? Specifically, did children who received the treatment exhibit a lower probability of following a poor trajectory (or a higher probability of following a good trajectory), regardless of their initial levels of behavioural problems, cognitive skills, or propensity for health service use?

(2) Within each trajectory, did treated children perform better than controls? Specifically, did children on poor developmental trajectories benefit the most from the intervention or, conversely, did children on good trajectories benefit the most?

Method

We used data from the Preparing for Life (PFL) randomised trial (Northside Partnership, Doyle and UCD Geary Institute PFL Evaluation Team, 2018; see also Doyle et al., 2015, 2017c), a programme aimed at promoting children's development by supporting parents living in a disadvantaged community in Dublin from pregnancy until age four or five using three intensive parenting supports – a home visiting programme, a baby massage course, and the Triple P Positive Parenting Programme. The study included 233 families who were recruited during pregnancy and randomly assigned to a treatment group receiving the parenting supports or a control group receiving a reduced form of intervention.

The study outcomes were: internalised and externalising behaviours, general cognitive skills, vocabulary, and health service use, and these were repeatedly measured from six months to four years of age. First, the developmental trajectories for these outcomes were estimated using Latent Class Growth Analysis (LCGA), which allows for the identification of unobserved but distinct groups following similar developmental trajectories. Second, logistic regressions were used to test whether the treatment group compared to the control group were more likely to follow the high rather than the low trajectory. Third, Wald tests were used to compare treatment and control groups symptoms scores within each trajectory (high and low).

Results

Question 1. Did the treatment impact children's probability of following a better trajectory?

Behavioural outcomes (Table 2A) between 2 and 4 years

For externalising behaviours, children followed either a low (n=104, 60 per cent) or a high trajectory (n=68, 39 per cent). The proportion of children in the treatment and control groups was similar in both trajectories (OR=1.10, CI=0.60-2.04, NNT=40). For internalising behaviours, children followed either a high and slightly increasing (n=33, 19 per cent) or a low stable (n=139, 81 per cent) trajectory. The proportion of children in the treatment and control groups was similar in the two trajectories (OR=1.25, CI=0.59-2.71, Number Needed to Treat [NNT]=28).

Cognitive outcomes (Table 2B) between 1 and 4 years

Children followed either a high (n=109, 62 per cent) or low (n=68, 31 per cent) cognitive skills trajectory. Treatment children were more likely to follow the high cognitive skills trajectory (OR=4.50, CI=2.22-9.65, NNT=4). Children followed either a high stable (n=62, 36 per cent) or low declining (n=111, 64 per cent) vocabulary trajectory. Treatment children were more likely to follow the high vocabulary trajectory (OR=2.02, CI=1.08-3.82, NNT=6).

Health service use (Table 2C) between 6 months and 4 years

For the number of health clinic visits, children followed either a high and increasing (n=33, 18 per cent) or low (n=148, 82 per cent) trajectory. Treatment and control children did not differ in their probability of following either trajectory (OR=1.68, CI=0.78-3.75, NNT=13).

Question 2. Within each trajectory, did treated children perform better than controls?

Behavioural outcomes (Table 3A)

Within the high externalising behaviour trajectory, treated children had lower scores than controls at each time point, with medium to large effect sizes (Hedges'g: 0.45-to-0.58, $p<0.05$). Within the low externalising behaviour trajectory, treated and control children had similar externalising scores at all time points (Hedges'g: 0.03-to-0.07, $p>0.05$). No differences were found in the overall rate of change (slope) between the treatment and control groups in either the high (Hedges'g: 0.23, $p<0.344$) or low (Hedges'g: 0.03, $p<0.911$) trajectories.

Similarly, no significant differences between the groups were found for the mean or the slope of the internalising trajectories for both the high (intercepts, Hedges'g: 0.46-to-0.56, $p<0.05$; slope, Hedges'g: 0.23, $p=0.548$) and low (intercepts, Hedges'g: 0.09-to-0.12, $p<0.05$; slope, Hedges'g: 0.23, $p=0.548$) trajectory groups.

Cognitive outcomes (Table 3B)

For the cognitive skill trajectories, no differences were found between treatment and control children (in both the high and low trajectories) for the mean score at each time point (high trajectory, Hedges'g: 0.01-to-0.13, $p<0.05$; low trajectory, Hedges'g: 0.03-to-0.17, $p<0.05$), or the change over time (high trajectory, Hedges'g quadratic slope: 0.09, $p<0.807$; low trajectory, Hedges'g quadratic slope: 0.07, $p<0.510$). The same pattern was found for the vocabulary trajectories.

Health service use (Table 3C)

For the health clinic visit trajectories, there were no differences in the mean number of visits for the treatment group compared to the control group across all time points for either trajectory (high trajectory, Hedges'g: 0.05-to-0.28, $p<0.05$; low trajectory, Hedges'g: 0.04-to-0.22, $p<0.05$). In addition, no differences were found in the rate of change over time for children in the low trajectory (Hedges'g linear and quadratic slopes: 0.20, p=0262, and 0.00, $p<0.300$). However, for the high trajectory, the control group increased their number of health visit significantly faster than the treatment group (Hedges'g linear and quadratic slopes: 0.37, $p<0.041$, and 0.26, $p<0.075$).

Discussion

We found that a five-year, multi-component early intervention programme providing education and social support to families living in economic deprivation had moderate-to-large positive effects on children's behavioural and cognitive development and health services use between six months and four years of age. These results

were in line with previous findings of the PFL trial (Doyle et al., 2015, 2017a, 2017b) and extended this body of work by testing the impact on children's developmental patterns (i.e. population heterogeneity).

We found impacts on all three types of outcomes, which is in line with the focus of the PFL curriculum. First, the positive effect for externalising problems was limited to children in the high externalising trajectory: among children with the most problems, treated children had lower levels of externalising behaviour than controls, but no such difference was found among children with low levels of externalising problems. This result is in line with the compensatory hypothesis, suggesting that children with the highest levels of problems should gain the most from early intervention. Externalising behaviours (for example, physical aggression) are normative during early childhood, but children exhibiting the highest levels of such behaviours are at risk of continuing on a chronic trajectory (Côté et al., 2006; Tremblay, Vitaro and Côte, in press). Since children with high externalising behaviours are typically the most resistant to treatment, this study suggests that an intensive intervention from pregnancy to age four can prevent chronic externalising problems.

Second, concerning cognitive skills, our findings are in line with the average treatment effect hypothesis, whereby all children benefited from the intervention regardless of their initial levels of skills. The treatment increased children's probability of following the high-level trajectory for both general cognitive skills and vocabulary, which suggests that early investment via PFL was an effective strategy for skill improvement. As demonstrated by the low NNT, the treatment effect was clinically relevant: four (cognitive skills) and six (vocabulary) children needed to receive the PFL treatment to see a clinical improvement in one child.

Third, we demonstrated that, within the trajectory of high health clinic visits, control children had faster rates of change, experiencing a substantial increase in the frequency of visits between six months and three years, and then a declining frequency. Thus, PFL treated families relied less on health services.

Comparing our results to the literature is inherently limited due to PFL's longer than average duration, multi-treatment nature, and the use of trajectory analysis. However, results are in line with those reported by the Healthy Families America (HFA) and Parents as Teachers (PAT), both five-year home visiting programmes, showing favourable effects on cognitive development after twenty-four months, but not before, while having little if no impact on child health at any time point (Anisfeld, Sandy and Guterman, 2004; Caldera et al., 2007; Drazen and Haust, 1993; Duggan et al., 2007; Kirkland and Mitchell-Herzfeld, 2012; Landsverk et al., 2002; Wagner, Cameto and Gerlach-Downie, 1996). Previous studies testing the impact of home visiting programmes on verbal skills have been inconclusive, with several reports of negative effects (Guttentag et al., 2014; Peacock, Konrad, Watson, Nickel, and Muhajarine, 2013). The HFA programme also reported positive effects on children's internalising and externalising behaviour at twenty-four months (Caldera et al., 2007; Landsverk et al., 2002). The magnitude of the effects observed in PFL was overall larger than the magnitude of the effects reported in those programmes.

Strengths of the study include a rigorous trial design and frequently measured outcomes over four years allowing us to account for patterns of stability/change over time and address the heterogeneity in children's developmental trajectories. Main limitations of the study are the small number of children in one of the two trajectories for some of the outcomes, which may have limited our power to detect significant effects (for example, internalising problems), and the reliance on parent-reported measures of children's development, which may be subject to differential misreporting.

In conclusion, we found that PFL, a five-year prenatally commencing programme, was effective in improving children's behavioural, cognitive, and health service use trajectories over the first four years of life. The programme was most effective for children with the most severe behavioural problems but was not effective in preventing problem behaviours from emerging. This is in line with the compensatory hypothesis and suggests that preventive interventions for behavioural problems may be most effective by targeting children with the most severe problems. Conversely, for cognitive skills, the intervention consistently placed all children on a better trajectory yet had no impact on the development within those trajectories. Thus, children benefited regardless of their initial levels of skills, which provides support for the average treatment effects hypothesis, suggesting that less-targeted interventions may be effective for cognitive development.

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Figure 1: Flow chart of sample size per data collection wave

