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Adapting Webster-Stratton's incredible years parent training for children with developmental delay: findings from a treatment group only study

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Abstract

Background Children with intellectual or developmental disabilities (ID/DD) are more likely than typically developing children to experience behaviour problems. Parent training, such as the Incredible Years Parent Training (IYPT) series, has been a widely used intervention to support families with children with or at-risk for behaviour problems; yet to date, this programme has not been used with parents with young children with developmental delay or disabilities.

Method This preliminary treatment group only study assessed the feasibility of implementing a modified parent training programme (IYPT-DD) with 25 families with 2–5-year-old children with developmental delay. Intervention consisted of 12 weekly (2.5 h) sessions with topics covering developmentally appropriate play, praise, rewards, limit setting and handling challenging behaviour.

Results Results suggest preliminary evidence of efficacy in reducing negative parent and child behaviour and increasing parental perceptions of child positive impact.

Conclusions This study provides evidence for the feasibility of the DD modifications applied to the IYPT. Although this approach is promising, additional evidence is needed to address the efficacy of IYPT-DD in children with developmental delay.

Keywords autism, challenging behaviour, incredible years, intellectual disability, parent training

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Introduction

It has been well documented that individuals with intellectual disability (ID) and other developmental disabilities (DD) are at heightened risk for developing a behaviour problem and/or mental health disorder (e.g. Dosen & Day 2001). Recent estimates suggest that more than a third of children and adolescents with ID have diagnosable psychiatric disorders (Einfeld & Tonge 1996; Emerson 2003). Dual diagnosis presents unique diagnostic (Sturmey 1995) and treatment challenges (Fletcher 2000) and leaves children at particular risk for unfavourable long-term outcomes, including, but not limited to, difficulties at home and school (McIntyre *et al.* 2002, 2006). For young children, serious maladaptive behaviour likely influences the adaptation to school in that student–teacher relationships and

peer relationships may be disrupted (Peterson *et al.* 2002; McIntyre *et al.* 2006). The early adaptation to school, particularly in preschool and kindergarten years, is crucial because this sets the stage for later school-based experiences (Rimm-Kaufman & Pianta 2000).

Young children with developmental delay are at greater risk for developing emotional and/or behaviour problems; however, very little is known about the developmental pathways of these problems or the underlying mechanisms of risk. It is likely a combination of biological, environmental and social factors that place children at risk (Sameroff & Fiese 2000). At a very early age, families are children's main socialising agents. The home environment serves as the primary context for children's development of adaptive (as well as maladaptive) strategies. This is consistent with the tenets of developmental psychopathology, emphasising and understanding multiple pathways to adaptation.

Family processes have influenced the emergence of behaviour disorders in young children without disabilities (Martin 1987; Baumrind 1989; Russell & Russell 1996; Bronson 2000; Kumpfer & Alvarado 2003). In parsing the family risk factors, Gerald Patterson and colleagues (Patterson 1982; Patterson *et al.* 1989; Patterson 1998) suggest that negative, coercive parenting practices place typically developing children at risk for behavioural problems. In a study of family problem-solving with children with disabilities, Floyd *et al.* (2004) found that child behaviour problems were associated with negative parent–child interactions. Baker *et al.* (2003) suggested a bi-directional relationship between parenting stress and child behaviour problems over time in families with young children with developmental problems. Indeed, a transactional relationship between children, their caregivers, and other environmental influences may best describe the interrelationships among these risk factors (Sameroff & Chandler 1975; Sameroff & Fiese 2000). Proximal variables (e.g. child temperament, developmental/cognitive status, adaptive behaviour) and more distal factors (e.g. family variables, poverty) may help describe risk factors, but still do not explain direct causes of psychopathology in children. Even less is known about psychopathology in individuals with developmental delay or ID. Few studies examine young children at risk for dual diagnosis and even fewer studies examine treatment outcomes for such children.

The work of Baker *et al.* (2002, 2003) suggests that young children with developmental delay, as early as 3-year old, are already exhibiting increased behaviour problems and negatively impacting their families. Existing behaviour problems may be exacerbated by parental stress over time (e.g. Baker *et al.* 2003). What is unknown is whether the presence of parental stress influences the emergence of behaviour problems in young children. Regardless of underlying cause or mechanism of psychopathology, there is a strong need for earlier, preventive efforts with families. Parent training, a promising form of intervention, has been used with families who have children with ID as well as families with children with behaviour disorders.

