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# Parents Plus Programme I: Evaluation of Its Effectiveness for Pre-School Children with Developmental Disabilities and Behavioural Problems

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Accepted for publication 18 October 2006

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**Background** This study aimed to evaluate the effectiveness of the Parents Plus programme with families of pre-school children with developmental disabilities and significant behavioural problems in the Irish health service. The Parents Plus programme is a group-based parent training package involving video modelling, which was designed to be effective for children with conduct problems, but without developmental disabilities.

**Materials and methods** Pre- and post-treatment assessments were conducted with 22 treated cases and 19 waiting-list controls with a protocol that included the Strengths and Difficulties Questionnaire, the Child Behaviour Checklist, the General Health Questionnaire-12, the Kansas Parental Satisfaction Scale, the Family Assessment Device, the Perceived Social Support Scale, the Family Inventory of Life Events and Changes, the Parenting Stress Index and the Questionnaire on Resources and Stress.

**Results** Following the treatment, a comparison of treatment and control group means showed that the treated

group showed better adjustment on the total difficulties scale of the Strengths and Difficulties Questionnaire. These gains were maintained at 10-month follow-up. Fifty per cent of treated cases showed clinically significant improvement and 14% showed reliable change on the Strengths and Difficulties Questionnaire. The treatment group reported a high level of satisfaction with the Parents Plus programme and showed significant goal attainment after treatment and at follow-up.

**Conclusions** For some families of pre-school children with developmental disabilities and significant behavioural problems, the Parents Plus programme is an effective intervention and may be incorporated into routine early intervention clinics in the Irish health service.

**Keywords:** child behaviour checklist, conduct problems, intellectual disability, parent training, strengths and difficulties questionnaire

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## Introduction

A large proportion of pre-school children with developmental disabilities, including intellectual disability and autistic spectrum disorder, display significant behavioural problems, and in many cases these persist into later childhood and adolescence (Baker *et al.* 2002, 2003). Among children in the 4–7-year age group, oppositional behaviour, non-compliance and aggression are among the most prevalent behavioural problems (Baker &

Abbott Feinfield 2007). A variety of parent training programmes have been developed to address such problems in children with developmental disabilities (Lutzker & Steed 1998; Hudson 2000; Gavidia-Payne & Hudson 2002; Baker & Abbott Feinfield 2006). Paralleling these developments in the disability field, video-modelling-assisted training packages for use in group-based settings for parents of children with conduct problems, but without developmental disabilities have been developed and are widely used (e.g. Webster-Stratton & Reid

2003). Evidence for the effectiveness of group-based, video-modelling-assisted parent training for children with behaviour problems, but without developmental disabilities is particularly compelling (Behan & Carr 2000).

### Group-based behavioural parent training and development disability

A summary of key features and findings from nine controlled group outcome studies of group-based behavioural parent training for parents of children with developmental disabilities is presented in Table 1. The studies were identified in computer and manual literature searches for the period 1970–2004. Searches of PsychInfo, Medline and other relevant electronic databases were conducted by using a range of terms for developmental disability and parent training. Bibliographies of identified studies and recent review papers were searched manually. Single case designs, single group outcome studies, studies of behavioural parent training programmes offered to one family at a time rather than in a group format, studies of non-behavioural programmes and studies of programmes aimed primarily at parental stress management or psychoeducation were excluded from the review.

From Table 1, it is clear that the nine selected studies were well designed, had adequate sample sizes, included participants recruited from both referrals and volunteers, had random assignment of cases to treatment, control and comparison groups (in eight of nine studies); involved families of children with a range of developmental disabilities including the intellectual disability and autism; and included families of children ranging in age from 3 weeks to 14 years. Programmes all involved training parents to foster adaptive behaviour and skills on the one hand, and manage oppositional or challenging behaviour on the other, using principles from behavioural psychology and social learning theory. Training was offered to parents in groups of 5–10 participants over periods of 4–20 weeks in sessions of 1–2-h duration. Completion rates, when reported, were high and ranged from 78% to 96%. In six of nine studies, group-based behavioural parent training led to significant changes in children's problem behaviour compared with control groups. In all seven studies where parents' knowledge and/or skills in applying behavioural parenting skills were assessed, treatment groups made significantly greater gains than control groups. A significant reduction in parents' stress occurred in only one of the three studies in which this

construct was evaluated. In one of two studies where the quality of parent–child relationships was assessed, behavioural parent training led to a significant improvement in this domain. In two studies, parents' satisfaction with treatment was evaluated, and in both instances a high level of satisfaction occurred. In two of three studies where 6-month follow-up data were available, post-treatment gains were retained at follow-up. Collectively, these results suggest that group-based behavioural parent training may be an effective way of reducing behaviour problems and parental stress; and enhancing the quality of parent–child relationships in families of children with developmental disabilities.

### Parents plus programme

In Ireland, the Parents Plus programme is the only available culturally sensitive, group-based behavioural parent training programme (Sharry & Fitzpatrick 1998). The Parents Plus programme, which was specifically developed for use in an Irish context, is a practical and positive video-based course, which helps parents manage and solve discipline problems in 4–11-year-old children. It is a group programme involving eight weekly sessions of 2 h each. The programme materials include two videos and a facilitator's manual. The manual contains directions on running the programme, session plans and handouts for parents. The videos show scenes, played by actors, of parents interacting positively with their children, both avoiding misbehaviour and dealing with it when it occurs, along with positive comments by clients who have used these parenting practices with their children. The video scripts were written in an Irish idiom and the actors all speak in Irish accents. However, the overall curriculum of the programme closely parallels North American Programmes that have been found to be effective in empirical studies (e.g. Webster-Stratton & Reid 2003). Topics covered include using parental attention to change behaviour, play and special time, encouragement and praise, using reward systems effectively, setting rules and helping children keep them, using active ignoring; using time-out and other sanctions and solution building with children. A typical session involves a welcome from the facilitator, a review from the participants of how they have put into practice the new ideas from the previous week's session, introduction of the current week's topic, video input and discussion of the topic, role play and skills rehearsal, planning for the next week and summing up. The programme uses a broadly cognitive behavioural model, but is unique in being solution-focused, drawing on parents'