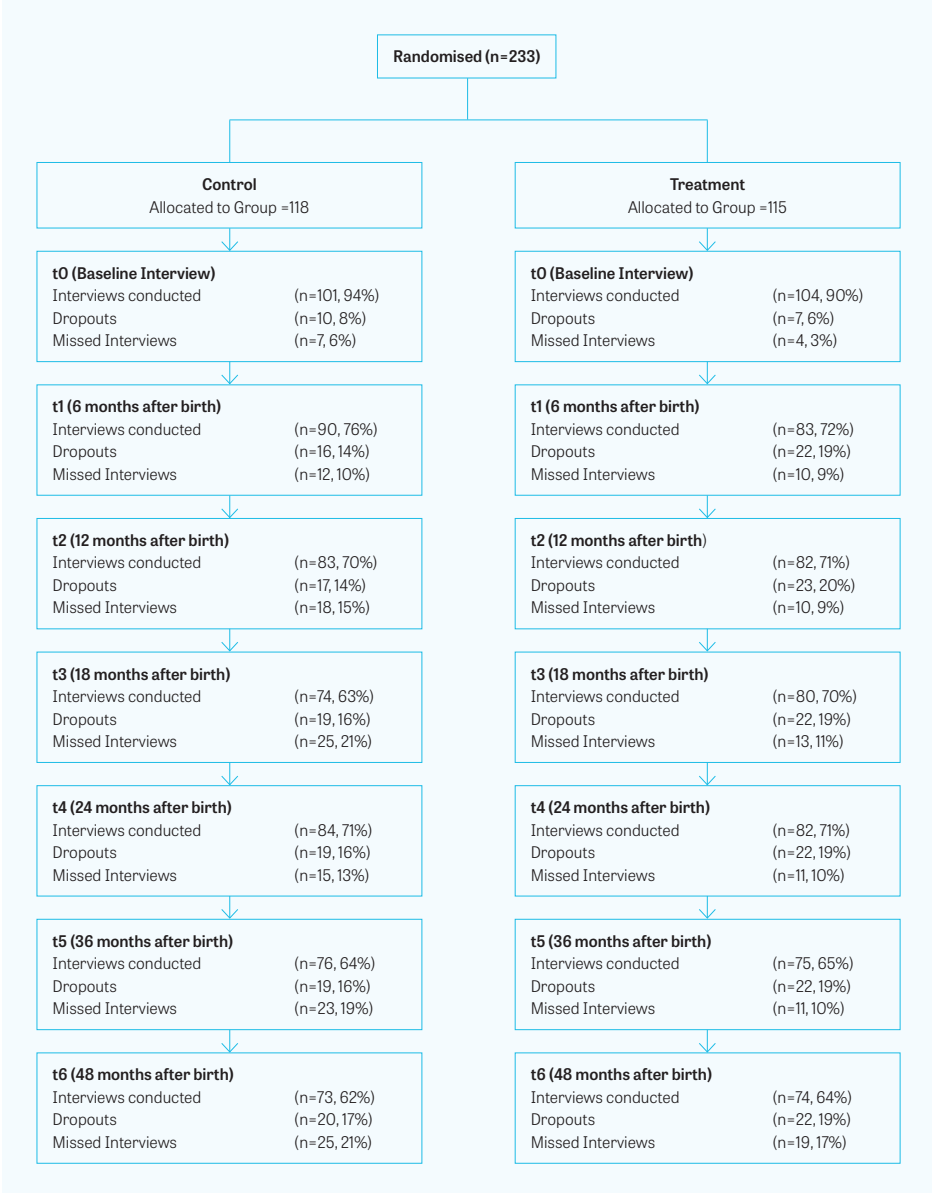
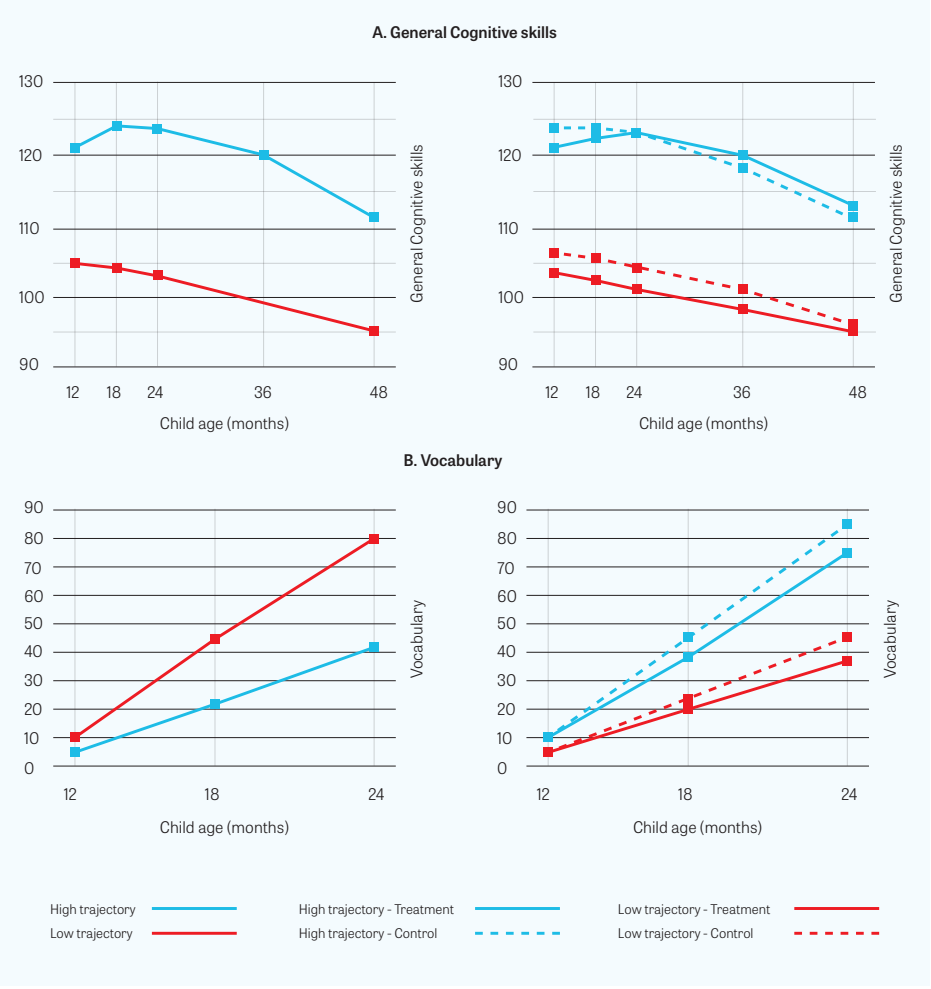


Figure 2: Developmental trajectories of behavioural outcomes

For each outcome, the figures on the left show the trajectories in the entire sample, while the figures on the right show the trajectories by intervention group (solid lines represent the treatment group, dashed lines represent the control group).

The trajectories were estimated for all subjects having at least one observation, and missing data were handled using Full Information Maximum Likelihood (assuming missing-at-random).

Figure 3: Developmental trajectories of cognitive outcomes



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For each outcome, the figures on the left show the trajectories in the entire sample, while the figures on the right show the trajectories by intervention group (solid lines represent the treatment group, dashed lines represent the control group).

For the vocabulary score, although all the tests reported in Table 3B take into account normalization by age and sex as for the MacArthur-Bates Communicative Development Inventories manual, we report the corresponding raw score (i.e., number of words) in Figure 3 to ensure a clearer understanding of the patterns of vocabulary acquisition.

Figure 4: Developmental trajectories of health service use outcomes

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For each outcome, the figures on the left show the trajectories in the entire sample, while the figures on the right show the trajectories by intervention group (solid lines represent the treatment group, dashed lines represent the control group).

Table 1: Characteristics of the baseline sample

	Treatment	Control	p-value1
Age	25.46 (5.85)	25.30 (6.00)	0.85
First-time Mother %	0.54 (0.50)	0.50 (0.50)	0.49
Married %	0.14 (0.35)	0.18 (0.38)	0.52
Low Education % (left ≤ age 16)	0.34 (0.47)	0.40 (0.49)	0.34
College Degree %	0.03 (0.17)	0.03 (0.17)	0.86
Unemployed %	0.43 (0.50)	0.41 (0.49)	0.71
Resides in Public Housing %	0.55 (0.50)	0.55 (0.50)	0.97
Long Term Chronic Illness %	0.11 (0.31)	0.08 (0.27)	0.50
Prior Mental Health Condition %	0.28 (0.45)	0.24 (0.43)	0.46
Planned Pregnancy %	0.29 (0.46)	0.30 (0.46)	0.89
Smoked During Pregnancy %	0.51 (0.50)	0.48 (0.50)	0.66
Drank Alcohol During Pregnancy %	0.28 (0.45)	0.29 (0.45)	0.95
N	105	101	

Descriptive statistics are mean (standard deviation).

1 two-tailed p-value calculated from permutation tests with 100,000 replications.

Table 2: Effect of the intervention on the developmental trajectories of children behavioural (A), cognitive (B), and health service use (C) outcomes

	Entire sample N (%)	RCT N (%) Control	RCT N (%) Treatment	Odds Ratio (CI)	NNT
A. Behavioral outcomes					
Externalising behaviour					
High trajectory	68 (39.54)	33 (38.37)	35 (40.70)	1.10 (0.60-2.04)	40
Low trajectory	104 (60.47)	53 (60.23)	51 (59.30)	1	
Internalising behaviour					
High trajectory	33 (19.19)	15 (17.44)	18 (20.93)	1.25 (0.59-2.71)	28
Low trajectory	139 (80.81)	71 (82.56)	68 (79.07)	1	
Total N	172 (100)	86 (100)	86 (100)		
B. Cognitive outcomes					
General cognitive skills					
High trajectory	109 (61.58)	44 (49.44)	65 (73.86)	2.89 (1.55-5.50)	4
Low trajectory	68 (38.42)	45 (50.56)	23 (26.14)	1	
Total N	177 (100)	89 (100)	88 (100)		
Vocabulary score					
High trajectory	62 (35.84)	25 (28.09)	37 (44.05)	2.02 (1.08-3.82)	6
Low trajectory	111 (64.16)	111 (64.16)	47 (55.95)	1	
Total N	173 (100)	89 (100)	84 (100)		
C. Health service use outcomes					
Number of health clinic visits					
High trajectory	33 (18.23)	13 (14.13)	20 (22.47)	1	
Low trajectory	148 (81.78)	79 (85.87)	69 (77.53)	1.68 (0.78-3.75)	13
Total N	181 (100)	92 (100)	89 (100)		

The table shows the count and proportion of participants in the treatment and control groups for the entire sample and for each trajectory. Difference from the expected distribution was tested using logistic regression and quantified using Odds Ratio (OR) and 95% confidence interval (CI).

NNT=Number Needed to Treat (NNT=1/[treated event rate – controls event rate]).

Odds Ratios were interpreted as follows: 'small' <1.5, 'medium' between 1.5 and 4.1, and 'large' >4.1. (Chen, Cohen and Chen, 2010).

Table 3: Effect of the intervention within each developmental trajectory of children's behavioural (A), cognitive (B), and health service use (C) outcomes

	HIGH TRAJECTORY			
	Control		Difference between RCT groups	
	Control group	Treatment group	Effect size	*p*-value
A. Behavioural outcomes				
Externalising behaviour				
Mean score at each point in time				
24 months	17.65 (1.19)	14.45 (1.22)	0.45	0.041
36 months	16.99 (1.49)	12.54 (1.15)	0.58	0.013
48 months	16.34 (2.29)	10.64 (1.46)	0.52	0.033
Rate of change over time				
Linear slope	-0.55 (0.88)	-1.58 (0.58)	0.24	0.344
Internalising behaviour				
Mean score at each point in time				
24 months	17.08 (8.78)	13.87 (4.97)	0.46	0.610
36 months	18.27 (10.19)	14.03 (4.16)	0.56	0.134
48 months	19.47 (14.28)	14.19 (5.04)	0.51	0.175
Rate of change over time				
Linear slope	1.00 (5.05)	0.13 (2.32)	0.23	0.548
B. Cognitive outcomes				
General Cognitive skills				
Mean score at each point in time				
12 months	123.39 (16.52)	120.93 (20.66)	0.13	0.466
18 months	123.53 (14.25)	122.50 (15.29)	0.07	0.467
24 months	122.82 (13.78	122.92 (12.88)	0.01	0.931
36 months	118.91 (13.52)	120.30 (11.24)	0.12	0.693
48 months	111.65 (14.19)	113.08 (13.48)	0.10	0.760
Rate of change over time				
Linear slope	0.09 (1.21)	0.36 (1.56)	0.18	0.903
Quadratic slope	-0.02 (0.02)	-0.01 (0.05)	0.09	0.807

	LOW TRAJECTORY			
	Control		Difference between RCT groups	
	Control group	Treatment group	Effect size	*p*-value
A. Behavioural outcomes				
Externalising behaviour				
Mean score at each point in time				
24 months	5.62 (1.03)	5.41 (0.88)	0.03	0.877
36 months	4.99 (0.81)	4.70 (0.66)	0.05	0.890
48 months	4.35 (0.74)	4.00 (0.65)	0.07	0.939
Rate of change over time				
Linear slope	-0.53 (0.32)	-0.59 (0.34)	0.03	0.911
Internalising behaviour				
Mean score at each point in time				
24 months	4.80 (0.50)	4.31 (0.48)	0.12	0.219
36 months	4.77 (0.47)	4.33 (0.40)	0.12	0.660
48 months	4.75 (4.92)	4.34 (3.69)	0.09	0.802
Rate of change over time				
Linear slope	-0.02 (0.24)	0.01 (0.19)	0.02	0.819
B. Cognitive outcomes				
General Cognitive skills				
Mean score at each point in time				
12 months	106.27 (24.13)	103.57 (14.85)	0.13	0.504
18 months	105.50 (19.02)	102.31 (16.61)	0.17	0.715
24 months	104.35 (19.05)	100.98 (23.26)	0.16	0.563
36 months	100.85 (21.34)	98.13 (26.93)	0.12	0.792
48 months	95.78 (26.04)	95.02 (22.27)	0.03	0.888
Rate of change over time				
Linear slope	-0.10 (2.25)	-0.20 (2.89)	0.04	0.321
Quadratic slope	0.00 (0.05)	0.00 (0.07)	0.07	0.510

The table shows the estimated mean (i.e., intercept parameters) at each time point and the estimated slope for the treatment and control groups within each trajectory. Difference between treatment and control groups for the estimated mean/slope are quantified using Hedges'g and statistically tested using Wald test. Hedges'g and interpreted as follows: 'small' <0.20, 'medium' between 0.20 and 0.50, and 'large' >0.50.(Cohen, 1988)

SE = Standard Error

Table continued overleaf

Table 3: Effect of the intervention within each developmental trajectory of children's behavioural (A), cognitive (B), and health service use (C) outcomes

