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

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Summary

Background Early risk factors for poor child outcomes are well established, and some group parenting programmes have demonstrated good outcomes for children under 3 years of age. This randomized controlled trial evaluated the effectiveness of the Incredible Years® Toddler Parenting Programme with parents of 1-year-old and 2-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, 6 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 6 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.

Keywords
child, group, intervention, parenting

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An estimated 6–24% of 1-year-old to 3-year-old children meets 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, for example, prematurity, developmental disorders and temperament, 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 behaviour (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 behaviour (Shaw & Gross 2008), and some can be identified when children are only 6 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 (Kiernan & Mensah 2009; Emerson & Einfeld 2010), language delay (Mensah & Keirnan 2009), academic underachievement (Feinstein *et al.* 2004), behavioural and emotional difficulties (Colman *et al.* 2009; Kiernan & 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 socio-economic 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) and 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- to 3-year-old child to deliver four universal components: free high-quality childcare for all 2-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 1-year-old and 2-year-old children over and above the other FS services. This paper presents short-term (6-month) post-baseline randomized controlled trial findings and longer-term (12-month) follow up of intervention families only. Wait-list control families were offered the intervention after the 6-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 3-year-olds and 4-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 and 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 standard deviation (SD) at 80% power and a 0.05 level of significance.

Participants

Group leaders recruited 89 parent–child dyads from eight FS sites across North, Mid and South Wales (CONSORT Fig. 1). Children had a mean age of 21.33 months (*SD* 6.91) at baseline, comprising 52 (58.4%) male children and 37 (41.6%) female children. Primary caregivers had a mean age of 28.97 (*SD* 6.72) years and two were men. The groups were matched at baseline (Table 1).

Randomization

Participants were randomly allocated using a computer-generated block randomization procedure, generated prior to

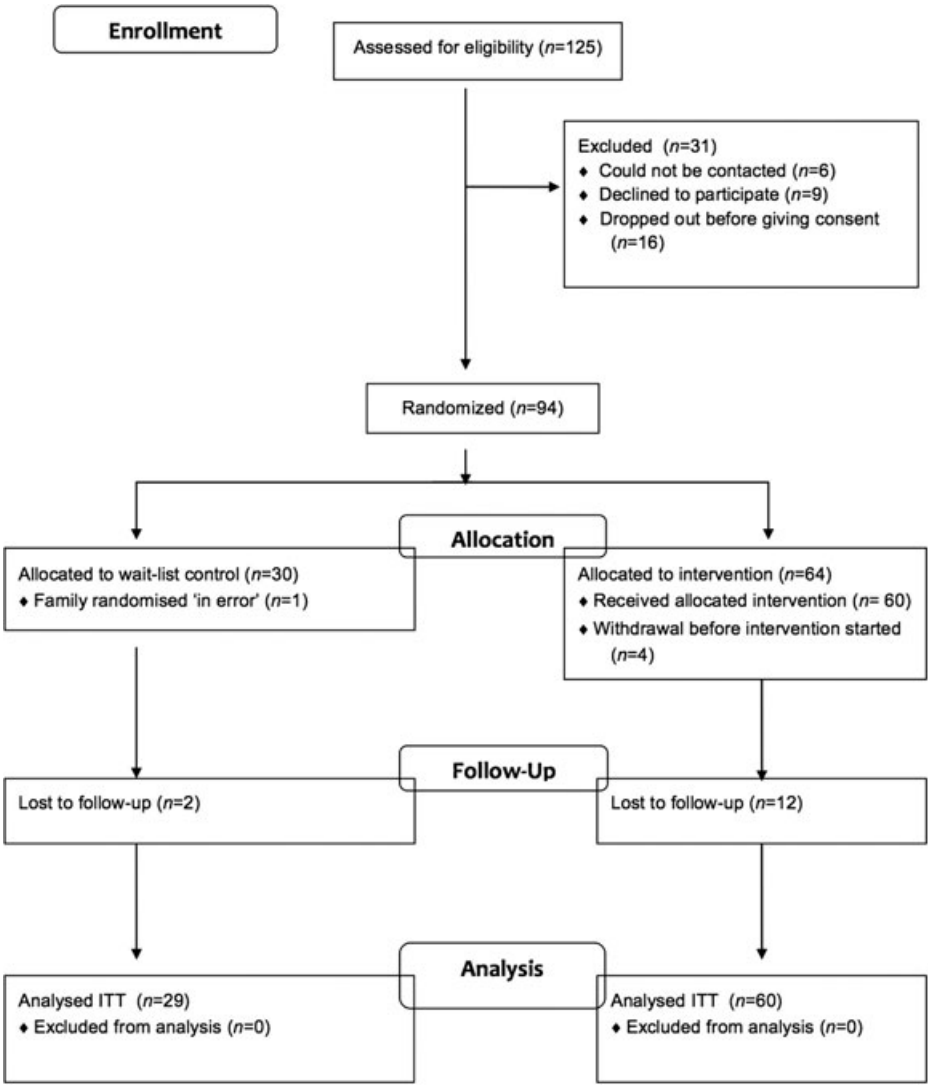

Figure 1. CONSORT flow diagram.