**Table 1** Characteristics and key findings from controlled behavioural parent training group treatment studies of children with disabilities

Study	Sample and method	Programme	Group treatment duration	Outcomes
Brightman <i>et al.</i> (1982)	Sample: 66 parents of children with moderate to severe DD aged 3–13 years Recruitment: referred from disability services Assignment: random	1. BPT-G = 37 2. BPT-I = 16 3. C = 13	9 weekly 2-h sessions	Completion rates: 1, 2 and 3 = 87% Children's behaviour: 1 = 2>3 Parents' knowledge and skills: 1 = 2>3 Follow-up: At 6-m follow-up, 1 = 2>3 Completion rates: 1 = 80%, 2 = 96% Children's behaviour: 2>1 = 3 Parental stress: 1 = 2 = 3 Parental satisfaction: 64% satisfied
Chadwick <i>et al.</i> (2001)	Sample: 62 parents of children with severe DD aged 4–11 Recruitment: self-referred and referred from special schools Assignment: random	1. BPT-G = 15 2. BPT-I = 23 3. C = 24	5 weekly 2-h sessions	Follow-up: at 6-m follow-up 1 = 2 = 3 Completion rates: 1, 2, 3 and 4 = 87% Children's behaviour: 1 = 2 = 3 = 4>5 Parents' knowledge: 1 = 2>3>4 = 5 Parent-child relationship: 1 = 2 = 3 = 4 = 5
Heifetz (1977)	Sample: 132 parents of children with DD aged 2–14 years Recruitment: volunteered through agencies and media announcements Assignment: random	1. BPT-G = 24 2. BPT-G & visit = 28 3. Instruction manual = 25 4. Telephone consult and manuals = 23 5. C = 32	20 weekly 2-h sessions	Children's development: 1 = 2 = 3>4 Parents' knowledge & skills: 1 = 2 = 3>4
Hudson (1985)	Sample: 40 mothers of children with DD aged 3 weeks to 3.5 years Recruitment: volunteers from early intervention waiting list Assignment: random	1. BPT-G = 10 2. BPT-G and behaviour principals = 10 3. BPT-G and modelling and role play = 10 4. C = 10	10 weekly 3-h sessions	Children's behaviour: 1 = 2 = 3 = 4 Parents' knowledge & skills: 1 = 2 = 3>4 Parental stress: 1 = 2 = 3>4 Parents' satisfaction: high satisfaction Follow-up: a 6-month follow-up positive gains maintained by groups 1–3
Hudson <i>et al.</i> (2003)	Sample: 115 mothers of children with mild to severe DD aged 3–13 years Recruitment: volunteers from schools and media announcements Assignment: random	1. BPT-G = 46 2. Telephone support = 13 3. Self-directed = 29 4. C = 27	6 weekly 2-h sessions	Child behaviour: 1 = 2 Child development: 1>2 Parent's knowledge: 1>2 Parental stress: 1 = 2
Jocelyn <i>et al.</i> (1998)	Sample: 35 parents of children with autism aged 2–6 years Recruitment: referrals to a child development clinic Assignment: stratified random	1. BPT-G = 16 2. C = 19	12 weekly 1.25-h sessions	Completion rates: 1&2 = 91% Children's behaviour: 1 = 2>3 Parent's knowledge & skills: 1 = 2>3
Kashima <i>et al.</i> (1988)	Sample: 61 parents of children with moderate to severe DD aged 3–13 years Recruitment: referred from disability services Assignment: random	1. BPT-G = 19 2. BPT-G (video) = 22 3. C = 20	4 weekly 2-h sessions	Completion rates: 1 = 2 = 3 = 4 = 5

Table 1 Continued

Study	Sample and method	Programme	Group treatment duration	Outcomes
Prieto-Bayard & Baker (1986)	Sample: 20 parents of children with moderate to severe DD aged 3 and 13 years Recruitment: referred from disability services Assignment: random	1. BPT-G = 9 2. C = 11	9 weekly 2-h sessions	Completion rates: 1 = 78% Children's behaviour: 1>2, Parents' knowledge & skills: 1>2
Tavormina (1975)	Sample: 48 mothers of children with DD aged 7 years Recruitment: volunteers Assignment: non-random	1. BPT-G = 19 2. Reflective PT-G = 16 3. C = 13	8 weekly 1.5-h sessions	Children's behaviour: 1 = 2>3 Parent-child relationship: 1>2>3

DD, developmental disability; BPT-G, behavioural parent training group; BPT-I, behavioural parent training individual; C, control.

Table 2 Content of Parents Plus programme sessions

Session	Content
	<i>Encouraging children to change</i>
1	Using parental attention to change behaviour
2	Play and special time with children
3	Encouragement and praise
4	Using reward systems effectively <i>How to set rules and handle misbehaviour</i>
5	How to set rules and help children keep them
6	How to use active ignoring to reduce misbehaviour
7	Using time out and other sanctions
8	Solution building with children

strengths and expertise, and being highly collaborative in its approach. Table 2 summarizes the focus of each session. At the inception of the project reported in this paper, only the version of the Parents Plus programme for 4–11-year olds was available. Since then, a version for pre-school children has been developed (Sharry *et al.* 2003).

Two evaluations of different versions of the Parents Plus programme have been conducted (Behan *et al.* 2001; Sharry *et al.* 2005). Behan *et al.* (2001) found that parents of 4–11-year-old children with conduct problems and normal ability levels who had completed the Parents Plus programme for families of primary school age children reported greater gains in the attainment of personal parenting goals compared with those in a waiting list control group. There was also a trend in the treatment group to report a decrease in externalizing behaviour problems. A significant decrease in parent-child interaction-related stress was also found in the treatment group. Gains in parents' goals and improvement in externalizing behaviour problems were maintained at 5.5-month follow-up. Sharry *et al.* (2005) conducted an uncontrolled evaluation of the Parents Plus Early Years Programme for children age 1–6 years (which was developed after the present study was conducted). They found that after the programme there was a significant reduction in parent-reported child conduct problems and hyperactivity and parental stress. After treatment, there was a significant goal attainment for parents' goals. There was also significant improvement in observer-rated positive parent-child interaction.