	HIGH TRAJECTORY				LOW TRAJECTORY			
	Control		Difference between RCT groups		Control		Difference between RCT groups	
	Control group	Treatment group	Effect size	*p*-value	Control group	Treatment group	Effect size	*p*-value
B. Cognitive outcomes								
Vocabulary								
Mean score at each point in time								
12 months	68.91 (34.95)	70.11 (30.78)	0.04	0.831	56.61 (35.88)	49.36 (35.99)	0.20	0.307
18 months	72.74 (12.90)	70.27 (16.04)	0.17	0.793	40.23 (25.30)	33.04 (21.96)	0.30	0.137
24 months	76.58 (20.15)	70.42 (27.76)	0.25	0.207	23.80 (47.61)	16.75 (34.22)	0.17	0.473
Rate of change over time								
Linear slope	0.64 (3.59)	0.02 (3.05)	0.19	0.551	-2.74 (3.46)	-2.72 (2.82)	0.01	0.904
C. Cognitive outcomes								
Health clinic visits								
Mean score at each point in time								
6 months	2.76 (2.92)	2.32 (1.45)	0.16	0.838	1.12 (0.97)	1.06 (1.59)	0.04	0.726
12 months	3.53 (3.86)	2.53 (2.71)	0.28	0.708	1.17 (0.76)	1.00 (1.54)	0.14	0.367
18 months	3.55 (3.94)	2.56 (3.42)	0.26	0.236	1.20 (0.85)	0.95 (1.60)	0.19	0.435
24 months	7 (3.66)	2.52 (3.55)	0.20	0.195	1.21 (1.01)	0.91 (1.66)	0.22	0.296
36 months	2.79 (3.37)	2.43 (3.55)	0.11	0.21	1.18 (1.15)	0.87 (1.64)	0.22	0.726
48 months	2.13 (3.43)	2.31 (3.56)	0.05	0.281	1.08 (1.08)	0.87 (1.55)	0.16	0.327
Rate of change over time								
Linear slope	0.13 (0.3)	0.02 (0.15)	0.37	0.041	0.01 (0.11)	-0.01 (0.09)	0.20	0.262
Quadratic slope	0.00 (0.01)	0.00 (0.00)	0.26	0.075	0.00 (0.00)	0.00 (0.00)	0.00	0.300

The table shows the estimated mean (i.e., intercept parameters) at each time point and the estimated slope for the treatment and control groups within each trajectory. Difference between treatment and control groups for the estimated mean/slope are quantified using Hedges'g and statistically tested using Wald test. Hedges'g and interpreted as follows: 'small' <0.20, 'medium' between 0.20 and 0.50, and 'large' >0.50.(Cohen, 1988)

SE = Standard Error

Gender differences in cognitive development and school readiness

Findings from a randomised controlled trial of children from communities of socio-economic disadvantage in Ireland

Gráinne Kent and Vasiliki Pitsia

Introduction

In recent years, through collaborations between Atlantic Philanthropies and the Irish Government, there has been ever-increasing attention on early intervention and prevention programmes in Ireland, which are targeted at geographic areas that have been designated as socio-economically disadvantaged (McAvoy, Purdy, Sneddon and Mac Evilly, 2013). These programmes aim to reduce the negative effects of childhood adversities. In understanding developmental trajectories in early childhood, one factor that requires careful consideration is gender and whether differences exist between boys and girls in early childhood development (Ertem et al., 2018). This is of particular importance in light of recent findings by Garcia, Heckman and Ziff (2017), who argued that boys have greater vulnerability to lower quality environments than girls. While an extensive review of the research literature on gender differences in early childhood development is beyond the scope of this short research article, evidence of gender differences across the domains of cognitive development and school readiness during early childhood is briefly discussed below.

With regards to their cognitive development, which includes building skills such as comprehending the world, thinking logically, problem solving and analysing and interpreting information (Doyle and PFL Evaluation Team, 2016), girls have been found to demonstrate an advantage over boys in their cognitive function as measured by intelligence tests. For instance, Palejwala and Fine (2015) utilised the Wechsler Primary and Preschool Scale of Intelligence with a sample of children between the ages of two and seven years and found evidence of girls outperforming boys in this early childhood stage. Similarly, von Stumm and Plomin (2015) found significant gender differences in intelligence favouring girls in early childhood (between two and four years of age). However, this difference mostly disappeared in later childhood and adolescence and was no longer evidenced by the age of sixteen.

Indeed, this early cognitive advantage of girls has been found in more recent studies, for example, a 2017 study by Toivainen, Papageorgiou, Tosto and Kovas of children aged two to four years found that girls had significantly stronger verbal and non-verbal abilities than boys; however, by later childhood (between ten and twelve years of age) boys outperformed girls in non-verbal abilities. Hence, a possible advantage for girls in cognitive development during early childhood appears to reduce over time. Further research is necessary to understand the mechanisms underlying this effect and whether any long-term effects result from this early discrepancy.

Furthermore, while girls appear to score higher in overall measures of early cognitive abilities, findings referring to the different elements of cognition have been mixed. An advantage favouring girls has been evident in specific domains of cognitive abilities, such as processing speeds (Palejwala and Fine, 2015) and verbal memory (Merrill, Yang, Roskos and Steele, 2016). On the contrary, boys have been found to have stronger visual processing (Palejwala and Fine, 2015) and spatial ability skills (Merrill et al., 2016). It is of vital importance to explore such discrepancies, given the growing body of research literature suggesting that early abilities in the cognitive domain are associated with academic and vocational outcomes and overall health and well-being in later life (Batty, Deary and Gottfredson, 2007; Bornstein, Hahn, and Wolke, 2013; Hofer and Clouston, 2014; Koenen et al., 2009).

'School readiness' is a term often used to describe how socially, physically, and intellectually ready children are to start formal schooling. Even though it is considered an outcome of the early years, it has been found to have a determining influence on a child's development, forming the foundation upon which further learning and development is based (Doyle, Finnegan and McNamara, 2010; Janus and Offord, 2007).

During early childhood, girls have been found to have an advantage in the domain of school readiness. For example, Isaacs (2012) found that the typical five-year-old girl in the US is, on average, sixteen points ahead of the typical five-year-old boy in the area of school readiness. In Ireland, it was reported that the majority of early years educators and teachers rated girls as more school ready than boys on their emotional readiness, independence, maturity and organisational skills (Ring et al., 2016). Studies have found that girls also have an advantage in their emotional expression (Chaplin and Aldao, 2013), emotional development (Maguire, Neins, McCann and Connolly, 2016), socio-emotional development (Masnjak, 2017) and social competence (Barbu, Cabanes and le Maner-Idrissi, 2011). However, recent research has found that boys have an advantage in their physical activity levels, indicating that they may be more physically ready to start formal schooling (Masnjak, 2017).

With the aforementioned evidence suggesting gender disparities in early childhood development, the necessity of early intervention and prevention programmes that attempt to reduce such gaps is magnified. If these gender gaps are not addressed early, they may continue to exist across the lifespan. Indeed, previous research has highlighted the effectiveness of enriched early childhood programmes for children living in areas of disadvantage in reducing gender inequalities (Garcia et al., 2017). Given the growing interest in early childhood education within the Irish context, the following research questions were addressed in the current study:

(1) At four years of age do boys and girls differ in their cognitive development?

(2) At five years of age do boys and girls differ in their school readiness?

(3) Does a high-intensity, early intervention programme reduce gender discrepancies in cognitive abilities at four years of age and school readiness at five years of age?

Method

Data

The current study involved a secondary analysis of the Preparing for Life (PFL) data (Northside Partnership, Doyle and UCD Geary Institute PFL Evaluation Team, 2018) and Children's Profile at School Entry (CPSE) data (Northside Partnership, Doyle and UCD Geary Institute PFL Evaluation Team, 2017). This research was supported by the Children's Research Network Prevention and Early Intervention Research Initiative Research Grant Scheme 2017-18.

Participants

Participants came from communities within the expanded PFL catchment area. All communities were deemed as being demographically similar based on analyses. Of the mothers recruited into the PFL programme, ninety-nine per cent were of Irish ethnicity, of whom five per cent were members of the Irish Travelling community.

Participants were randomly allocated to either a low or high treatment group for the duration of the programme (from pregnancy through to when children started school). Between 2008 and 2010, a total of 233 women were recruited with 118 being assigned to the low treatment group and 115 being assigned to the high treatment group. While both groups received developmental toys, access to preschool, public health workshops and a support worker, the main difference between the two groups was that families in the high treatment group received more supports and home visits from a trained mentor and they also attended group-based, parent training during the programme (for further information on the low and high treatment groups see Doyle et al., 2016). By providing additional supports and resources to both treatment groups, the PFL programme accounted for any ethical issues that may have arisen.

Measures

Child cognitive development at four years of age was assessed using the British Ability Scales II (BAS II; Elliott, Smith and McCulloch, 1997). The scores in each cognitive development domain ranged from 49 to 137 with higher scores indicating higher levels of behaviours associated with each domain (Doyle and PFL Evaluation Team, 2016). Data on cognitive development were available for 128 children in total.

Child school readiness was assessed at school entry using a teacher completed, 48-item version of the Early Development Instrument (SEDI; Janus, Duku and Stat, 2005). The scores in each school readiness domain ranged from zero to ten with higher scores indicating higher levels of behaviours associated with each domain (Doyle and PFL Evaluation Team, 2013). Data on school readiness were available for 134 children in total.

Results

Gender differences in cognitive development

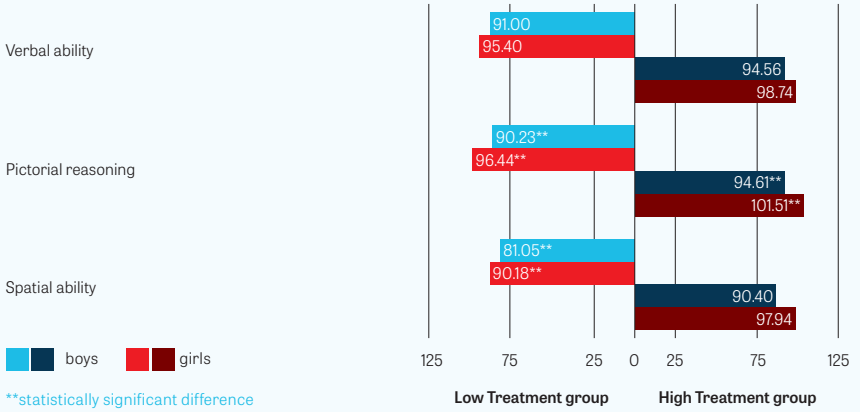
Figure 1 presents the gender differences in cognitive development domains across the two treatment groups, as measured by the BAS II. Girls demonstrated higher scores compared to boys in all cognitive development domains in a consistent manner within both treatment groups. In the low treatment group, the largest gender difference was noted in spatial ability, whereas the smallest difference was noted in verbal ability. Gender differences in pictorial reasoning and spatial ability were statistically significant. In the high treatment group, gender differences in pictorial reasoning and spatial ability were of similar magnitude, whereas boys and girls differed to a lesser extent in the verbal ability domain. Gender difference in pictorial reasoning was statistically significant. It is noteworthy that, while gender differences in verbal ability and spatial ability were larger in the low treatment group compared to the high treatment group, for pictorial reasoning the gender difference was larger in the high treatment group. Overall, both boys and girls from the high treatment group had higher scores compared to children from the low treatment group across all domains.

Gender differences in school readiness

Figure 2 presents the gender differences within the two treatment groups across the school readiness domains, as measured by the SEDI. Girls demonstrated higher scores compared to boys in all school readiness domains in both treatment groups. In the low treatment group, the largest gender difference was noted in the communications skills and general knowledge domain, whereas the smallest gender difference was noted in the language and cognitive development domain. Differences in the domains of social competence, emotional maturity and communications skills and general knowledge were statistically significant. In the high treatment group, the largest gender difference was, again, noted in communications skills and general knowledge, whereas the smallest gender difference was noted in the language and cognitive development domain. Gender differences in emotional maturity and communication skills and general knowledge were statistically significant. Gender differences in all domains of school readiness were smaller within the high treatment group than the low treatment group and children from the high treatment group had higher scores across all school readiness domains (with the exception of girls' emotional maturity).

