Evaluating the Incredible Years Toddler Parenting programme with parents of toddlers in disadvantaged (Flying Start) areas of Wales

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Child: care, health and development

DOI:
10.1111/cch.12415

Published: 01/01/2017

Peer reviewed version

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Abstract

Background: Early risk factors for poor child outcomes are well established and some group parenting programmes have demonstrated good outcomes for children under three years of age. This randomised controlled trial evaluated the effectiveness of the Incredible Years® Toddler Parenting Programme with parents of one- and two-year-old children recruited by staff in disadvantaged Flying Start areas across Wales. **Methods:** Eighty-nine families with a child aged between 12 and 36 months at baseline participated in a pragmatic community-based trial of the programme in eight Flying Start areas. Outcomes were measured at

baseline, six months, and 12 months using measures of parental mental health, competence, child behaviour, child development, home environment, and blinded-observation of parent-child interactions. **Results:** Significant intervention group improvements were found in parental mental well-being and observed praise at six-months. Significant improvements for the intervention group at 12 months included child development, home environment, and parental depression. **Conclusion:** The study provides preliminary evidence for programme attendance.

An estimated 6-24% of one to three year-old children meet diagnostic criteria for one or more mental disorder including emotional, behavioural adjustment, sleeping, eating disturbances, and regulatory problems (Skovgaard et al., 2007). Many difficulties are apparent in children from 12 months of age (Alink et al., 2006). Early onset problems strongly predict later psychopathology with approximately 25% of children still having difficulties 24 years later (Reef et al., 2009) and behavioural problems predict poorer outcomes up to 40 years later, including poorer mental health, social and economic outcomes (Colman et al., 2009).

The importance of early experience

Whilst some child characteristics e.g. prematurity, developmental disorders, temperament, etc. predict risk for poor outcomes (Murray et al., 2010) many risks are linked to the child's environment (Andershed & Andershed, 2015). For babies and young children home environments that provide social, emotional, and cognitive support are associated with many positive child outcomes including secure parent–child attachment (Bakermans-Kranenburg et al., 2003) and social adjustment (Foster et al., 2005). Positive maternal involvement is also associated with reduced risk of subsequent problem behavior (Gardner et al., 2003; Van Zeijl et al., 2006).

Parental risk factors include maternal depression (Goodman et al., 2011) and lack of maternal responsiveness (Flykt et al., 2010) putting children at risk of poor development of the neural pathways that support emotional, cognitive, behavioural and language systems (Shonkoff & Phillips, 2000). Poor quality parenting and low maternal sensitivity predict attachment and social adjustment difficulties in children (Yoshikawa et al., 2012), behavioural problems (Kawabata et al. 2011) and poor school readiness (Connell & Prinz, 2002). Longitudinal studies in the UK, USA and New Zealand demonstrate longer-term

difficulties including adolescent delinquency, adult criminality, unemployment and mental health problems (Farrington & Welsh, 2007).

The contribution of parenting

Negative and neglectful parenting practices predict later problem behavior (Shaw & Gross, 2008) and some can be identified when children are only six months old (Shaw et al., 2000). Living in stressful environments affects the capacity of some parents to care for their children resulting in increased risk of long-term emotional and behavioural difficulties (Caspi et al., 2000). These include delayed development (Keirnan & Mensah, 2009; Emerson & Einfeld, 2010), language delay (Mensah & Keirnan, 2009), academic underachievement (Feinstein et al., 2004), behavioural and emotional difficulties (Colman et al., 2009; Keirnan & Mensah, 2009), Attention-Deficit Hyperactivity Disorder and risk of physical abuse (Belsky et al., 2007).

Long-term outcomes are significantly worse for children from disadvantaged socioeconomic circumstances (Feinstein, 2003). Intergenerational cycles of underachievement affect many such children (Allen & Smith, 2009). Stress and maternal depression, more prevalent in disadvantaged areas can impact on parenting practices (Mensah & Keirnan, 2009), are associated with child behaviour problems (Hay et al., 2010). However, poor child outcomes are mediated by parenting practices and some parents provide good parenting despite socio-economic disadvantage (Gardner et al., 2010).