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				0.628
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)	0.593
Parent gender				0.320
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)	0.413
Parent age at birth of first child, *M* (*SD*)	22.00 (5.41)	21.90 (5.48)	22.22 (5.35)	0.797
Marital status				0.450
Single parent, *n* (%)	22 (24.7)	14 (23.3)	8 (27.6)	

Continues

Table 1. (Continued)

	All ($n = 89$)	Intervention ($n = 60$)	Control ($n = 29$)	*P*-value
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)	0.348
SED6 score, *M* (*SD*)	2.70 (1.65)	2.80 (1.62)	2.48 (1.70)	0.407
SED6 score ≥ 2, *n* (%)	62 (70.0)	42 (70.0)	20 (69.0)	0.353
Living below poverty level, *n* (%)	33 (37.0)	19 (31.7)	14 (48.3)	0.128
Parental depression[a] , *n* (%)	12 (13.5)	7 (11.7)	5 (17.2)	0.470
Parental stress[b] , *n* (%)	19 (21.3)	11 (18.3)	8 (27.6)	0.318
Child developmental delay[c] , *n* (%)	19 (21.3)	13 (21.7)	6 (20.7)	0.058
Child behaviour[d] , *n* (%)	12 (13.5)	9 (15.0)	3 (10.3)	0.547

Note: SED6, socio-economic disadvantage risk factor score.
[a] Beck Depression Inventory II score above cut-off for moderate depression at baseline (>20).
[b] Parenting Stress Index: Short Form score above cut-off at baseline (>90).
[c] Overall developmental quotient score ≤85 at baseline using Schedule of Growing Skills II.
[d] Based on scores from the Parenting Stress Index Difficult Child subscale (>35).

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 6-month wait list, after obtaining informed consent and all baseline measures had been collected, and was stratified for child sex, age (under 2 years/two and over) and centre. Following randomization, 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 randomization 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 is derived from the PDHQ to assess family socio-economic status. Six risk factors are measured as follows: 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.* 1961) 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 ($r = 0.93$), good convergent validity ($r = 0.93$) and high internal consistency ($\alpha = 0.92$). High scores represent the presence of more depressive symptoms.

The Warwick–Edinburgh Mental Wellbeing Scale (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 ($\alpha = 0.89$). High scores represent good mental well-being.

The Parenting Stress Index: Short-form (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 ($\alpha = 0.78$–0.90) and good test–retest reliability ($\alpha = 0.68$).

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

Child behaviour

The Difficult Child subscale of the Parenting Stress Index 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. SGS-II was administered by 'blind' researchers in Welsh or English depending on the primary language used at home. SGS-II was scored to provide a developmental quotient (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-min 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 (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 Infant/Toddler Home Observation for Measurement of the Environment Inventory. This format was used at 6-month 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 are 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 session 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 childcare practitioners, trained and supervised by the first author, an accredited IY trainer. Groups were delivered in FS children's and family centres with free childcare 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 6-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.

Standardized effect sizes were calculated by dividing the regression coefficient for the effect of intervention on each outcome by its baseline pooled SD. All measures were analysed using an intention-to-treat sample with multiple imputation used for missing data, 16% of the sample comprising 12 interventions and 2 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 two-thirds 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-intervention and post-intervention raw scores for intervention and control groups. At 6 months post-baseline intervention, families had significant improvements in parental well-being relative to controls (effect size = 0.37) and significant improvements in level of praise (effect size = 0.70).

At 12-month follow-up, two comparisons were conducted, one between baseline and 12-month follow-up and one between the 6-month and 12-month follow-up (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.

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 3 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, reported low levels of child behaviour problems and were less disadvantaged than parents of targeted 3-year-old and 4-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 devel-

Table 2. Multiple regression analyses of effects of parenting intervention on all outcome measures 6 months post-baseline

			Intervention ($n = 60$)		Control ($n = 29$)		
Outcomes	***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)	0.457	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)	0.221	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 (−1.73, 5.06)	0.336	26.82 (1.21)	25.24 (1.28)	25.85 (1.48)	23.58 (1.56)	0.19 (−0.20, 0.59)
Parent mental health/competence							
WEMWBS[a]	3.85 (0.36, 7.33)	0.031*	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)	0.834	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)	0.915	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)	0.219	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)	0.312	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)	0.150	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)	0.002*	15.37 (2.06)	17.50 (2.44)	15.07 (2.51)	9.44 (2.50)	0.70 (0.10, 1.86)

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.

[a] High scores = improvement.

[b] High scores = worsening.

*$P < 0.05$.

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

	BL	6-month FU	12-month FU	BL to 12-month FU	6- to 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)

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.

*Significant – CIs do not cross zero.

[a] High scores = improvement.

[b] High scores = worsening.

opment, 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. The first recruitment was undertaken by FS staff with no specific requirements beyond age and FS residency; it was probable that the families who participated 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 (Reid *et al.* 2004; Scott 2005). 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 randomized controlled trial design with 'blind' data collection and independent randomization 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 6 months. Consequently, caution should be taken when interpreting long-term follow-up results.

Key messages

- Dysfunctional parenting is a key risk factor for poor child outcomes, and improving parenting skills improves child outcomes.
- The IYTPP, a group-based programme, was delivered to parents of children aged 1 to 2 years.
- The IYTPP has modest positive short-term effects with significant improvements in parental mental well-being and parental praise compared with 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.

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