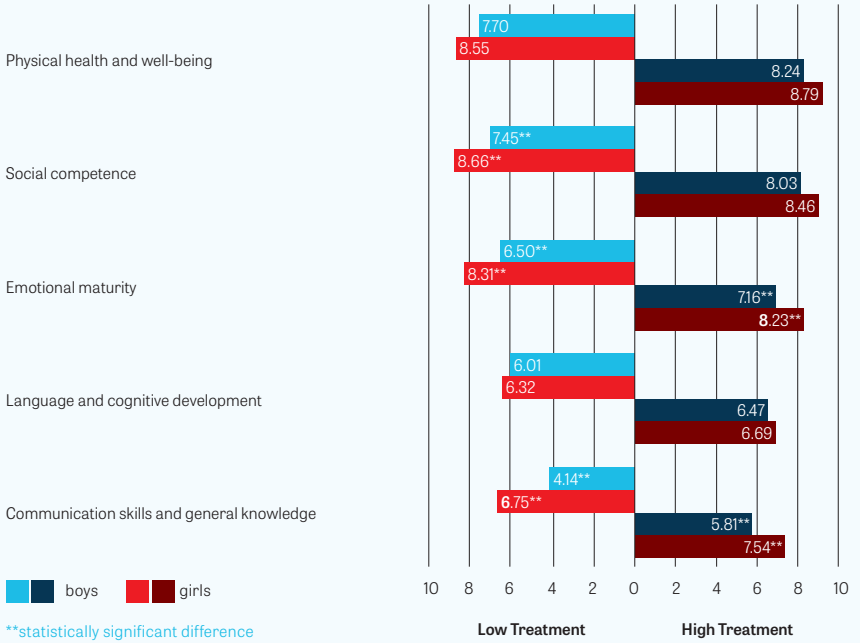
In general, both boys and girls in the high treatment group performed better in the cognitive development and school readiness measures compared to their counterparts in the low treatment group, but none of the differences reached statistical significance. In addition, in most of the cognitive development and school readiness domains, gender differences were larger in the low treatment group compared to the high treatment group.

Figure 1: Gender differences in cognitive development domains by treatment group



**statistically significant difference

Figure 2: Gender differences in school readiness domains by treatment group



**statistically significant difference

Discussion

Overall, the current study found evidence of gender disparities across both cognitive outcomes and school readiness behaviours, with girls demonstrating higher scores than boys. This pattern was evident across all domains of cognitive development and school readiness behaviours and contradicts previous research that has suggested an advantage for boys in the cognitive domain of spatial ability (Merrill et al., 2016) and the school readiness domain of physical development (Masnjak, 2017). However, the findings corroborated other previous research, which suggests that gender differences favour girls in cognitive and school readiness outcomes during early childhood (for example, Isaacs, 2012; Palejwala and Fine, 2015; von Stumm and Plomin, 2015). Given the focus of the current study on a sample of children from an area of socio-economic disadvantage, it may be that boys have less opportunities to develop in these domains. Additionally, this gender disparity across both treatment groups possibly indicates that the interventions being delivered in early childhood may not adequately address gender gaps in these areas.

Even though gender differences continued to exist in both the low and the high treatment groups, findings indicated that gender gaps were less pronounced in the high treatment compared to the low treatment group. Thereby, differential intensity-dependent intervention effects are highlighted, given that both groups received interventions that only varied in intensity. This finding suggests that the high treatment intervention may have reduced gender gaps, supporting previous research that has found similar results (Garcia et al., 2017). More specifically, additional supports and home visits by a trained mentor, group-based parent training and access to infant massage during the course of the programme were the intervention components that differentiated the high from the low treatment group. Hence, smaller differences among boys and girls in cognitive development and school readiness behaviours during early childhood in the high treatment group may be attributed to these intervention elements. It is possible that these intervention elements favour boys' development in particular. However, it should be taken into account that this finding is reflective of the overall findings from the PFL evaluation, where children from the high treatment group were found to be more advanced in terms of their cognitive development and school readiness than children in the low treatment group (Doyle et al., 2016). Therefore, more in-depth research is required to delineate the effect of early intervention and prevention programmes on gender discrepancies.

A number of limitations should be considered in the interpretation of the above findings. The relatively small sample, the narrow age range of the participants and the fact that the sample was derived from areas classified as socio-economically disadvantaged may limit the generalisation of the findings beyond similar samples. Nevertheless, insights from this study are valuable and may well inform further research in the area. In fact, future research may benefit from exploring these effects across a nationally representative sample.

Overall, the current research has the potential to make a valuable contribution to the field of early intervention and prevention in Ireland through the novel insights into gender differences in children's developmental trajectories during early childhood. Previous research has shown that boys from areas designated as socio-economically disadvantaged are likely to face higher risk in their cognitive development and school readiness during early childhood. The current research demonstrates that high intensity, early intervention and prevention programmes have potential to address particular areas that boys struggle with. These findings can contribute to the design and delivery of more focused programmes within Irish and other similar contexts. Findings from the current study require careful consideration by policy makers in the design and implementation of interventions which target children living in socio-economically disadvantaged areas.

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Understanding and addressing the concurrent needs of families living in the Colin Area

A secondary analysis of the Colin Early Intervention Community report card data

Colm Walsh and Gavin Davidson

Introduction

Previous reviews of whole family support services have found that family members often experience multiple issues, but responses to those issues vary greatly, are often bespoke and lack a strong evidence base (Batty, 2014). To address the complex social issues which families experience, there has been an explosion of interest around 'what works' (Olsson, 2010) data over recent years to help us understand how best to improve outcomes for families. But while there has been a growth in evidence-based approaches (Mihalic, Irwin, Fagan, Ballard and Elliot, 2004), these are normally targeted at specific populations (Walsh and Doherty, 2016) for narrow but well-defined issues (Aarons and Palinkas, 2007).

The reality, as we know, is that families are complex systems comprising of individuals who interact in even more complex systems, and interventions are not designed in ways that acknowledge these complexities (Guastaferro et al., 2017). Practitioners understand that for many families, crises can arise at any time and often exacerbate pre-existing challenges. These might include a range of practical issues but also more complex psycho-social challenges. Financial issues can be common, but some families also experience trauma, abuse, addiction, incarceration and ill health, and often several of these at once (Lee, Anderson, Quranta and Shim, 2018). In one review from Northern Ireland, families experienced an average of four issues concurrently (Walsh and Doherty, 2016). Blended models, in which distinct but complementary interventions are available to families based on their specific needs, is one intervention model which is currently under-evaluated. In this study we examined the extent to which families engaged in a complex, early intervention programme in which they could access multiple interventions concurrently to address different issues experienced by family members; and whether it is possible to attribute improved outcomes to this engagement.

The Colin Early Intervention Community (CEIC)

The Colin Neighbourhood is located on the outskirts of greater West Belfast in County Antrim, has a population of approximately 30,000 people, and falls within the three per cent of most deprived areas of Northern Ireland. The unique demographic and deprivation features have contributed to a range of poor health, education and social outcomes for children and families on an inter-generational basis (NCB, 2012). The Colin Early Intervention Community (CEIC), which consists of a range of statutory, voluntary and community organisations, set out in 2011 with a vision that organisations would work differently together and be more coordinated in their approach. Implementing an Outcomes Based Accountability (OBA) Framework (Friedman, 2015), the CEIC provided data on outputs and outcomes for each quarter which were then converted into 'report cards' for dissemination. Report cards are summaries of analysed data, and report on key questions within the context of the OBA Framework, namely (1) how much did we do (2) how well did we do it and (3) is anyone better off? In many ways, this 'practice informed by evidence' approach was still novel during the inception of CEIC and represented a strategic shift by service providers in the voluntary, community and statutory sectors. In 2017, a team of researchers from Queen's University Belfast undertook a secondary analysis of the report card data collected by CEIC since its inception, with support from the Children's Research Network Prevention and Early Intervention Research Initiative Research Grant Scheme.

Aims of the study

The aim of this retrospective, secondary analysis was to identify the extent to which families engaged in multiple interventions to address, or seek support for, a range of issues or challenges (see Table 1). This article outlines the process by which these data were collected and analysed, as well as the findings that emerged from that analysis.

Table 1: Overview of the research questions

Overall research question
Do families access multiple interventions concurrently to address different issues that family members experience?
Specific research questions
1. How many families have benefitted from services within CEIC?
2. What are the reasons for referral into the programme and what are those pathways?
3. What proportion of families engaged in multiple interventions?
4. How are decisions taken around who engages in which intervention and when?

Method

Secondary analysis involves the re-analysis of data that were collected by someone else for a different purpose (Boslaugh, 2007). Despite a growth in the amount of data available within the community and voluntary sector, few datasets have been made available for further or secondary analysis. The first step in the process was to review the report card data. Familiarisation with the data is a critical step in understanding the utility of the information and what subsequent steps need to be taken to answer the research question. The second step in the process was to identify a method of standardising the data so that different service users could be linked across programmes. CEIC established a coding system during 2016. This was used as the cut-off point for the data included in the analysis. It was apparent that not all interventions subsequently used this coding system and therefore, our analysis was limited to families that could be tracked across different interventions. The third step was to become familiar with the clinical measures being used. The fourth step involved recoding of the existing data to facilitate analysis. The fifth step involved analysis of that data and the findings are reported below. The details of 207 families were collated from the raw report card data. The data were analysed using SPSS Version 22. Descriptive statistics were conducted to examine the means, standard deviation and range across all variables. Independent samples t-tests were used to compare means between variables of interest. Cross-tabulations were used to compare categorical variables and Chi-square tests of independence were used to explore statistical relationships between them.

Summary of the findings

The CEIC programme comprises different, but complementary, intervention components. Because the aim of the study was to explore how individual family members access different elements of the programme concurrently, only those interventions which collated data using the same family identifiers were included in the review. Following the first review of all data, four interventions were included in the study (see Table 2). Some of these interventions focussed on the whole family, others solely on parents, and others on children or young people. The mode of delivery varied between individual and group work and was an important factor in recruitment and retention. This suggests that despite similarities, each intervention was positioned to address and respond to variability within families.

While it is not clear from the report card data how families were engaged in the programme or what all those pathways were, it appears that a mixture of professional referral as well as

Table 2: Interventions reviewed

Intervention	No. of families engaged	Target Group	Target Outcomes
Partnership with Parents	73	Parents of children aged 2-16 years	Family functioning
Strengthening Families	22	Parents of children aged 12-16 years	Parenting skills
Incredible Years	125	Parents of children aged 0-8 years	Family functioning
Mentoring for Achievement	32	Young people aged 10-16 years	Educational attainment
Total	252		

self-referral was common. Where referral data were collected, individual projects documented basic demographic data, such as name and age, as well as more specific information, such as presenting needs. However, there were few cases of documented referral data on families, and when it was evidenced there did not appear to be a coherent or consistent way of recording pathways into the CEIC. Some documented referral data included comprehensive needs analysis, whilst others collected only contact details and a brief statement of perceived need. Interestingly, where these data were collected, these families were more likely to engage in multiple interventions, indicating that their needs may have been more fully understood. Comparison of means of the number of interventions engaged in by families differed between those with referral information (m=1.48 interventions) and those without (m=1.11 interventions) and illustrates that this was at the point of statistical significance (t, 73=3.6, p=.001). When referral information was routinely collected, families engaged in more elements of the programme.

There was evidence that a sizeable minority engaged in more than one programme. In fact, eighteen per cent (n=38) of families who engaged in the reviewed interventions within the specific time period (January 2016 to September 2017) engaged in multiple programmes. Within this group, the average number of interventions engaged in was 2.22, and ranged between two and four interventions.

Those who engaged in more than one intervention were more likely to complete the interventions. For instance, twelve per cent (n=20) of those who engaged in only one intervention left their intervention without any demonstrable evidence of partial or full completion. On the other hand, only three per cent (n=1) of those who completed more than one intervention left the intervention without any evidence of engagement.