Publication of the Incredible Years® Toddler Parent Programme (IYTPP; Webster-Stratton, 2008) coincided with Flying Start (FS), a new project in Wales for pre-school children and parents living in highly targeted disadvantaged areas. FS areas were identified by the Welsh Government using strict criteria based on levels of deprivation from the Welsh Index of Multiple Deprivation and Free School Meal entitlement (Welsh Government, 2008).

FS services receive £2k per annum for every 0-3 year old child to deliver four universal components: free high-quality childcare for all two-year-olds, increased support from dedicated FS health visitors, parenting programmes, and parent-child language and play schemes..

Aim/Objective

This study assessed whether the IYTPP had added benefit for parents of one- and two-year-old children over and above the other FS services. This paper presents short-term (six-month) post-baseline randomised controlled trial findings and longer-term (12 month) follow-up of intervention families only. Wait-list control families were offered the intervention after six-month follow-up. It was predicted that programme attendance would benefit observed parenting practices. Following similar research in disadvantaged Sure Start areas in Wales with parents of high-risk three and four year olds (Hutchings et al., 2007) improvements in parental confidence and mental health were also predicted. The impact of the programme on child behaviour, development, and home environment was also evaluated.

Methods

Sample Size & Power

No formal power calculation was undertaken however a sample of 89 participants was found to be sufficient to detect an effect size of 0.75 SD at 80% power and a 0.05 level of significance.

Participants

Group leaders recruited eighty-nine parent-child dyads from eight FS sites across North, Mid and South Wales (see CONSORT figure 1). Children had a mean age of 21.33

months (*SD* 6.91) at baseline, comprising 52 (58.4%) male and 37 (41.6%) female children. Primary caregivers had a mean age of 28.97 (*SD* 6.72) years and two were male. The groups were matched at baseline (see table 1).

Table 1.
Baseline characteristics of the Flying Start families by study group.

	All (*N*=89)	Intervention (*n*=60)	Control (*n*=29)	*p*-value
Child Gender				.628
Male, *n* (%)	52 (58.4)	34 (56.7)	18 (62.1)	
Female, *n* (%)	37 (41.6)	26 (43.3)	11 (37.9)	
Child Age in Months, *M* (*SD*)	21.33 (6.91)	21.07 (7.28)	21.86 (6.17)	.593
Parent Gender				.320
Male, *n* (%)	2 (2.2)	2 (3.3)	0	
Female, *n* (%)	87 (97.8)	58 (96.7)	29 (100)	
Parent Age in Years, *M* (*SD*)	28.97 (6.72)	28.58 (7.03)	29.79 (6.06)	.413
Parent Age at Birth of First Child, *M* (*SD*)	22.00 (5.41)	21.90 (5.48)	22.22 (5.35)	.797
Marital Status				.450
Single Parent, *n* (%)	22 (24.7)	14 (23.3)	8 (27.6)	
Married/Cohab, *n* (%)	55 (61.8)	35 (58.3)	20 (69.0)	
Parental Education Beyond 16, *n* (%)	50 (56.2)	33 (55.0)	17 (58.6)	.348
SED6 score, *M* (*SD*)	2.70 (1.65)	2.80 (1.62)	2.48 (1.70)	.407
SED6 score ≥ 2, *n* (%)	62 (70.0)	42 (70.0)	20 (69.0)	.353
Living Below Poverty Level, *n* (%)	33 (37.0)	19 (31.7)	14 (48.3)	.128
Parental Depression[a], *n* (%)	12 (13.5)	7 (11.7)	5 (17.2)	.470
Parental Stress[b], *n* (%)	19 (21.3)	11 (18.3)	8 (27.6)	.318
Child Developmental Delay[c], *n* (%)	19 (21.3)	13 (21.7)	6 (20.7)	.058
Child Behaviour[d], *n* (%)	12 (13.5)	9 (15.0)	3 (10.3)	.547

Note: SED6 – Socio-economic Disadvantage risk factor score
[a]BDI II score above cut-off for moderate depression at baseline (> 20)
[b]PSI-SF score above cut-off at baseline (>90)
[c]Overall DQ score ≤ 85 at baseline using SGS II
[d]Based on scores from the PSI Difficult Child subscale (>35)

Randomisation

Participants were randomly allocated using a computer generated block randomisation procedure, generated prior to the enrollment of participants, by independent researchers at the North Wales Organisation for Randomised Trials. This was on a 2:1 ratio to the IYTPP or six-month wait-list, after obtaining informed consent and all baseline measures had been

collected, and was stratified for child sex, age (under two years/two and over) and centre. Following randomisation, participant allocation was returned to the third author who informed participants of their allocation. None of the researchers responsible for data collection had access to the randomisation list.