The aim of the present study was to evaluate the effectiveness of the Parents Plus programme for families with pre-school children with developmental disabilities and significant behavioural problems in the Irish public

health system. It was the first evaluation of the Parents Plus programme with families of pre-school children with developmental disabilities.

## Method

### Design

This was a comparative treatment outcome study in which cases were assigned to treatment or waiting-list control groups and assessed at Time 1, before, and at Time 2 after the treatment group's participation in the Parents Plus programme. In addition, follow-up data were collected for the treatment group at Time 3, 10 months after the end of treatment.

### Participants

Forty-two parents of children aged 4–7 years with developmental disabilities and clinically significant behaviour problems participated in this study, with 23 cases in the treatment group and 19 in the waiting-list control group. One parent dropped out of treatment after two sessions and it was not possible for two further participants from the treatment group to be followed up at Time 3. Participants were drawn from four rural, early intervention clinics for children with significant cognitive development delay in the Irish public health service. All four clinics had similar referral procedures, admission criteria, prioritization procedures, and offered the same range of interventions and supports. Consecutive referrals to two of these clinics were assigned to the treatment group. Consecutive referrals to the other two clinics were assigned to the waiting-list control group. From Table 3, it may be seen that the groups were similar in terms of the children's developmental disabilities and behaviour problems, and the families' demographic characteristics. The typical participant was a married middle class woman in her mid-30s with two or three children, one of whom was a boy under five with a developmental disability and behaviour problems. The majority of participants in each group had a child whose main diagnosis was intellectual disability and in each group a minority of children had a diagnosis of autistic spectrum disorder. Temper tantrums, non-compliance, over-activity and impulsivity were the most common behaviour problems. In all cases, these difficulties had been present for at least a year. Parental distress and restriction of families' social activities were the most common impacts of these behaviour problems.

**Table 3** Profiles of the treatment and control groups on developmental disabilities, pre-treatment behaviour problems and demographic characteristics

	Treatment group ( <i>n</i> = 22 parents) ( <i>n</i> = 16 children)		Control group ( <i>n</i> = 19 parents) ( <i>n</i> = 15 children)	
	<i>F</i> (%)		<i>F</i> (%)	
Main developmental disability				
Intellectual disability (mild or moderate)	14 (64)		13 (87)	
Autistic spectrum disorder	8 (36)		2 (13)	
Parental gender				
Male	7 (32)		5 (26)	
Female	15 (68)		14 (74)	
Child's gender				
Male	13 (81)		14 (93)	
Female	3 (19)		1 (7)	
SES				
1. Higher professional	3 (13)		1 (6)	
2. Lower professional	7 (32)		5 (26)	
3. Clerical	7 (32)		6 (31)	
4. Skilled manual	5 (23)		6 (31)	
5. Semiskilled	0 (0)		1 (6)	
6. Unskilled	0 (0)		0 (0)	
7. Unemployed	0 (0)		0 (0)	
Parents' marital status				
Married	21 (95)		17 (89)	
Single	1 (5)		2 (11)	
		<i>M</i>	<i>SD</i>	<i>M</i>
				<i>SD</i>
Behaviour problems				
Strengths and Difficulties Questionnaire total score before treatment	16.36	4.58	15.26	3.34
Parental age	36.50	5.99	38.26	4.10
Child's age	4.95	0.83	4.83	0.88
Number of children in family	2.63	1.09	2.42	0.94

For child characteristics, percentages are based on the 16 in the treatment group and 15 in the control group. For parental attributes, percentages are based on the 22 in the treatment group and 19 in the control group.

Throughout the study, all participants received routine early intervention services, which included multi-disciplinary support from speech and language therapy, social work, psychology and physiotherapy. Most children attend 2–3 pre-school educational sessions per week. None of the children received stimulant, anti-psychotic, anti-convalescent or anti-depressant medications during the study.

## Instruments

The assessment protocol included instruments with good psychometric properties, which assessed variables in the following domains:

- Child behaviour problems.
- Parental and family adjustment.
- Family stress processes.

## Measures of child behaviour problems

### *Strengths and difficulties questionnaire*

This 25-item inventory which assesses parents' perceptions of children's recent behaviour problems yields a total difficulties score and scores for five subscales: conduct problems, hyperactivity, emotional symptoms, peer problems and pro-social behaviour. Three point response formats are used for each item and are scored from 0 to 2. Here are two sample items: often has temper tantrums or hot tempers; many worries, often seems worried. The Strengths and Difficulties Questionnaire subscales (Goodman 1997) have a mean internal consistency reliability coefficient of 0.71, mean test-retest reliability co-efficient over 6 months of 0.62, a stable subscale factor structure and strong criterion validity for predicting psychological disorders (Goodman 2001; <http://www.sdqinfo.com/>). The Strengths and Difficulties Questionnaire has been normed on a large nationally representative UK sample of clinical and non-clinical cases covering the whole spectrum of ability levels and in this context using a clinical cut-off score of 16 which falls at the 90th percentile, the total difficulties scale has a sensitivity of 47% and a specificity of 94% (Goodman 2001). Emerson (2005) in a sub-sample of 98 11–15-year olds with intellectual disabilities from a UK nationally representative survey found the SDQ to have adequate reliability and validity when used with this population, and adolescents with intellectual disabilities had more behaviour problems than those without such disabilities.