Discussion

The potential for data to inform practice is often missed. Given the potential risks, the real-time decision making, and the requirement for staff to be informed by evidence, services require data-driven decision making, but the systems that facilitate this are not always in place. In this study, despite positive efforts to achieve this, we found little evidence that data were collected routinely to guide and inform practice. For example, it was difficult to track families across most of the interventions; it was difficult to establish which families came into CEIC and for what reason(s); the pathway(s) into the programme were not clear; and it was difficult to establish how decisions were made on which family members received which intervention, who made these decisions, and at which points these decisions were made. It was therefore difficult to answer our fourth research question, how are decisions taken around who engages in which intervention and when? The reasons for this appear to be related to the evaluation frameworks established by and on behalf of the commissioner of each evaluation. Data collected focussed on individual interventions as opposed to the synergy between the interventions; focussed on outputs such as the number of participants within each intervention; and focussed on outcomes such as the difference between baseline and endpoint measures. While this data is useful, particularly for funders and policy makers who appear to prefer synopsis rather than detail, it is limited.

Some families living in Colin are likely to experience one or more significant social issues (NCB, 2012) and we know from other empirical studies that the cumulative effect exacerbates already complex issues (Finkelhor, Shattuck, Turner and Hamby, 2015). It has been proposed that single issue interventions (for example, those that attend to parenting practices) are not and cannot be sufficient to address other concurrent issues (Guastaferro et al., 2017). Therefore, blended models in which interventions are simultaneously implemented provide a conceptual framework to design complex services and potentially enhance outcomes that some families experience. It appears that in some cases, some families do receive multiple interventions, but this is neither strategically designed nor coherently coordinated. The CEIC programme provides some evidence that for families with chronic and complex needs, blending interventions could provide a platform for greater strategic delivery and coherent coordination.

Conclusion and recommendations

Engaging, supporting and improving outcomes for families who experience multiple adversity is complex. It is well established that single issue interventions cannot address multiple issues concurrently - they are not designed to. CEIC has demonstrated a vision of improving outcomes at the community level through coordinating services and the use of best evidence. Combining interventions is a novel approach and the mechanisms by which they are implemented are currently undervalued. This study demonstrated that there are some significant challenges associated with implementing blended approaches. Table 3 overleaf outlines the key lessons and recommendations.

Table 3: Summary of key learning and recommendations

Domain	Lesson	Recommendation
Conceptual	Single issue based interventions cannot attend to all the issues that families experience (Guastaferro et al., 2017). Blended approaches are about ensuring the right interventions are available when families need them.	Further investigation is needed to understand the complex issues that families experience and how they could be better served by blended approaches.
	Not all families require multiple interventions (Berlinger et al., 2015). However, some families could benefit from a range of supports implemented concurrently to address variability of need within the family and between different members of the family.	Consideration should be given to prospective and controlled studies in order to enhance our understanding of how such conceptual frameworks could enhance the outcomes for families experiencing acute adversity.
Operational	Implementation is complex and dependent upon many internal organisational and external factors (Fixsen, Blasé, Naoom and Wallace, 2005). This becomes even more challenging when different organisations are implementing complementary interventions within the same programme.	A strategic approach is needed to ensure all internal policies and protocols promote and facilitate opportunities for joined up working.
	Complex cases require data to inform decision and practice. A coherent and consistent decision-making protocol is needed in order to define pathways into and out of the programme.	Consideration should be given as to how the CEIC can implement a shared data system and develop a coherent and consistent system to make decisions based upon data being collected.
	Data should be collated, analysed and reported to demonstrate outcomes but also to inform decision making and practice. It is not clear how the current report card format could help inform practitioners.	Processes within and between CEIC intervention could be reviewed in order to increase the utility of data being collected and the purpose of collecting that information.

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Meaningful participation of young people in secondary data analysis

Lessons from the field

Leonor Rodriguez

Introduction

The benefits of promoting meaningful participation of young people in issues that are relevant to them have been identified. Oliver, Collin, Burns and Nicholas (2006) carried out an evaluation of the participation of young people in a youth advisory board to improve mental health services. The study found that participation had many benefits for young people, including resilience building, increasing control, connectedness, communication skills, confidence, self-esteem, self-efficacy and acted as a protective factor for mental health problems. Other studies have shown that participation of young people can increase their civic engagement by giving them a voice in public affairs, policy making and connection within their community (Finn and Checkoway, 1998; Frank, 2006; Horgan, 2017). Young people can enhance research by providing reliable knowledge informed by their perspectives and experiences and can, in turn, also benefit from research that understands their lives (Kennan and Dolan, 2017). This provides an opportunity for both adults and young people to learn from each other (Lundy, McEvoy and Byrne, 2011). Integrating the views of youth in research allows findings to be aligned with the priorities and experiences of young people and improves the impact and success of policies and programmes (Liebenberg, 2017). "Participatory dissemination" (Liebenberg, Ikeda and Jamal, n.d., p.1) with young people can bring "volume to their voices" and attract the attention of those who have the power and ability to improve their lives.

This article is based on a secondary data analysis of the impact of mentoring relationships on adolescent empathy (Rodriguez, Dolan and Brady, 2018). Data for this analysis originated from the Big Brothers Big Sisters (BBBS) evaluation study which was undertaken by the UNESCO Child and Family Research Centre at the National University of Ireland, Galway (Dolan et al., 2011). The evaluation consisted of a randomised control trial (n=164) and nine longitudinal qualitative case studies of mentoring pairs, including the experiences of young people, mentors, mothers and case workers taking part in the Big Brothers Big Sisters programme.

To disseminate the findings from this secondary analysis, young people who were involved in the BBBS programme at the time of the current study were invited to take part in an advisory group to explore their views on the relevance of these new findings and to determine if these findings were relevant to their current experience in the programme. The lead researchers, a professional video producer and two case workers were present at the time of the advisory group meeting. These young people were then asked to share their own experiences in the programme by creating a video to spread the messages of the research to other young people, stakeholders and the public. This process is described in more detail in the methodology section below. Video was selected as the medium for dissemination because it can be shared widely. In a participatory dissemination approach, young people can be involved in the selection of the dissemination method, and may select from other media such as creative writing and art (Liebenberg et al. n.d.).

Dissemination methodology

The dissemination process consisted of three phases. Firstly, contact was made with the BBBS programme in the West of Ireland to explain the research and invite them as gatekeepers for young people. This organisation purposefully selected young people according to their personalities to maximise their potential interest in the video. All parents and young people were provided with information sheets and consent forms before participating.

Secondly, the young people took part in a youth advisory group to increase engagement (Leitch and Mitchell, 2014). For two hours the young people were introduced to the research and the findings and were then asked to reflect upon these and to identify any times in their lives where a similar situation had happened to them. The lead researcher explained the research and findings in five slides using age-appropriate language, confirmed with the young people that they understood the ideas, and ensured the young people had adequate opportunity to comment or ask questions. The young people were then given blank story scripts and were divided into small groups to brainstorm their lived experiences or creative ideas in relation to the research and findings. These were then discussed as a group and the young people selected the most relevant ones for the story line. The professional video producer created a script based on the young people's themes and suggestions.

The third stage consisted of a full day of filming. The young people were given scripts and they were asked to read them to ensure the language was suitable for a young person; they could make any changes they felt were needed. Following this, the young people were assigned a character, and scenes were filmed in the different locations to fit the storyline. The young people had an active role in selecting the locations of the film, as there were different options available near the location of the BBBS programme headquarters, however, it was decided to stay within the area to guarantee the safety of the young people, and to reassure parents of the whereabouts and safety of their children. The lessons learned from this experience are explored in detail in the following section.

Lessons from the field

This section describes some lessons learned in the process of meaningful participation and dissemination of the results of this secondary data analysis. This includes ethical and practical considerations to safeguard the integrity of these young people, and, in this innovative research experience, of involving a different cohort of young people to disseminate the findings of a study that they were not initially part of. It was also very important to encourage meaningful participation, as well as making it an enjoyable experience for the young people. It was important to emphasise to the young people the significance and responsibility of their dissemination work – that they had the potential to reach those with the power to affect positive change. Meaningful participation entails doing something that has a bigger purpose: young people believe in this purpose and in their capacity to help others (Oliver et al., 2006; Decker et al., 2011). The steps taken to achieve meaningful participation in the current study are described below.

Take the time to talk to young people and get to know them

Building relationships of trust with young people requires time and it is essential to ensure that their authentic views will emerge in the research process (Kennan and Dolan, 2017). One of the successes of this dissemination process was conducting an introductory advisory group with young people. This allowed the researchers and video producer to meet them, get to know their personalities and interests, and identify the potential role they could have based on their personalities, hobbies and talents. This also built good rapport as young people felt listened to and respected.

Identify young people's strengths

Recognising the capacities of young people is an important part of youth participation (Oliver et al., 2006) and researchers need to assume young people have the capacity to express their views (Lundy et al., 2011). One young person, for example, was very talented at filming and had experience with cameras, and he had a very active role in filming the video. Young people have talents and abilities, and it is important to spend time finding out about them and how they can be utilised within the project.

Select a suitable environment for young people

Young people need to feel comfortable to express themselves, and the need for safe and uncensored spaces for young people to voice their concerns has been highlighted (Bradley, Deighton and Selby, 2004; Lundy et al., 2011;

Kennan, Brady and Forkan, 2018). It was decided by the research team and the youth organisation to meet the young people in their community centre as this was a familiar environment for them. This location also had the capacity to be an indoor and outdoor recording venue. Young people provided suggestions around the city centre and public parks, however, these were very open spaces where it might have been challenging to stay together and stay focused on the task with minimum interruptions. As proposed by Lundy et al. (2011) researchers need to listen to the child's views but make an informed judgement when the outcome of their views may not be in the child's 'best interest'. This must be explained in the context of ongoing dialogue between researchers and children in a way that they can understand why their suggestions may not prevail but are taken very seriously into consideration (Lundy et al., 2011).

All adults involved need to have the same mind-set regarding participation by young people

It was crucial to engage adults that valued the involvement of the young people and were willing to act as enablers and supporters of this process, as deliberate attempts are necessary to support children to form and express their views confidently (Lundy et al., 2011). The young people were encouraged to complete the tasks but never forced to share more than they wanted. Work was also carried out in small groups where one adult had the role of listening to the young people, encouraging them to explore their lives and experiences and make them feel comfortable and validated. Regarding safety, it is essential that all adults involved with the group of young people comply with child safety guidelines, for example, by ensuring that they have appropriate Garda vetting. Research teams need to ensure child safety guidelines are adhered to before allowing recording teams, actors or any other support personnel to encounter young people.

Provide information sheets and consent forms

Researchers have a duty of care towards young people to ensure that the levels of distress or burden are reduced or eliminated (Kennan and Dolan, 2017). Consent forms are a well-established ethical standard (ibid, 2017) and young people and parents need to be clear about what their involvement entails, the risks and benefits and the time they are committing (Alderson and Morrow, 2011). In the case of video, young people and their parents need to consent to use their image on websites and in social media. Additionally, it is important to have written parental consent to allow young people to leave the venue on their own or with a different person at the end of the day, to ensure their safety. It is the researchers' duty to ensure the young people return home safely.

Ensure the right to participate or withdraw

If any young person did not want to be on camera, they could participate by taking other roles such as recording, bringing props and setting scenery. All of the young people were asked to read the script and provide feedback. In the consent and information form the young people were informed that they could disengage from the task at any time without consequences for them personally or for the mentoring programme (Kennan and Dolan, 2017). Such reassurances reduce the pressure on young people and create a friendlier environment for them to be involved voluntarily (Lundy et al., 2011). One young person, for example, attended the advisory group but decided not to take part in any other stages of the process.

Bring all young people together at the same time

As this was a three-part process, finding a suitable date to bring all the young people together was a challenge. Considerations were given to important milestones such as school examinations. A day was selected when the young people could be relaxed and not under the pressure of other tasks. Some of the young people had family commitments and could not attend. However, they were given several options as to week days or weekends and a decision was reached by a majority. It was important to include several young people more the minimum number required, to allow for cancellations on the day.

Give careful consideration to providing gifts and rewards

Providing gifts and rewards to young people for their participation is a matter for ethical consideration. In this case, the young people were paid to take part in the advisory group and the video. The justification for this was they were working for the research project and, therefore, should receive fair payment for their time and commitment. All basic needs of young people should be covered according to the amount of time they spend carrying out the task, and this includes providing meals and coordinating transport to and from the venue if parents themselves cannot provide transport. In this case, the youth organisation took charge of transport for the young people and had direct contact with parents. The work of young people should be valued and is just as important as any other part of the project. It is important to include these costs within the overall dissemination budget, or to find alternative ways to thank young people for their time and involvement.