Measures

Family demography.

The Personal Data and Health Questionnaire (PDHQ) provides a quantitative score of the key disadvantaging circumstances associated with child behavioural problems.

A Socio-Economic Disadvantage Index (SED6) is derived from the PDHQ to assess family socio-economic status. Six risk factors are measured: employment status, marital status, number of children, primary carer education, housing, and area of residence (high/low crime).

Parent reported mood and competence.

The Beck Depression Inventory II (BDI-II; Beck et al., 1996) has 21-items measuring the severity of attitudes and symptoms associated with depression with the cut-off for moderate depression being 20. The BDI II has good test-retest reliability (r = .93), good convergent validity (r = .93), and high internal consistency (α = .92). High scores represent the presence of more depressive symptoms.

The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al., 2007) is a 14 item positively worded scale measuring adult mental well-being with good test-retest reliability (r = 0.83) and high internal consistency (α = 0.89). High scores represent good mental well-being.

The Parenting Stress Index: Short-Form (PSI-SF; Abidin, 1990) is a 36 item inventory that measures stress in parents of children aged up to 12 years. The cut-off score for clinical

levels of total stress is 90 with higher scores indicating more stress. It has high internal reliability (α = 0.78 – 0.90) and good test-retest reliability (α = 0.68).

The Parenting Sense of Competence questionnaire (PSOC; Johnston & Mash, 1989) has 17 items assessing parenting self-esteem and has good internal consistency (α = 0.79 – 0.88). High scores represent good self-esteem.

Child behaviour.

The Difficult Child subscale of the PSI is a 12-question parent report measure of challenging child behaviour that correlates with longer measures of child behaviour problems (Hutchings, 1996; Reitman et al., 2002). The cut-off for behaviour problems is 35 with higher scores representing more behaviour problems.

Child development.

Child development was assessed by the Schedule of Growing Skills II (SGS-II: Bellman et al., 2008), a researcher administered developmental screening tool. The SGS-II was administered by 'blind' researchers in Welsh or English depending on the primary language used at home. The SGS-II was scored to provide a developmental quotient (DQ) (Williams et al., 2013). SGS-II was chosen by the Welsh Government for the assessment of developmental progress of children in FS areas and included at their request. Higher scores represent good developmental status.

Parent-child interaction.

Parent-child interaction quality was assessed during a 30-minute blind observation of a free-play session in the home, using categories from the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg & Robinson, 1981). The DPICS has good reliability (r = 0.91 – 0.92) and good discriminant validity. Some families (17%) interacted in Welsh. The DPICS is scored using frequency counts with higher frequencies indicating higher occurrence of the behaviour.

Home environment.

The home environment quality was assessed using the Infant/Toddler Home Observation for Measurement of the Environment Inventory (IT-HOME; Caldwell & Bradley, 2003). It has good internal consistency ($\alpha = 0.80$) and moderate stability from 12 to 24 months ($\alpha = 0.77$). Higher scores represent better environment quality.

Procedures

Group leaders contacted families and details of interested families were passed to the research team who arranged home visits to collect research consent and complete the PDHQ interview, parent report measures and child developmental assessment. The second visit involved observation of parent-child interaction and administration of the IT-HOME. This format was used at six and 12-month data collection points.

Parent-child observations.

Parent-child observations were live coded by 'blind' researchers and video recorded if parental consent was obtained. Some parents declined to be video recorded therefore live observational data is reported in this study ($n = 87$). Inter-rater reliability for 20% of total live observations demonstrated 74% reliability. For the analyses, categories were combined into an overall positive parenting score, parental praise, and negative parenting. Parental praise was examined separately because praise is the topic of one sessions and an important part of the programme (Webster-Stratton, 2008).

Ethical Approval

North West Wales Research Ethics Committee granted ethical approval in August 2008, application number: 08/WNo01/43.