### *Child behaviour checklist*

This 113-item inventory which assesses parent's perceptions of children's recent behaviours problems yields scores for three main scales and eight subscales. The main scales assess total, externalizing and internalizing behaviour problems. The narrowband subscales are: withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour and aggressive behaviour. Three

point response formats are used for each item and are scored from 0 to 2. Here are two sample items: impulsive or acts without thinking; Unhappy, sad or depressed. The Child Behaviour Checklist (Achenbach 1991) has internal consistency and test-retest reliability co-efficients above 0.7, a stable factor structure for the two main scales and strong criterion validity as indexed by correlations with other measures of psychological adjustment (Achenbach 1991; <http://www.aseba.org/>). The Child Behaviour Checklist has been normed on a large nationally representative US sample of clinical and non-clinical cases covering the whole spectrum of ability levels and in this context a clinical cut-off T score of 63 or raw score of 44 which falls at the 90th percentile identifies clinical cases with a sensitivity of 71% and a specificity of 89% for detecting psychological disorders (Achenbach 1991). Dekker *et al.* (2002) confirmed the reliability and criterion validity of the CBCL for children with intellectual disabilities in a study of 1041 6–18-year-old children with mild-and-moderate intellectual disabilities and 1855 normal controls. Almost 50% of children with intellectual disabilities had a total problem score in the deviant range compared with about 18% in children without intellectual disabilities.

The Strengths and Difficulties Questionnaire and Child Behaviour Checklist were used in this study because they have been used in previous evaluations of the Parents Plus programme and because they can be used in cases where intellectual disability is present or absent. Thus, it was possible to use them in a study reported in a companion paper, in which the effectiveness of the Parents Plus programme for treating behavioural problems in children with and without intellectual disabilities was evaluated (Quinn *et al.* 2006). Two rather than one measure of behavioural problems were included in the protocol because the Strengths and Difficulties Questionnaire is widely used in the UK and the Child Behaviour Checklist is widely used in North America.

## Measures of parental and family adjustment

### *The general health questionnaire – 12*

This 12-item scale which assesses psychological distress over the preceding 4 weeks yields a single score, which in this study served as an index of parental psychological adjustment. Item responses were scored by using a 4-point Likert system (1,2,3 and 4), which is the recommended scoring system for assessing severity of psychological distress (rather than psychiatric caseness). Here

are two sample items: have you recently been feeling unhappy and depressed?; have you recently felt you could not overcome your difficulties? The General health Questionnaire 12 (Goldberg & Williams 1988) has been found to have internal consistency reliability coefficients of 0.82–0.86 in most studies and strong criterion validity for predicting psychological disorders with a sensitivity of 76% and a specificity of 84% (Goldberg *et al.* 1997). In the present study with a 1,2,3 and 4 Likert scoring system, a cut-off score of 24 (12 points above the lowest possible score) may be used to interpret mean scores in Table 4 (Goldberg *et al.* 1997; NFER-Nelson 2006).

#### *Kansas parental satisfaction scale*

Scores on the 3-items of this scale which measures parental satisfaction with children's behaviour, with the parenting role, and with parent-child relationships are summed to yield a total parental satisfaction score. Seven-point response formats are used for each item and are scored from 1 to 7. Here are two sample items: how satisfied are you with your child's behaviour?; how satisfied are you with yourself as a parent? The Kansas Parental Satisfaction Scale (James *et al.* 1985) has been found in a series of studies to have internal consistency reliability coefficients from 0.78 to 0.95; a stable single factor structure; and criterion validity as indicated by its moderate correlations with parental self-esteem, locus of control, marital satisfaction and severity of family/work conflicts (DeCato Murphy *et al.* 2003). Scores of 15 or less fell one SD below the mean, indicating low parental satisfaction in the validation sample, and this may be used to interpret data in the present study.

#### *Family assessment devise*

This 60-item inventory yields a total score and subscale scores for family problem solving, communication, roles, affective responsiveness, affective involvement, behaviour control and general functioning. Four-point response formats are used for each item and these are scored from 1 to 4. Here are two sample items: planning family activities is difficult because the present authors misunderstand each other; the present authors avoid discussing our fears and concerns. The Family Assessment Devise (Kabacoff *et al.* 1990) and its subscales have been found to yield internal consistency reliability coefficients above 0.7 and the criterion validity of the instrument has been supported through its moderate correlations with observer-rated family functioning, and adjustment of vulnerable family members with psychological and

physical difficulties (Miller *et al.* 2000). Total scores of 120 or more indicate the possibility of clinical problems.

#### *Perceived social support scale*

This 20-item scale yields a total score based on the parental perceived social support from spouse, friends, helping professionals and significant others. Seven-point response formats are used for all items, which are scored from 1 to 7. Here are two sample items: I get the emotional help and support I need from my spouse or partner; my friends really try to help me. The Perceived Social Support Scale (Carr & O'Reilly 2000) has an internal consistency reliability coefficient of 0.89 and its validity is supported by its inverse relationship with level of need in families of children with intellectual disabilities (Carr & O'Reilly 2000). In the validation sample, scores below 98 fell one SD below the mean, indicating the low social support.

#### *Measures of family stress processes*

##### *Family inventory of life events and changes*

The 72 items in this scale describe sources of family stress. Each item has a standardized stress weighting and these are summed to yield a single family stress score, and scores on the following subscales: intrafamilial strain, work strains, illness and family care strains, family transitions, pregnancy and child strains, financial strains and losses. Here are two sample items: a member became physically disabled or chronically ill; a member stopped working for an extended period, e.g. laid off, leave of absence and strike. The Family Inventory of Life Events and Changes (McCubbin *et al.* 1982) has internal consistency and test-retest reliability coefficients above 0.8; a stable factor structure; and criterion validity as indexed by the association between high scores on the instrument and deterioration in functioning of vulnerable family members such as children with epilepsy or cystic fibrosis (Patterson & McCubbin 1983; Austin *et al.* 1992; Lessenberry & Rehfeldt 2004). In the validation sample, 10% of families of pre-school children obtained stress scores above 840, indicating high levels of family stress.