Conclusion

The video is a valuable tool to inform people about the importance of mentoring relationships and how they promote empathy in young people. The video has the capacity to reach a varied audience and is in a format that can be easily understood beyond academic research (Liebenberg et al., n.d.).

This paper provides an overview of our strategies to facilitate the engagement and meaningful participation of young people in the research dissemination process, and also the challenges and limitations we encountered. Even though there is strong evidence to support the benefits of encouraging participation of young people (Oliver et al., 2006; Finn and Checkoway, 1998; Frank, 2006; Kennan and Dolan, 2017; Lundy et al., 2011; Liebenberg, 2017), challenges remain. One of the limitations of this study is it did not capture the benefits from involvement in the dissemination that the young people might have reported. However, we did not have the capacity to measure this within the time frame of our study. According to Frank (2006) some benefits can become immediately apparent while others may accrue over time; meaningful participation was encouraged but not necessarily achieved. Additionally, as this was a secondary data analysis, these young people were only involved in dissemination. Therefore, if they had been involved throughout the study, the benefits to these young people might have been greater.

More research is needed regarding the involvement of young people in secondary data analysis, as research has suggested that children need to have significant control and ownership of the research if it is to promote their empowerment (Kennan and Dolan, 2017). It is important to build their capacity for meaningful participation (Lundy et al., 2011) however, in secondary data analysis, their involvement and empowerment may be, by its nature, limited.

There is an implicit risk in participatory research that young people's views may be delivered effectively to relevant policy makers, but these views may not be acted upon (Kennan and Dolan, 2017). In the context of this study, efforts need to be made by the researchers to continue to disseminate the video, but also track its impact (Leitch and Mitchell, 2014; Horgan 2017), and inform young people about this to encourage them to continue engaging meaningfully in research. Hogan (2017) argued that policy should be grounded in children's realities, and that policy and services should respond accordingly. In the case of this secondary data analysis, policy recommendations were drafted to improve the services Big Brothers and Big Sisters provide. It is also expected that this experience will

encourage researchers to foster meaningful participation in research, whether working with primary or secondary sources.

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Research Summaries

How do we compare?

Locating findings from the Tallaght West Child Development Early Years Initiative within a wider international context

Nóirín Hayes and Judy Irwin

In educational research the use of comparative and meta-analysis methods allows researchers to draw conclusions about educational practices using a quantitative synthesis across studies. Such methods

> ... help draw conclusions about whether an intervention or approach, on balance, is effective or not ... [and] explain variation in research findings by identifying any patterns or significant associations with features of interventions associated with greater or smaller effects (Higgins, 2016, p. 32).

While there has been significant growth in early education research in Ireland, it is still at the nascent stage when compared to other fields of education research and there are few research evaluations with the design potential to be studied comparatively.

This research summary reports a study that was devised to carry out a comparative analysis using a section of quantitative findings from the evaluation of the Tallaght West Child Development Initiative (CDI) Early Years programme (Tallaght West Childhood Development Initiative, 2017), along with datasets from the UK Effective Provision of Preschool Education (EPPE; Melhuish, Sammons, Siraj, Sylva, and Taggart, 2014) and Effective Pre-school Education Northern Ireland (EPPNI) studies. This internationally comparative study was funded by the Children's Research Network Prevention and Early Intervention Research Initiative Senior Scholars Grant Scheme 2018. The CDI Early Years project was one element of a wider area-based initiative developed to meet the needs of young children and their families growing up in a designated disadvantaged area of Dublin. The CDI Early Years project provided a two-year programme for two-and-a-half to three-year-old children. It offered, among other features, a manualised programme that followed the High/Scope Curriculum and a dedicated Speech and Language Therapist.

The CDI evaluation (Hayes, Siraj-Blatchford, Keegan and Goulding, 2013) was designed to allow for comparison with elements of the EPPE and EPPNI[6] datasets. This approach aimed to mitigate any shortcomings associated with a medium sample size and the short duration of the study. The evaluations of all three initiatives share common dimensions across a series of evaluation instruments. At the child level shared measures include dimensions of the British Abilities Scale (BAS II; Elliot, Smith and McCullough, 1996) and the Adaptive Social Behavior Inventory (ASBI; Hogan, Scott and Bauer, 1992); at the parent level they include the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and the Home Learning Environment Inventory (HLE - Adapted; Melhuish, Sylva, Sammons, Siraj-Blatchford and Taggart, 2001); and at setting level they include the Early Childhood Environment Rating Scales (ECERS – Revised; Harms, Clifford and Cryer, 1998). By quantifying the degree to which the outcomes at comparable points are similar (or different), the study intends to statistically extrapolate what the results might have been, had the CDI evaluation study extended for a longer period allowing data collection as the sample children progressed through into primary school.

While there are points of commonality across the evaluations, there are also differences. In the first instance, the CDI evaluation explored the impact of an early intervention programme, whilst the EPPE evaluation studied the impact of preschool provision in general. However, there are subsample data from the UK studies which relate specifically to Local Authority preschools, often in receipt of additional supports when compared to mainstream UK preschools. Secondly there is a ten-year difference in the data collection points; the preschool data for the EPPE study were collected in the early 1990s; in comparison, the CDI data were collected from 2008-2011. Finally, there is a substantial difference in the sample sizes across the studies.

[6]On commencing the study, it was found that data from the EPPINI had not, in fact, been archived and so the study compares the CDI data with EPPE data only.

We are currently comparing the datasets across the comparable dimensions and developing the analytical framework to test the extent to which the ambitions of the CDI design can be realised. If successful, locating the findings of the CDI evaluation within an international context will provide an expanded and enhanced context for interpreting and disseminating the CDI data nationally and internationally. Furthermore, the results will further to our understanding of what aspects of preschool experience contribute to positive outcomes for children and inform policy initiatives to enhance the impact of early childhood education and care. The findings will be disseminated through publication and relevant conferences.

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Investigating associations between maternal well-being and infant dietary intake in a low-income setting

Sarah Buggy, Kate O'Neill, Patricia M. Kearney and Karen Matvienko-Sikar

Background

Maternal well-being is associated with child health and developmental outcomes, including obesity risk (Woo Baidal et al., 2016). Such associations may be due to factors such as child feeding practices, though findings are inconsistent (McPhie, Skouteris, Daniels and Jansen, 2014). Being of low socio-economic status is associated with higher risk of poor child feeding and dietary intake (Zarnowiecki, Dollman and Parletta, 2014; Darmon and Drewnowski, 2008), which in turn is an important predictor of childhood obesity (Perry et al., 2015). There is mixed evidence suggesting that maternal stress and depression impact on weight outcomes (Tate, Wood, Liao and Dunton, 2015) and dietary intake (O'Connor et al., 2017), possibly through impacting the parent-child feeding relationship (Webb, Zimmer-Gembeck, Scuffham, Scott and Barber, 2018). Maternal self-esteem influences the parent-child relationship but has not been investigated in relation to weight outcomes (Benton, Skouteris and Hayden, 2015).

Aim

The aim of this study is to examine the effect of stress, depression and self-esteem on child dietary intake in a low socio-economic group.

Method

The Preparing for Life (PFL) study was a longitudinal, randomised controlled trial aimed at improving the school-readiness of children in several disadvantaged communities in North Dublin. We used data from the PFL study (Northside Partnership, Doyle and UCD Geary Institute PFL Evaluation Team, 2018) that were collected when study children were eighteen months old. The following data were collected by trained interviewers using Computer Assisted Personal Interviewing software: parenting stress (Parenting Daily Hassles Scale (PDH; Crnic and Greenberg, 1990) using Frequency and Intensity subscales); parenting stress (Parenting Daily Hassles Scale (PDH; Crnic and Greenberg, 1990) using Frequency and Intensity subscales); depression (Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden and Sagovsky, 1987) with scores of nine or over representing clinically elevated depressive symptoms); depression (Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden and Sagovsky, 1987) with scores of nine or over representing clinically elevated depressive symptoms); and self-esteem (six-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965)); as well as demographic information. Child dietary intake was assessed using a Food Frequency questionnaire (FFQ) adapted from the Lifeways Cross-Generation Cohort Study (Shrivastava et al., 2013). Binary 'healthy' or 'unhealthy' categorical variables were created to represent whether children were or were not meeting Irish dietary recommendations for toddlers (Health Promotion Unit of the Department of Health and Children, 2004) for each food group (protein, fruit and vegetables, dairy, protein, and sugars/fats - see Table 1). A composite 'Overall Healthy Diet' binary variable was also created to quantify the number of children meeting all dietary recommendations listed above.

Descriptive statistics were used to explore associations between variables of interest and each dietary outcome variable using t-tests, chi square tests and Mann Whitney tests. Multivariable logistic regressions were conducted to further explore relationships between exposure and outcome variables and were adjusted for relationship status, household income and maternal age. Analyses were carried out using SPSS Version 24.

Findings

A total of 225 participants provided data at eighteen months, representing a response rate of sixty-eight per cent of the initial sample of 322.

The key results are presented in Table 2. Seventy participants reported having maternal depression. Mean PDH Frequency score was 33.83, and median PDH Intensity score was 26. Median RSES score was 14. Overall, only two

Table 1: Coding of FFQ based on nutrition guidelines to create outcome variables

Outcome variable	Departmental guidelines	PFL FFQ coded as 'Healthy'
Grain	4 servings	4-5 times per day
Fruit and vegetables	2-4 servings	Fruit >1 time per day Vegetables >1 time per day
Protein	2 small servings	2-3 times per day
Dairy	3 servings	2-3 times per day
Sugars and fats	Less than once per week	Once per week or less
Overall Healthy Diet	Meeting grain, fruit and vegetable, protein and dairy guidelines	Scoring 'healthy' for grain, fruit and vegetable, protein and dairy outcome variables

Table 2: Demographic characteristics

Variable	N %
Mean maternal age	28.83 (5.93)
Relationship status	
Single	54 (24.1%)
Married	42 (38.8%)
Cohabiting	87 (38.8%)
Not living with partner, separated, divorced, widowed	41 (18.3%)
Median weekly disposable income	€193.37
Score >9 on EPDS	70 (31.1%)
Overall healthy diet	2 (0.9%)

children (0.9%) were reported to have a diet meeting all dietary requirements at eighteen months. None of the psychological variables significantly predicted any dietary intake outcomes.

Conclusion

Dietary recommendations were met by less than one per cent of participants. This corroborates research on the poorer diet quality of people in low socio-economic brackets (Harrington et al., 2011; Kunaratnam, Halaki, Wen, Baur and Flood, 2018). As this analysis did not produce significant associations between maternal well-being and dietary intake, socio-economic disadvantage may be a more salient factor in child dietary intake than maternal psychological factors and may explain the linkages between maternal well-being and infant feeding within the literature. This may occur due to financial constraints on the type of food available and consumed in the home, or differences in feeding practices and beliefs among mothers of different socio-economic groups (Zarnowiecki et al., 2014). Maternal stress, depression and self-esteem may also influence weight outcomes through other weight-related behaviours, but not dietary intake.

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Does early home environment influence basic numeracy skills?

The Preparing for Life Study

Victoria Simms, Abbie Cahoon, Aideen McParland, Nicola Doherty and Camilla Gilmore

This study aims to address an open question about the longitudinal relationship between the early home environment and the development of children's numeracy skills. Data analysis is currently on-going thus this report provides a summary of the rationale and methods of the study.

What do we know about the home environment and numeracy skills?

Predictors of early educational outcomes for children have been widely researched within the field of educational, cognitive, and developmental psychology for many decades (Sirin, 2005). Previous research has suggested that the quality of the home environment is not only important, but predictively linked to a child's social and academic outcomes (Bakermans-Kranenburg, Van IJzendoorn and Bradley, 2005; Melhuish et al., 2008).

Typically, home environment has been conceptualised as a proxy of socio-economic status (SES) when predicting early educational outcomes for children. This is due to SES, as a domain, capturing many aspects of the home environment, for example: lone parent status, parental employment, household composition, family income, and parental education. Indeed, each of these SES indicators have also been found to impact the educational outcomes of a child (see for example, Biblarz and Raftery, 1999; Bradley and Corwyn, 2002). However, more recently, studies have found that nuanced measures of the home environment are significant predictors of reading and maths achievement for children (Anders et al., 2012; Melhuish et al., 2008).