Intervention

The IYTPP (Webster-Stratton, 2008) is a 12-session programme for parents of children aged 1-3 years. It uses the same underpinning social learning theory principles and components as the strongly evidence-based IY Basic parent programme (Hutchings et al., 2004). It was delivered by trained facilitators, working in FS settings, between August 2008 and July 2009. Facilitators were health visitors and child-care practitioners, trained and supervised by the first author, an accredited IY trainer. Groups were delivered in FS children's and family centres with free child-care provided for group attenders.

Programme content adherence was encouraged by providing programme manuals and materials. Facilitators completed weekly checklists detailing components covered, overall 90% of programme content was delivered. Facilitators attended weekly supervision to enhance fidelity. All group sessions were video-recorded and selected sections were discussed during supervision.

Data analyses

The effect of treatment was examined using multilevel multiple regression models with child or parent outcomes at level 1 and area at level 2. The dependent variables were the outcomes measured at six-month follow-up; baseline score and intervention status were entered as fixed effects and area as a random effect in all analyses. Child age and sex were entered as fixed effects in analyses on child development and HOME. Confidence intervals were examined to assess the difference between baseline and 12-month outcomes for the intervention sample only.

Standardised effect sizes were calculated by dividing the regression coefficient for the effect of intervention on each outcome by its baseline pooled standard deviation. All measures were analysed using an intention-to-treat sample with multiple imputation used for

missing data, 16% of the sample comprising 12 intervention and two control families. There were no significant differences between families lost to follow-up and the rest of the sample on any demographic variables.

Results

Take-Up of Parenting Intervention

The median number of sessions attended was nine (range of 0-12) with 62% attending seven or more, at least 2/3rd of, sessions. Only 10% of participants did not attend any sessions, the mean number of those attending at least one session was 8.29 (*SD* = 3.40).

Main Findings

Table 2 shows pre- and post-intervention raw scores for intervention and control groups. At six months post baseline intervention families had significant improvements in parental well-being relative to controls (ES = 0.37) and significant improvements in level of praise (ES = 0.70).

Table 2.
Multiple regression analysis of effects of parenting intervention on all outcome measures six-months post-baseline

Outcomes			Intervention (*N*=60)		Control (*N*=29)		
	B (95% CI)	*p*	BL *M* *(SE)*	FU *M* *(SE)*	BL *M* *(SE)*	FU *M* *(SE)*	ES (95% CI)
Child Development							
SGS-II[a]	2.87 (-4.70, 10.45)	.457	95.40 (1.98)	103.59 (3.15)	99.44 (3.83)	100.72 (3.83)	0.17 (0.28, 0.63)
Home Environment							
IT-HOME[a]	1.41 (-0.85, 3.67)	.221	34.57 (0.93)	38.34 (0.93)	34.93 (1.09)	36.93 (1.09)	0.23 (0.14, 0.59)
Child Behaviour							
PSI-DC[b]	1.66	.336	26.82	25.24	25.85	23.58	0.19

	(-1.73, 5.06)		(1.21)	(1.28)	(1.48)	(1.56)	(-0.20, 0.59)
Parent Mental Health/ Competence							
WEMWBS[a]	3.85 (0.36, 7.33)	.031*	47.88 (1.31)	50.72 (1.90)	48.67 (2.26)	46.87 (2.14)	0.37 (0.03, 0.70)
PSI-T[b]	0.73 (-6.12, 7.59)	.834	77.43 (2.90)	69.95 (5.34)	79.67 (3.88)	69.22 (5.54)	0.03 (-0.29, 0.35)
PSOC[a]	-0.19 (-3.65, 3.27)	.915	60.80 (1.21)	64.43 (1.85)	61.41 (1.85)	64.61 (1.86)	-0.02 (-0.40, 0.36)
BDI-II[b]	-0.36 (-0.93, 0.21)	.219	10.14 (1.23)	5.56 (0.07)	12.56 (2.23)	7.39 (0.11)	-0.22 (-0.59, 0.13)
Parent-Child Observation							
Observed Positive Parent[a]	0.14 (-0.12, 1.21)	.312	58.86 (3.79)	58.16 (0.13)	54.85 (4.93)	52.61 (0.16)	0.08 (-0.07, 0.68)
Observed Negative Parent[b]	-0.21 (-1.19, 0.03)	.150	19.25 (2.02)	10.15 (0.16)	18.52 (2.35)	13.31 (0.19)	-0.11 (-0.60, 0.02)
Observed Praise[a]	1.23 (0.18, 3.28)	.002*	15.37 (2.06)	17.50 (2.44)	15.07 (2.51)	9.44 (2.50)	0.70 (0.10, 1.86)