##### *Parental distress scale from the short form of the parenting stress index*

The 12-item Parental Distress Scale (Abidin 1995) from the Short Form of the Parenting Stress Index was used

**Table 4** Status of the treatment group at times 1, 2 and 3 and control group at times 1 and 2 on measures of child problems and family adjustment

Scale	Reliability	Range	Treatment group (n = 22)						Control group (n = 19)						ANOVA F (differences among T1, T2 and T3)				
			Time 1		Time 2		Time 3		Time 1		Time 2		ANOVA F						
			M	SD	M	SD	M	SD	M	SD	M	SD							
Behaviour problems	0.73	0-40	16.36	4.58	8-28	13.90	4.34	7-24	12.95	3.69	7-25	15.26	3.34	10-22	15.68	3.60	11-23	6.402**	11.25*** (T1 > T2 = T3)
SDQ total difficulties		16+																	
Conduct problems	0.42	0-10	3.36	1.25	2-7	2.81	1.29	1-6	2.10	1.07	0-4	2.63	1.06	0-4	3.05	0.97	2-5	3.05	11.34** (T1 > T2 = T3)
SDQ conduct problem scale																			
Behaviour problems	0.93	0-236	41.20	21.80	16-94	36.40	20.81	9-74	36.27	24.31	7-95	51.37	32.82	17-148	44.16	26.48	16-107	0.01	0.92
CBCL total score		44+																	
Parental adjustment	0.81	12-48	21.59	3.88	17-33	19.04	2.10	16-23	23.10	7.79	15-50	20.05	2.75	17-27	19.63	2.13	17-24	2.13	4.723
GHQ-12 total		24+																	
Parenting satisfaction	0.73	3-21	13.72	2.51	9-17	15.72	2.37	12-19	15.95	3.39	9-25	13.15	3.21	3-17	14.05	2.41	9-18	6.62	5.542** (T1 < T2 = T3)
KPS total		<15																	
Family functioning	0.85	60-240	170.04	13.61	139-193	171.36	15.39	140-206	172.75	43.05	0-215	178.63	17.73	148-214	176.05	14.02	152-209	0.08	0.07
FAD total		120+																	
Social support	0.93	20-140	112.41	20.51	64-138	113.45	18.90	73-133	128.05	75.78	83-439	117.00	15.11	80-139	120.89	17.81	78-140	1.01	0.47
PSSS total		<98																	
Life events	0.69	0-3305	268.95	255.05	25-915	191.63	228.67	0-1015	188.65	243.95	0-908	135.00	80.27	25-323	129.00	74.68	25-378	1.10	2.18
FILE total		840+																	
Parenting stress	0.78	12-60	31.77	7.70	27-57	28.68	7.80	28-56	28.7	9.31	28-60	32.21	7.54	24-52	32.21	7.87	26-57	2.60	1.63
PSI parenting distress scale		33+																	
Parenting stress	0.70	0-20	9.86	3.02	3-14	9.77	2.11	7-14	7.65	4.22	0-13	10.92	2.23	6-14	9.64	2.34	5-13	0.72	3.42** (T1 < T2 = T3)
QRS parent and family problems																			

SDQ, Strengths and Difficulties Questionnaire; CBCL, Child Behaviour Checklist; GHQ-12, General Health Questionnaire-12; KPS, Kansas Parental Satisfaction Scale; FAD, Family Assessment Device; PSSS, Perceived Social Support Scale; FILE, Family Inventory of Life Events and Changes; PSI, Parenting Stress Index; QRS, Questionnaire on Resources and Stress. ANCOVA F is from one-way ANCOVA of time 2 scores with time 1 scores as covariates. ANOVA F is from one-way repeated measures ANOVA on treatment group time 1, time 2 and time 3 scores. Clinical cut-off score were not available for the SDQ conduct problems scale or the QRS parent and family problems scale. \*P < 0.05. \*\*P < 0.01. \*\*\*P < 0.001.

in the present study to evaluate the parental stress. It has the advantage of assessing parental distress, unconfounded by measures of child characteristics. The short form of the Parenting Stress Index is a 36-item parent-report scale, which yields a total parenting stress score and scores on three twelve item subscales: parental distress, difficult child and parent-child dysfunctional interaction. For all items, 5-point response formats are used which are scored from 1 to 5. Here are two sample items: since having this child, I have been unable to do new and different things; my child turned out to be more of a problem than I had expected. The short form of the Parenting Stress Index total scale and subscales have been found in a series of studies to have acceptable internal consistency reliability coefficients above 0.9 and test-retest reliability coefficients of between 0.65 and 0.96 (Lessenberry & Rehfeldt 2004). The instrument has a stable three factor structure and strong criterion validity as indicated by significant associations between the subscales and other measures of parental stress, poverty, low education and parenting challenges including severity of a child's disability (Abidin 1997; Reitman *et al.* 2000; Smith *et al.* 2001; Lessenberry & Rehfeldt 2004).

#### *Parent and family problems scale of the questionnaire on resources and stress*

The 20-item Parent and Family Problems Scale (Friedrich *et al.* 1983) of the Questionnaire on Resources and Stress was used in the present study to evaluate the parental and family stress. It has the advantage of assessing parental and family distress, unconfounded by measures of child characteristics. The 52-item, short form of the Questionnaire on Resources and Stress yields a total score and scores on four subscales: parental pessimism, parent and family problems associated with the child's disability, child characteristics and child's physical incapacity. For all items, yes/no response formats are used which are scored 0 or 1. Here are two sample items: I am disappointed that my child does not lead a normal life; I worry what will happen to my child when he/she gets older. The short form of the Questionnaire on Resources and Stress total scale and its subscales have acceptable internal consistency reliability coefficients above 0.7 (Friedrich *et al.* 1983). The instrument has a stable factor structure and strong criterion validity as indicated by a correlation above 0.9 with the longer version of the scale, significant associations with parental distress and parenting challenges including severity of a child's disability, and an inverse

relationship with the availability of professional support (Friedrich *et al.* 1983; Dyson 1996; Honig & Winger 1997).