Interestingly, recent research has shown the quality of the home environment is specifically important for the development of early number skills, thus supporting the argument for home environment to be considered independently from other SES proxies. For instance, Kleemans, Peeters, Segers and Verhoeven, 2012 found that parent-child numeracy activities and parents' numeracy expectations are unique and important predictors of early numeracy, after controlling for linguistic and cognitive child factors. This emphasises the importance of home numeracy experiences on early numeracy skills development Huntsinger, Jose and Luo (2016).

The Preparing for Life intervention

The Preparing for Life (PFL) programme aimed to improve school readiness by intervening during pregnancy and working with families until children started school (Doyle, Cheevers, Finnegan, McEntee and McNamara, 2009). Based upon key theories of child development this programme was designed to improve children's school readiness by assisting low-income parents in developing skills for their child starting school. Researchers compiled a multi-dimensional programme that targeted a range of child outcomes including; cognitive development, physical health and motor skills, socio-emotional development, approaches to learning, and language development. The PFL programme was evaluated using a randomised controlled trial (RCT) design, with participants randomly assigned to either a low or high treatment group. Families in both groups (low and high treatment) experienced support from a key worker and received additional preschool and health related information. The high treatment group received additional home visits from a mentor and training through a parenting scheme. The home environment was measured in participating families when the study child was six, eighteen, thirty-six, and forty-eight months of age. Early numeracy skills were measured when the child was aged forty-eight months.

The current study

This study used the PFL dataset (Northside Partnership, Doyle and UCD Geary Institute PFL Evaluation Team, 2018), which provides unique longitudinal data, to explore the relationships between home environment in the development of numeracy skills. To date, no other study that investigates early numeracy skills has included home environment measures from infancy. The overall aims of the current study were:

(1) to identify if group membership (high or low treatment group) predicts numeracy skills, as measured by the British Ability Scales, Second Edition: Early Number Concepts scale (BASII; Elliott, Smith and McCulloch, 1997);

(2) to investigate if home environment scores measured in infancy, toddlerhood and early childhood predict numeracy skills; and,

(3) to investigate if home environment measures predict numeracy skills after controlling for socio-economic status.

Status of the current study

The results are currently in preparation and are being submitted to Frontiers in Psychology for peer review. This research is supported by the Children's Research Network Prevention and Early Intervention Research Initiative Research Grant Scheme 2017-18.

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Children's own priorities for their school readiness

More than just a checklist of skills and behaviours

Christine O'Farrelly, Ailbhe Booth, Mimi Tatlow-Golden and Beth Barker

Background to the Children's Thoughts about School Study

The Children's Thoughts about School Study (CTSS) was a sub-study of the Preparing for Life (PFL) evaluation. PFL tested the effectiveness of an intensive parenting programme in promoting the school readiness of children living in a socio-economically disadvantaged community in North Dublin. The programme was developed in response to evidence that many children from the catchment area were starting school without the socio-emotional, cognitive and behavioural skills needed to navigate school successfully (Doyle, McEntee and McNamara, 2012). The PFL randomised controlled trial is one of the most extensive studies of its kind, utilising a state of the art design incorporating a multi-informant, multi-domain and multi-measure outcome battery. The CTSS sought to complement the main PFL evaluation by examining children's own priorities and concerns about school readiness. Supported by the Children's Research Network Prevention and Early Intervention Research Initiative Research Grant Scheme (2017-18), we were able to undertake a rigorous and detailed analysis of the CTSS data (Northside Partnership, Doyle, UCD Geary Institute PFL Evaluation Team, 2018) in order to distil children's school readiness priorities from their accounts of their early school experiences. A full account of this study and its findings is currently under review for publication, and here we present a brief summary of the background and highlights of this secondary analysis of the CTSS data.

Why might children's views be valuable in understanding adjustment to school?

Despite growing international investment in school readiness (Sabol and Pianta, 2017), there is no one, agreed definition of what school readiness means. Rather, the term has caused confusion and provoked debate (Britto, 2012; Kagan, 2007) and there is often little commonality in the outcome measures used to gauge an intervention's effectiveness. For example, some studies, such as PFL, use a combination of measures and informants including teacher and parent reports of children's school readiness alongside direct assessments of children's skills; while others may report on just one aspect of children's functioning (for example, cognitive ability). One means of interrogating the suitability of outcome measures is to identify what is meaningful to service users themselves (see for example, Crawford et al., 2011; Orri et al., 2015; Singh, 2017). Yet, despite trends to incorporate stakeholder perspectives into evaluations of complex interventions (Moore et al., 2015; Pawson and Tilley, 1997), those targeting children's lives tend to privilege adults' observations over children's priorities and experiences. This is despite the United Nations Convention on the Rights of the Child (1989) asserting children's right to a say in matters that affect their lives. Studies also show that young children provide reliable and valid information in clinical, courtroom and education settings, which adds uniquely to the understanding provided by teachers and adults, provided that appropriate methods are used (Brown and Lamb, 2015; Harrison, Clarke and Ungerer, 2007; Luby, Belden, Sullivan, and Spitznagel, 2007). Although valuable research has been undertaken exploring children's experience of the transition to school (see for example, O'Kane, 2007), few studies have examined the experiences of children growing up in socio-economically disadvantaged communities.

How did the Children's Thoughts about School Study work?

Forty-two children (aged four to five years) from a single school in the PFL catchment community participated in a multi-method interview approximately seven months into their first school year. The protocol was designed in consultation with local schools and was piloted to ensure its suitability with young children. Parents were given an information pack including an illustrated booklet for their child. Children whose parents had provided consent were then invited by the researcher to participate in a one-to-one interview in a familiar place, such as the library. Interviews were conducted concurrently (two at a time), and children were interviewed separately. First, the interviewer used the illustrated information booklet to explain to the child the research and their participation in it (i.e. to explore assent). To help address power imbalances the researcher positioned themselves as an 'interested other' who wanted to learn more about what school was like. To get a broad picture of children's perceptions of early school experiences and adjustment to school we asked children to:

(1) complete a structured measure of school liking and avoidance (School Liking and Avoidance Questionnaire; Ladd and Price, 1987);

(2) complete a structured interview about nine potentially challenging everyday school scenarios (Pictorial Measure of School Stress and Wellbeing; Murray and Harrison, 2005);

(3) offer advice to a fictional character, 'Riley Rabbit', who was starting school for the first time;

(4) draw and describe a picture of themselves in school.

Using the principles of thematic analysis, we developed a thematic framework of children's early school experiences. Children's priorities were then distilled from themes and subthemes to extract essential components of school readiness. Further information on the analytic strategy is included in the full manuscript (currently in review).

What are children's priorities for their school readiness?

Overall, children's accounts suggested that school readiness is a multi-faceted construct; it includes a range of capacities and skills that are underpinned by motivation, is largely social in nature, and influences and is influenced by its surrounding environments. In this way, children's responses strongly endorsed the view that school readiness is "more than a checklist of skills and contextually isolated knowledge and more than a set of behaviours that enable children to be considered as compliant in the classroom" (Dockett and Perry, 2002, p. 84). Twenty-five school readiness priorities were distilled from the data. These encompassed children's enthusiasm for school, their sense of self-efficacy, traditional academic skills, physical independence, self-regulation skills, an ability to navigate peer interactions, a capacity to think and play creatively, supportive peer interactions, as well as a supportive and playful school environment, and strong connections between school and family life. Table 1 presents each priority alongside a brief description.

Importantly, children endorse the significance of many of the core academic skills considered as part of school readiness and captured by batteries such as those used in the PFL trial. However, they also highlight targets that are overlooked (such as motivation, which includes children's school liking and efficacy) that could aid greater prediction of children's school success. It would also be instructive for future research to consider investigating children's perceptions about school readiness and anticipated adjustment to school prior to school commencement. Although these results require replication across more diverse samples, they help to provide a starting point in affording children's priorities a place in the policy and practice landscape that shapes their lives.

Table 1: Children's school readiness priorities

Priority	Brief Description
1. School	Feel positively about school; like and look forward to school
2. Enthusiasm for learning	Enthusiastic and curious about learning
3. Self-efficacy	A strong belief in their own competence, even in the face of challenges
4. Write	Able to hold a pencil, trace, and write letters and numbers
5. Count	Numeracy skills for counting and solving number problems
6. Draw	Can draw simple forms (e.g. lines and shapes) as well as more creatively
7. Read	Early literacy skills such as letter knowledge / recognition and letter / sound correspondence
8. Independence in toileting	The confidence and skill to maintain dryness, ask to use the toilet, and complete toileting routines
9. Run and balance	Maintain balance, run, and avoid frequent falls, especially in the playground
10. Regulate behaviour	Control impulsive behaviour (e.g. being able to wait your turn, inhibit aggression)
11. Regulate emotion	Control emotions especially anger and frustration
12. Cope with separation	Maintain a sense of security in the absence of parents and family
13. Regulate attention	Ignore distractions, adjust attention, and stay on task
14. Follow directions	Listen to the teacher and follow rules and directions
16. Establish and maintain friends	Skills to make (e.g. introduce yourself, ask to play) and maintain friendships
17. Avoid rejection	Social skills to avoid rejection (e.g. control aggression, ability to approach peers and join play)
18. Resolve conflict	Adaptive coping skills in the face of conflict, including the ability to seek out external support when necessary
19. Think and play creatively	Capacity to use imagination for pleasure, learning, and exploration
20. Access to friends	Opportunity to develop and seek out friendships for enjoyment and support
21. Positive social climate	Positive social climate including an absence of victimisation and social distress
22. Regular access to play and supportive outdoor space	Regular access to both guided and self-directed play in classroom and outdoor settings and easy access to supportive adults when necessary
23. Clear rules and routines	Organised classrooms with predictable routines and clear rules to guide behaviour
24. Supportive teacher relationships	Warm and encouraging teachers who provide support with learning and peer interactions
25. Strong family school involvement	Positive connections between schools and families including opportunities for families to be involved in children's school lives
26. Strong community networks	Access to wider family and social networks and support (e.g. for after-school care)

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The experiences and approaches of mentors in the Big Brothers Big Sisters programme

Lessons for research, policy and practice

Bernadine Brady and Charlotte Silke

The core component of youth mentoring programmes, such as the Big Brothers Big Sisters (BBBS) programme, is a 'match' between an adult volunteer (mentor) and a young person (mentee). Youth mentoring is an approach that is firmly located in prevention and early intervention. It aims to strengthen the social support available to children who lack the presence of significant adults in their lives and thus, to facilitate the positive development and well-being of children and young people (Brady, Dolan and Canavan, 2017; Dolan and Brady, 2011). Mentoring has been found to support children in coping with stress and other risks occurring in their social environments and to prevent the escalation of problems.

The results of evaluations of mentoring programmes provide clear evidence that involvement in youth mentoring relationships can result in benefits for young people (Dolan et al., 2011; DuBois, Portillo, Rhodes, Silverthorn and Valentine, 2011). But, the research indicates that not every mentoring programme will produce these results; the most successful mentoring programmes are those that foster the development of close, trusting and safe relationships between mentors and mentees. Such programmes have been shown to adhere to evidence-based practices such as rigorous screening of volunteers, creating matches based on shared interests, providing training to mentors and ensuring regular supervision of matches (Stelter, Kupersmidt and Stump, 2018). Ongoing availability of staff support and opportunities for mentors and youth to participate in shared activities are also helpful in facilitating bonds to develop (Garringer, Kupersmidt, Rhodes, Stelter and Tai, 2015). A range of research studies have shown that specific factors associated with the approach or style of volunteer mentors also influences whether mentoring is beneficial for young people (Brumovská, 2017; Morrow and Styles, 1995).