*$p < .05$; [a] High scores = improvement; [b] High scores = worsening

Note: BL – Baseline; FU – Follow-up; CI – Confidence Interval; ES – Effect Size; SGS-II – Schedule of Growing Skills II; IT-HOME - Infant/Toddler Home Observation for Measurement of the Environment Inventory; WEMWBS – Warwick-Edinburgh Mental Well-Being Scale; PSI-DC – Parent Stress Index-Difficult Child; PSI-T – Parent Stress Index-Total; PSOC – Parental Sense of Competence; BDI-II – Beck Depression Inventory II

At 12-month follow-up, two comparisons were conducted, one between baseline and 12-month follow-up and one between the six-month and 12-month follow-up (see Table 3). In the first comparison, intervention families showed significant improvements in all the measures, excluding the observed measures that had wide confidence intervals. In the second comparison, participants showed significant improvements in home environment, child development, and parental depression.

Table 3.
Long-term maintenance effects for all outcome measures (*N* = 60)

	BL	6 month FU	12 month FU	BL – 12 month FU	6 month FU – 12 month FU
	M (SD)	*M (SD)*	*M (SD)*	Mean difference (95% CI)	Mean difference (95% CI)
Child Development					
SGS-II[a]	95.81 (13.95)	101.05 (18.33)	105.00 (19.92)	10.17* (5.94, 14.41)	4.93* (0.58, 9.29)
Home Environment					
IT-HOME[a]	34.62 (6.68)	37.38 (5.51)	39.26 (5.25)	4.45* (2.96, 5.94)	1.69* (0.58, 2.80)
Child Behaviour					
PSI-DC[b]	26.25 (8.51)	24.57 (7.46)	23.50 (7.10)	-2.75* (-4.93, 0.57)	-1.07 (-2.31, 0.18)
Parent Mental Health/ Competence					
WEMWBS[a]	47.37 (10.18)	51.08 (8.64)	51.31 (6.43)	3.58* (1.53, 5.64)	0.13 (-1.27, 1.54)
PSI-T[b]	75.43 (20.23)	68.13 (18.32)	67.35 (16.53)	-8.80* (-13.27, -2.89)	-0.78 (-3.38, -1.81)
PSOC[a]	60.80 (8.64)	64.12 (7.99)	65.29 (7.67)	3.57* (1.31, 5.83)	0.61 (0.68, 1.91)
	Median (range)	*Median (range)*	*Median (range)*		
BDI-II[b]	8.50 (0-35)	5.50 (0-29)	4.50 (0-13)	-4.30* (-6.53, -2.07)	-1.55* (-2.79, -0.31)
Parent-Child Observation					
Observed Positive Parent[a]	78.50 (13-208)	66.50 (14-200)	96.00 (35-228)	7.64 (-14.09, 29.38)	11.76 (-7.49, 31.01)
Observed Negative Parent[b]	15.00 (0-79)	9.50 (0-37)	13.50 (0-88)	-3.50 (-10.92, 3.92)	5.76 (-1.02, 12.55)
Observed Praise[a]	12.00 (0-62)	18.00 (0-50)	16.00 (2-62)	3.57 (-2.84, 9.98)	-1.10 (-7.76, 5.57)

* Significant – CIs do not cross zero; [a] High scores = improvement; [b] High scores = worsening

Note: BL – Baseline; FU – Follow-up; CI – Confidence Interval; SGS-II – Schedule of Growing Skills II; IT-HOME - Infant/Toddler Home Observation for Measurement of the Environment Inventory; WEMWBS – Warwick-Edinburgh Mental Well-Being Scale; PSI-DC – Parent Stress Index-Difficult Child; PSI-T – Parent Stress Index-Total; PSOC – Parental Sense of Competence; BDI-II – Beck Depression Inventory II