The Parenting Stress Index and the Questionnaire on Resources and Stress, which measure similar aspects of the stress process, were both included in the protocol because the Parenting Stress Index has been used in past evaluations of the Parents Plus programme and the Questionnaire on Resources and Stress is widely used to assess the stress processes in families of children with intellectual disability.

#### **Procedure**

The study was conducted with ethical approval of involved institutions and informed consent of all participants. Participants were recruited into the study at parent information sessions conducted over a number of evenings at the early intervention clinics, with full support from multidisciplinary teams at these clinics. All participants completed the assessment protocol at times 1 and 2, and the treatment group also completed time 3 assessments 10 months after treatment. For the treatment group at times 1 and 2, assessments were conducted in the clinics and at time 3 assessment packs were mailed to participants. Control group participants were mailed assessment packs at times 1 and 2. When assessment packs were mailed to participants, this was followed up with phone calls to remind them to return the packs and to answer questions about completing the protocol.

The Parents Plus programme was conducted over six, rather than eight sessions, as specified in the programme manual. The sessions on using reward systems effectively and solution building for children were dropped from the curriculum because these modules were directed to older children, and because pilot interviews with prospective participants indicated that parents were reluctant to commit to more than a 6-session programme because of the significant travel involved and family commitments. Ninety-six per cent of participants completed five of the six programme sessions and 89% completed most homework assignments. When participants missed sessions, they were contacted, and the group facilitator helped them plan attendance at future sessions. Handouts from the missed session were sent to them. Courses were provided to groups of 7-10 participants. Each course was facilitated by a senior psychologist with specialist training in the Parents Plus programme and a co-facilitator. The facilitators included a principal social worker and a nurse specialist both of whom held

masters degrees in psychotherapy and worked in child health services.

Prior to the programme, participants set at least three specific, measurable and achievable child- and parent-focused goals expressed in positive behavioural terms. Before and after treatment, participants rated the frequency with which the target behaviour defined by each goal was achieved in the preceding month on 10-point scales, from 1 = never to 10 = always.

After treatment, participants completed a course evaluation form. The form covered the following areas: overall satisfaction with the programme, ratings of main topics, rankings of the importance of specific aspects of sessions, the most helpful aspect of programme, the most helpful elements of the facilitator's teaching style, the most important skill to take away from the programme and the most important thing to take away from the programme.

All Parents Plus sessions were audio recorded, and a random sample of these were rated for programme integrity, by checking that facilitators covered the main topics specified in the programme manual. The contents of all selected sessions were rated as fully complete. This high level of integrity was due to the very explicit nature of the manual and the fact that all groups were facilitated by the principal investigator.

## Results

### Reliability of scales

Internal consistency alpha reliability coefficients based on the data collected at time 1 before treatment are given in Table 4. All scales used in the main analyses described below had good reliability ( $\alpha > 0.7$ ) with the exception of the conduct problem subscale of the Strengths and Difficulties Questionnaire, which had moderate reliability ( $\alpha = 0.42$ ).

### Improvement on group mean scores after treatment

To evaluate the statistical significance of the impact of the Parents Plus programme on group mean scores of treatment and control groups, a series of one-way ANCOVAs were conducted on dependent variables. In these analyses, time 2 or post-treatment means of treatment and control groups were compared, and time 1 or pre-treatment scores were used as covariates. This strategy was used to control statistically for pre-treatment intergroup differences on dependent variables. To control for type 1 error (i.e. detecting spurious statistically

significant intergroup differences as a result of conducting tests on multiple-dependent variables), ANCOVAs were only conducted on 10 variables, which were either total instrument scores or theoretically relevant instrument subscale scores, and a conservative  $P$ -value of 0.01 was set by using Bonferroni's adjustment for an overall experiment wise  $P$ -value of 0.05, with 10 tests, 40 d.f. and an average correlation of 0.24 between dependent variables (<http://home.clara.net/sisa/bonhlp.htm>).

From Table 4, it may be seen that, at post-treatment (time 2), the treatment and control groups differed significantly on the total difficulties scale of the Strengths and Difficulties Questionnaire only. The mean score on the total difficulties scale decreased from a pre-treatment level of 16.36 ( $SD = 4.58$ ) to a post-treatment level of 13.9 ( $SD = 4.34$ ). For the control group, the mean score was 15.26 ( $SD = 3.34$ ) at time 1 and 15.68 ( $SD = 3.60$ ) at time 2.

An effect sizes was calculated for the total difficulties scale of the Strengths and Difficulties Questionnaire by dividing the difference between means of treatment and control groups at time 2 by the pooled  $SD$  at time 2 [ $ES = (M1 - M2)/SD$ ]. The effect size was 0.49, which indicates that at time 2 the average-treated case fared better on the Strengths and Difficulties Questionnaire total difficulties scale than 69% of untreated controls. From a normative perspective, 16 is the clinical cut-off score for the total difficulties scale of the Strengths and Difficulties Questionnaire, so the mean for the treated group moved from the clinical to the non-clinical range from pre-treatment to post-treatment.

### Improvement in treatment group mean scores at follow-up

To evaluate whether gains made by the treatment group were maintained at 10 month follow-up (time 3), one-way repeated measures ANOVAs with three levels were conducted on time 1, 2 and 3 treatment group data, followed by paired  $t$ -tests among time 1, 2 and 3 scores to check if improvement or deterioration occurred between the end of treatment (time 2) and 10-month follow-up (time 3). From Table 4, it may be seen that significant improvement from time 1 through time 2, to time 3 occurred on the total difficulties and conduct problems scales of the Strengths and Difficulties Questionnaire, the Kansas Parental Satisfaction Scale and the Questionnaire on Resources and Stress Parent and Family Problems Scale. For each variable, post-treatment and follow-up scores were significantly ( $P < 0.01$ ) different from pre-treatment scores, but not significantly different

from each other. Thus, in each instance, gains made from time 1 to time 2 were maintained at time 3.