Funding from the Children's Research Network Prevention and Early Intervention Research Initiative Senior Scholars Grant Scheme in 2018 has enabled us to explore these issues, using qualitative and quantitative data collected as part of a large-scale evaluation of the BBBS programme in Ireland (Dolan et al., 2011). A rich body of research data was gathered from mentors as part of the original evaluation of the BBBS programme but, due to time constraints, was not analysed during the evaluation or since it was completed. The current mixed-methods study will provide a valuable insight into the perspectives of mentors regarding the training and support available to them from the BBBS programme. It will allow for an exploration of their motivations for mentoring, how this motivation was sustained or reduced over the course of their mentoring match, and how programme staff supported them in dealing with challenges. The study will also provide an insight into the styles or approaches taken by mentors and explore how varying styles impacted on relationship dynamics and outcomes for young people. It will be the first study of this nature in an Irish context and will contribute to the international knowledge base in relation to youth mentoring interventions. The report and academic publications from the current study will be disseminated through various channels, including the websites of the Global Youth Mentoring Network[7], European Centre for Evidence Based Mentoring[8] and Chronicle of Evidence Based Mentoring[9]. The findings will be presented at a range of conferences and seminars, including the Foróige / Global Youth Mentoring Network conference *Mentoring Young People Facing Adversity* in Dublin in October 2018, which will provide an opportunity for practitioners and policy makers to inform their practice, based on the emerging findings and recommendations.

[7]https://globalyouthmentoring.com/
[8]https://www.ecebmentoring.eu/
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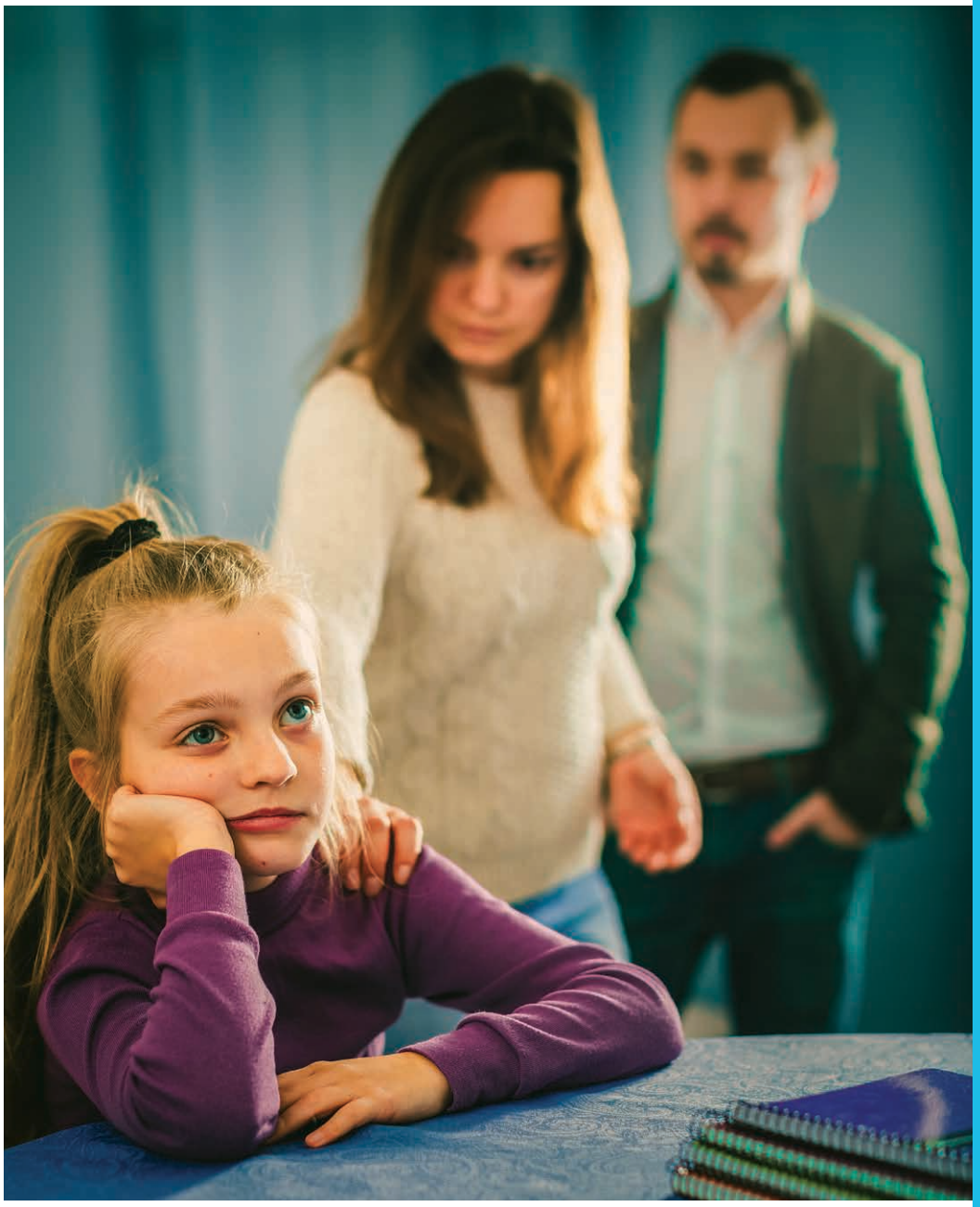

Population Triple P in Ireland

Does it work?

Orla Doyle, Mary Hegarty and Conor Owens

Introduction

Parenting practices and behaviours play an important role in shaping various aspects of children's development (Ermisch, 2008; Marmot et al., 2010). Research has found that parenting practices characterised by positive displays of affection and consistent disciplinary strategies are related to a child's psychosocial development, while parenting which lacks control or warmth is associated with a greater number of behavioural issues (Baumrind, 1978; Rose, Roman, Mwaba and Ismail, 2018). Parenting interventions can be an effective tool for improving parenting practices (Barlow, Parsons and Stewart-Brown, 2002) and are typically provided on an individual, case-specific basis. Yet offering parenting programmes on a universal scale has the potential to eliminate stigma surrounding parenting interventions, as well as serving as a preventative mechanism (Prinz, Sanders, Shapiro, Whitaker and Lutzker, 2016). Triple P is an example of a parent training intervention which adopts a population approach and uses a multi-method delivery system (Sanders, 2008). A systematic review of 101 Triple P studies found evidence of significant short and long-term effects for child well-being outcomes, as well as parenting practices and satisfaction, and parental relationships (Sanders, Kirby, Tellegen and Day, 2014).

Method

The aim of this study was to evaluate the effectiveness of implementing Triple P at a population level in Ireland on the prevalence of children's social, emotional, and behavioural problems as measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The Triple P intervention was offered to all parents of children aged between four and eight years in two intervention regions over a thirty-month period between 2010 and 2013. The programme was delivered by the Longford/Westmeath Parenting Partnership (LWPP) using a partnership model comprising statutory, community, and voluntary sector organisations. Four of the five Triple P levels were provided including a media campaign, one-off seminars and discussion groups, and multi-week group sessions. Parents could choose how many and which levels of Triple P to participate in. A propensity score matching (PSM) differences-in-differences (DID) method was used to compare two intervention regions (Longford and Westmeath) and two comparison regions (Tipperary North and Tipperary South) matched on socio-demographic characteristics. By combining DID with PSM, we utilised the advantages of both techniques, as DID helps to differentiate out permanent (time invariant) confounders and PSM helps to capture transitory shocks (and thus balance the covariates). This method was first introduced by Heckman, Ichimura and Todd (1997). We first estimated the propensity score using a probit function to calculate the probability of being in the intervention sample based on observable covariates. The propensity score allowed us to match treated and untreated respondents according to one single metric. We used kernel matching which allowed a large amount of data to be retained, while bias was reduced by assigning larger weights to the untreated units which were the closest matches to the treated units. The Epanechnikov kernel was employed and the optimal bandwidth was determined using Silverman's rule-of-thumb. Separate propensity score models were estimated for both time points. Next, we estimated the DID models using OLS regressions for the continuous outcomes and Linear Probability Models for the binary cut-off scores, and applied the average weights obtained from the propensity score in each case. Each DID model included a treatment status indicator (intervention or comparison sample), a time indicator (pre- or post-intervention sample), an interaction between time and treatment status, and a set of control variables. Please see the full paper for a detailed explanation of this method (Doyle, Hegarty and Owens, 2018).

A population survey was administered in both regions before (between February and April 2010) and after (between March and May 2013) programme implementation. Participants were sampled from 302 Electoral Districts across the four regions and a random probability sampling method was then used to select the sample of eligible households using quotas based on socio-economic group (Fives, Pursell, Heary, Nic Gabhainn and Canavan, 2014). The pre-intervention sample included 1,501 and 1,495 parents of children aged four to eight years in the intervention and comparison regions respectively. The post-intervention sample included 1,521 and 1,544 parents respectively. These samples represented seventeen to twenty per cent of all families with children between the ages of four and eight years in the counties.

Results

Table 1 presents the mean scores of the intervention and comparison samples at the pre and post intervention periods, as well as the results of the PSM DID models. There were significant reductions in the prevalence rates of social, emotional, and behavioural problems in the two intervention regions compared to the two comparison regions. Children in the intervention sample experienced lower total difficulties, emotional symptoms, and conduct problems, and they were less at risk of scoring within the borderline/abnormal range for total difficulties, conduct problems, and hyperactivity. The programme reduced the proportion of children scoring within the borderline/abnormal range by 4.7 per cent for total difficulties, 4.4 per cent for conduct problems, and 4.5 per cent for hyperactivity in the total population. There were no impacts on peer problems or on positive behaviours as measured by prosocial behaviour.

Conclusions

This study provides some evidence that a universal system of parenting support may result in reductions in the prevalence rates of child social, emotional, and behavioural problems at a population level. This was achieved using Triple P, a universal parenting programme which was implemented at multiple levels by a collaborative partnership. The programme reduced the proportion of children classified as having borderline/abnormal problems, as well as reducing the overall level of difficulties. The results reported here differ from the one other comparable population study of Triple P in Australia which also adopted a quasi-experimental methodology and measured similar outcomes, and found that the effects were limited to total difficulties and emotional difficulties (Sanders et al., 2008). Possible explanations for differences in the number of treatment effects include programme developments over time. These results add to the evidence base for the science of population-based approaches to parenting.

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Table 1: Mean Behavioural Scores and Results

	Pre-Intervention		Post-Intervention		Mean Difference	*p* Value
SDQ Continuous Scores	Intervention (1)	Comparison (2)	Intervention (3)	Comparison (4)	Coef. (st dev) (5)	
Total difficulties	8.44	7.94	7.30	8.43	-0.788 (0.289)	0.007
Emotional symptoms	1.83	1.82	1.47	2.03	-0.266 (0.101)	0.008
Conduct problems	1.76	1.63	1.44	1.72	-0.183 (0.086)	0.033
Hyperactivity	3.36	3.16	3.1	3.26	-0.177 (0.116)	0.128
Peer problems	1.49	1.33	1.25	1.42	-0.152 (0.081)	0.060
Prosocial scale	7.86	8.23	8.28	8.67	-0.039 (0.098)	0.691
SDQ Proportion in borderline/abnormal range %						
Total difficulties	17.0	15.0	11.0	17.0	-0.047 (0.018)	0.009
Emotional symptoms	18.0	16.9	12.6	19.1	-0.033 (0.019)	0.058
Conduct problems	27.3	24.4	18.7	23.3	-0.044 (0.022)	0.042
Hyperactivity	16.1	14.4	13.7	19.6	-0.045 (0.019)	0.015
Peer problems	21.5	19.7	15.6	19.7	-0.027 (0.020)	0.173
Prosocial scale	15.2	11.0	10.0	8.2	-0.022 (0.016)	0.179

Columns (1), (2), (3), (4) show the unweighted raw scores of the intervention and comparison groups in the pre and post-intervention periods. Column (5) shows the difference-in-difference impact from the kernel PSM DID models which includes a treatment status indicator (intervention or comparison), a time indicator (pre- or post-intervention), an interaction between time and treatment status, a set of controls (child age, child gender, respondent's relationship to the child, Irish-born or not, employment status, educational attainment, social class, rurality, housing tenure, and aggregate ED), and matching weights applied.

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The Children's Research Digest is a publication of the Children's Research Network for Ireland and Northern Ireland. The Network is a membership organisation that aims to support the research community to better understand and improve the lives of children by:

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