Discussion

Wales has higher poverty levels than the UK overall and FS areas are the most disadvantaged in Wales. However, despite an annual allocation of £2000 per annum for each child aged from birth to three years of age, services may have greater take-up by well-functioning families, as was demonstrated in the large-scale English Sure Start evaluation (Melhuish et al., 2010). Parents in this study lived in highly disadvantaged areas but did not demonstrate many risk indices at baseline and reported low levels of child behaviour problems and were less disadvantaged than parents of targeted three- and four-year-old children in the Welsh Sure Start trial, where community disadvantage rates are lower (Hutchings et al., 2013).

The IYTPP was delivered by local staff in eight FS areas. Short-term findings demonstrated significant increases in observed parental praise and parental mental well-being relative to control parents indicating modest positive short-term benefits. Longer-term findings, for the intervention group only, demonstrated significant improvements for child development, quality of home environment, and parental depression. None of the 12-month scores dropped below baseline levels.

There are a number of possible explanations for the findings. First recruitment was undertaken by FS staff with no specific requirements beyond age and FS residency, it was probable that they were proactive and easier to recruit than more challenged parents. Despite living in FS areas, parents recruited predominantly did not have mental well-being difficulties or children whose developmental status or level of reported behavioural difficulties suggested risk of longer-term difficulties. Significant developmental delay is a risk factor and the SGS-II was used to assess this risk. Relatively few children evidenced a significant degree of developmental delay (overall 21.3%). Nevertheless significant improvements in SGS-II scores were found at the 12-month follow-up, however there was no comparison group.

It is possible that short-term intervention improvements in parental mental well-being and parental praise contributed to the significant developmental gains, quality of home environment, and parental depression at 12 months. However at that stage the control group parents had been offered the intervention and there was no comparison group to corroborate the findings. This requires further research with a larger sample to track the relationship between short-term benefits to parents and subsequent child outcomes.

Families with the greatest needs tend to show largest improvement (Scott, 2005; Reid et al., 2004). The baseline characteristics of the current sample suggest that the majority of families were coping well (Hutchings et al., 2013). Most children were typically developing and displaying low levels of behavioural problems. Very few parents scored within clinically significant ranges for depression and stress and ratios of positive to negative parenting were high, suggesting a possible ceiling effect on several measures. Changes in measures such as BDI-II that assess clinical levels of depression may not have been the most appropriate means of assessing the effectiveness of an intervention for these families.

Study Strengths

This was a rigorous randomised controlled trial design with ‘blind’ data collection and independent randomisation process. The study included a variety of information sources, independent assessment of child developmental status, parental report and blind observation of parent-child interaction. A longer-term follow-up was conducted to assess maintenance effects. The IYTPP was delivered across Wales, with satisfactory levels of programme completion, indicating that widespread roll out could be implemented effectively, although this was the first delivery of the programme for many leaders.

This was a well-run study that also enabled subsequent exploration of the impact of the intervention on parental language use (Gridley et al., 2015) and the cost of establishing and delivering the programme in a community setting (Charles et al., 2013).

Study Limitations

Firstly, failure to gather information on uptake of additional FS service components was a weakness. Secondly, the study failed to recruit the required numbers and was, consequently, underpowered to find significant effects. Thirdly, there was no control group at 12-month follow-up due to the wait-list design, with control parents offered the intervention after six months. Consequently caution should be taken when interpreting long-term follow-up results.

Key messages

- Dysfunctional parenting is a key risk for poor child outcomes and improving parenting skills improves child outcomes.
- The IYTPP, a group-based programme, was delivered to parents of children aged one-to-two years.
- The IYTPP has modest positive short-term effects with significant improvements in parental mental well-being and parental praise compared to a control condition. There was some preliminary evidence of long-term effects but with no comparison condition.
- The IYTPP shows promise as an intervention for parents of toddlers living in disadvantaged communities.

Acknowledgements

This study was funded by a grant from Coleg Cymraeg Cenedlaethol and the Welsh Government. We would like to acknowledge Nia Griffith, Karen Jones, Pam Martin-Forbes, Catrin Eames and Joanna Charles for collecting the data for the current study.

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