On the total difficulties scale of the Strengths and Difficulties Questionnaire, the mean score of the treatment group decreased from a pre-treatment level of 16.36 (SD = 4.58) to a post-treatment level of 13.9 (SD = 4.34) and at 10-month follow-up the mean score was 12.95 (SD = 3.96). The mean scores at post-treatment and follow-up were in the non-clinical range, below the clinical cut-off score of 16 for the total difficulties scale of the Strengths and Difficulties Questionnaire.

On the Kansas Parental Satisfaction Scale, the mean score of the treatment group increased from a pre-treatment level of 13.72 (SD = 2.51) to a post-treatment level of 15.72 (SD = 2.37) and at 10-month follow-up the mean score was 15.95 (SD = 3.39). The mean scores at post-treatment and follow-up were in the non-clinical range, above the clinical cut-off score of 15 for Kansas Parental Satisfaction Scale.

#### Clinical improvement rates

To compare rates of clinical improvement in treatment and control groups, the following analysis was conducted. Cases were classified as clinically improved if they moved from the clinical to the non-clinical range on the total difficulties scale of the Strengths and Difficulties Questionnaire from time 1 to time 2. Eighteen of 22 cases in the treatment group, and 16 of 19 cases in the control group had scores in the clinical range at time 1. Nine of the 18 cases (50%) in the treatment group that were in the clinical range at time 1 compared with seven of the 16 cases (43%) in the control group that were in the clinical range at time 1 showed clinical improvement on the total difficulties scale at time 2. This difference in clinical improvement rates (50% versus 43%) was not statistically significant ( $\chi^2 = 0.13$ , d.f. = 1,  $n = 34$ ,  $P > 0.05$ ). Clinically significant improvers and non-improvers did not differ significantly ( $P < 0.01$ ) on any baseline variables.

#### Reliable improvement rates

To compare rates of reliable improvement in treatment and control groups, the following analysis was conducted. Cases were classified as reliably improved on the total difficulties scale of the Strengths and Difficulties Questionnaire if they achieved a score  $>1.96$  on the reliable change index (Jacobson & Truax 1991). The reliable change index for each case was calculated by dividing the difference between time 1 and 2 Strengths and Difficulties Questionnaire total difficulties scale

scores by the standard error of measurement [ $RCI = (Mt1 - Mt2)/SE_{meas}$ ]. The standard error of measurement was obtained by multiplying the SD by the square root of the difference between one and the reliability of the instrument [ $SE_{meas} = SD \times \sqrt{1 - \text{reliability coefficient}}$ ]. The SD for the total difficulties scale of the Strengths and Difficulty Questionnaire in the normative sample is 5.8 (Meltzer *et al.* 2000) and the reliability coefficient is 0.72 (Goodman 2001). Three of 22 cases in the treatment group, and none of 19 cases in the control group were classified as reliably changed at time 2. This difference in improvement rates (13.6% versus 0%) was not statistically significant ( $\chi^2 = 2.795$ , d.f. = 1,  $n = 41$ ,  $P = 0.095$ ). Reliable improvers and non-improvers did not differ significantly ( $P < 0.01$ ) on any baseline variables.

#### Goal attainment

For treated cases, goal attainment was evaluated in the following way. At time 1, participants set three individualized child- and parent-centred goals, which they rated on 10-point scales at times 1, 2 and 3. Here are examples of child-centred goals: my child will stop biting; my child will hit himself less often. Here are examples of parent-centred goals: I will be more confident in managing my child's behaviour; I will learn specific strategies in dealing with my child. For each case, a mean child- and parent-centred goal score was calculated for times 1, 2 and 3. To evaluate the degree to which treated cases attained child- and parent-centred goals, the statistical significance of changes in group mean goal attainment scores was evaluated with one-way repeated measures ANOVAS. Mean child-centred goal attainment ratings for parents in the treatment group increased significantly from time 1 ( $M = 2.68$ ,  $SD = 1.28$ ) to time 2 ( $M = 7.40$ ,  $SD = 1.97$ ), and this improvement was maintained 10 months later at time 3 ( $M = 7.45$ ,  $SD = 1.65$ ). A repeated measures ANOVA confirmed that this improvement was statistically significant [ $F(2, 42) = 100.63$ ,  $P < 0.01$ ]. Mean parent-centred goal attainment ratings also increased significantly from time 1 ( $M = 3.95$ ,  $SD = 1.93$ ) to time 2 ( $M = 7.38$ ,  $SD = 1.20$ ), and this improvement was maintained at time 3 ( $M = 8.09$ ,  $SD = 1.30$ ). A repeated measures ANOVA confirmed that this improvement was statistically significant [ $F(2, 40) = 58.30$ ,  $P < 0.01$ ].

#### Parent satisfaction

The satisfaction survey completed by members of the treatment group at time 2 indicated that participants

were satisfied with the Parents Plus programme. All parents were sufficiently satisfied with the programme to say that they would recommend it to others in their situation. On 10-point scales, they rated the course as highly relevant to the challenges they faced as parents ( $M = 8.93$ ,  $SD = 1.29$ ) and predicted that they would use the skills they learned to cope with these challenges ( $M = 9.19$ ,  $SD = 1.22$ ). Six of the key skills learned on the programme were given mean ratings between 4 and 5 on 5-point scales for relevance and importance. These included: catching your child being good ( $M = 4.43$ ,  $SD = 0.64$ ), play skills ( $M = 4.46$ ,  $SD = 0.64$ ), using praise and encouragement ( $M = 4.53$ ,  $SD = 0.64$ ), setting consequences ( $M = 4.13$ ,  $SD = 0.64$ ), active ignoring ( $M = 4.27$ ;  $0.88$ ) and using time-out or sanctions ( $M = 4.20$ ,  $SD = 0.77$ ). Six specific aspects of the contents of the sessions were ranked in order of importance from 1 to 6. The order of the following sequence is based on the mean rankings of these aspects of the programme from the most to the least important: review of homework and content of previous session ( $M = 2.62$ ;  $SD = 1.58$ ), having homework assigned and reviewed ( $M = 2.93$ ,  $SD = 1.69$ ), brainstorming solutions ( $M = 3.12$ ,  $SD = 1.54$ ), watching video vignettes and discussing them ( $M = 3.37$ ,  $SD = 1.45$ ), receiving hand-outs covering key points in the sessions ( $M = 3.81$ ,  $SD = 1.55$ ) and conducting role-plays of specific situations ( $M = 5.00$ ,  $SD = 1.50$ ). The most frequently reported, most helpful aspects of sessions were meeting and listening to other parents (47%) and learning specific skills (32%). The most frequently reported, most helpful aspects of the teaching style used by facilitators were giving information in a clear manner (37%) and giving time to each parent participating in the programme (16%). Parents reported that the most important specific skills to take away from the programme were to be calm (34%), to use praise and encouragement and active listening to promote prosocial behaviour (34%) and to use active ignoring to deal with conduct problems (30%). Parents reported that, overall, the most important thing to take away from the programme was a sense of parental competence and this included being calmer, more confident, more positive as a parent and knowing that one is a good parent (63%).

## Discussion

In this study, the aim of which was to evaluate the effectiveness of the Parents Plus programme for families with pre-school children with developmental disabilities and significant behavioural problems; the present

authors found that following treatment, compared with the control group; the treated group showed better adjustment on the total difficulties scale of the Strengths and Difficulties Questionnaire. This mean post-treatment gain was maintained at 10 month follow-up. Fifty per cent of treated cases showed clinically significant improvement as indexed by movement from the clinical to the non-clinical range of the Strengths and Difficulties Questionnaire and 14% showed reliable change. These improvement rates did not differ from those in the control group. Thus, while the programme led to a *statistically* significant improvement in group mean levels of child behaviour problems, it did not lead to a higher rate of *clinically* significant improvement.

The treatment group showed significant goal attainment from pre-treatment through post-treatment to follow-up on mean scores of ideographic measures of parent- and child-centred treatment goals. Programme participants also expressed satisfaction with the programme.

Treatment did not lead to significant changes in behaviour problems as assessed by the Child Behaviour Checklist, family functioning as assessed by the Family Assessment Device, parental perceived social support as assessed by the Perceived Social Support Scale, or family stress processes as assessed by the Parenting Stress Inventory or the Questionnaire on Resources and Stress.

The study had limitations, which deserve mention. Cases were consecutively assigned to treatment and control groups at matched clinics, rather than randomly assigned to groups within clinics. While this may have led to biased samples in treatment and control groups, it is noteworthy that the groups were remarkably similar in terms of the distribution of intellectual disability and autism spectrum disorder, the level of behaviour problems and demographic profiles. A second limitation was the small sample sizes, although small sample sizes are not unusual for this type of study (e.g. Heifetz 1977; Brightman *et al.* 1982; Hudson 1985; Kashima *et al.* 1988; Jocelyn *et al.* 1998; Chadwick *et al.* 2001; Prieto-Bayard & Baker, 1986; Tavormina 1975). But small samples do compromise the power of statistical tests to detect real intergroup differences on dependent variables, so real treatment-related changes may have gone undetected. A third limitation concerns attrition and compliance. One participant dropped out of the study at time 2, and two further cases were not followed up at time 3, representing an overall attrition rate of 14%. The non-compliance rate for homework assignments was 11%. A fourth limitation concerns the type of vignettes used in the training programme; while parents were able to use the video

vignettes of normal children to learn child management skills, they would have preferred video vignettes tailored to their specific needs, which incorporated children with developmental disabilities.

With these shortcomings in mind, a number of features of the study suggest that considerable confidence may be placed in the results obtained. Firstly, cases were representative of typical referrals to early intervention clinics involved in the study. These were 'difficult cases' that had not responded to routine services. Secondly, well validated, reliable instruments were included in the assessment protocol. Thirdly, the programme was delivered by trained therapists by using detailed programme manuals and videos to insure a high level of programme integrity, and the integrity of programme delivery was verified. Finally, it is important to highlight that our study examined the impact of the programme on families whose children were receiving routine services in addition to the parent training programme. This factor contributes to the clinical validity of the results, insofar as it indicates the incremental benefit of participating in parent training for cases already involved in routine treatment.

Our findings are consistent with those of other evaluations of group-based parent training programmes for families of pre-school children with developmental disabilities, which show that these programmes lead to improvements in children's behaviour problems (Tavormina 1975; Brightman *et al.* 1982; Prieto-Bayard & Baker 1986; Kashima *et al.* 1988; Chadwick *et al.* 2001). Although not all studies of group-based behavioural parent training have found programmes leading to positive changes in child behaviour, especially in cases of severe intellectual disability (Hudson *et al.* 2003) and autism (Jocelyn *et al.* 1998). Our findings are consistent with those of other evaluations of group-based parent training programmes for families of school children with developmental disabilities, which show that these programmes lead to improvements in aspects of family life (Tavormina 1975), although this is not a universal finding (Jocelyn *et al.* 1998; Chadwick *et al.* 2001).

From a clinical perspective, it may be concluded that for some families of pre-school children with developmental disabilities and significant behavioural problems, the Parents Plus programme is an effective intervention and may be incorporated into routine early intervention clinics in the Irish public health service.

From a research perspective, a number of questions deserve further investigation. Evidence from the current study and Behan *et al.*'s (2001) study indicate that, compared with waiting list controls, children with and

without developmental disabilities show significant improvement in conduct problems following the participation in the Parents Plus programme. It would be valuable to know if the Parents Plus programme leads to similar levels of improvement in families of children with and without developmental disabilities. It would also be useful to evaluate the degree to which short-term gains are maintained at long-term follow-up by these two types of families. Finally, it would be valuable to know how parents from these differing family contexts evaluate the programme, and perceive the process of involvement in the Parents Plus programme. Each of these issues is addressed in a companion paper (Quinn *et al.* 2006).

### Acknowledgments

The research reported in this paper was funded in part by a grant from the Brothers of Charity, Southern Services, Ireland.

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