Parent training

Children with conduct problems

Practitioners and researchers have, for decades, utilised behavioural parent training to treat conduct disorder in children (e.g. Forehand & McMahon 1981). This approach is based on: (1) social learning theory principles, such as modelling (Bandura 1977); (2) positive and negative reinforcement to modify behaviour (Holland & Skinner 1961); and (3) a consideration of developmental psychopathology (Hinshaw 2002) that is influenced by a transactional model of parent–child interactions (Sameroff & Fiese 2000). Altering parent behaviour, i.e. increasing positive parent–child interactions and reducing negative or coercive parent–child interactions, is thought to result in a reduction of child behaviour problems (Patterson 1982). Parent training programmes have been useful in reducing child behaviour problems and increasing parental competence and positive parent–child relationships (Eyberg 1992; Webster-Stratton & Hammond 1997; Webster-Stratton 2000).

Carolyn Webster-Stratton and her colleagues have developed a parent training programme, the Incredible Years Parent Training (IYPT) series, which has been demonstrated to be more effective than control treatments in six randomised trials and in five independent replication studies (Webster-Stratton 1984, 1994, 2000) in reducing children's

problem behaviour and increasing parents' adaptive parenting skills. Webster-Stratton's parent training series utilises videotape modelling, role-playing, rehearsal, and weekly homework activities in small groups of 8–14 parents (see Webster-Stratton 2000 for a review). Webster-Stratton and her colleagues have also used IYPT with parents who have children at risk for adverse academic-socio-behavioural outcomes, partly because of their poverty status (Gross *et al.* 2003). The Incredible Years series also includes teacher training and child skill-building components, making this approach an efficacious treatment for children with conduct problems and a useful prevention technique for high-risk children and families. The Division 12 (clinical psychology) task force of the American Psychological Association deemed Webster-Stratton's Incredible Years series as one of two well-established psychosocial treatments for childhood conduct problems (Brestan & Eyberg 1998).

Children with intellectual disability

Parent training also has a long history for use with children with ID. For example, Kaiser and colleagues have taught parents to implement milieu teaching intervention to increase the vocalisations of young children with DD (e.g. Hemmeter & Kaiser 1994; Hester *et al.* 1996; Kaiser *et al.* 1996; Kaiser *et al.* 2000). Many parent training programmes (e.g. Shearer & Snider 1981; Baker 1996; Baker & Brightman 2004) have focused on both increasing children's adaptive behaviour and decreasing maladaptive behaviour. Although behaviour management has been included in these programmes, maladaptive behaviour has not been the primary focus. There are, however, programmes that primarily focus on maladaptive behaviour (e.g. Hudson *et al.* 2003); however, these programmes have focused on intervention with older children (e.g. Feldman & Werner 2002), children with specific diagnoses such as autism (e.g. Tonge *et al.* 2006; RUPP Autism Network 2007) or have only included children with pre-existing behaviour disorders (e.g. Chadwick *et al.* 2001). In the applied behaviour analysis literature, parent training procedures have used single case experimental methodology and have emphasised individualised parent training approaches that incorporate technology such as functional analysis (e.g. Lerman *et al.* 2000).

Although there are few randomised controlled trials of parent training interventions for families with young children with ID (Roberts *et al.* 2003), recently the Positive Parenting Programme (Sanders 1999) has been adapted for use with parents of children with ID (Roberts *et al.* 2006; Plant & Sanders 2007). Stepping Stones Triple P was evaluated with 47 families who had preschool-aged children with a range of disabilities, including those with mild to severe ID using a randomised wait-list control design (Roberts *et al.* 2006). Parent training was individually administered to parents in 10.2-h clinic-based sessions and included three to four home visits. Post-intervention, parents and children had reduced negative behaviours and parenting stress (Roberts *et al.* 2006). In a follow-up study, Plant & Sanders (2007) compared the Stepping Stones Triple P intervention with an enhanced version of Stepping Stones Triple P that emphasised enhancing parental coping skills. Both interventions resulted in significant reductions in child behaviour problems. Both interventions utilised individualised training procedures, i.e. a therapist worked one-on-one with each family, rather than conducting the intervention in a group-based format. Furthermore, participants in the Stepping Stones Triple P programme had a range of intellectual functioning, including severe ID. To be included in the study, children had pre-existing behaviour problems, emphasising behavioural reduction rather than preventive (or early intervention) procedures.

Although some authors have argued that group-based parent training may not be as effective or as acceptable to families (e.g. Chadwick *et al.* 2001), group-based approaches may be more cost-efficient than individualised sessions (e.g. Webster-Stratton 1994). Implementing group-based parent training groups may increase parents' knowledge of behavioural principles and teaching (Clark & Baker 1983; Prieto-Bayard & Baker 1986) and has the added benefit of increasing perceived social support for participants (Intagliata & Doyle 1984). Group-based parent training to reduce negative parent–child interactions, increase positive feelings towards the child, and build positive parent–child relationships has not typically been demonstrated with

families who have young children with developmental delay. The utility of parent training as an early intervention/preventive strategy for young children with delay has not been fully explored.

Study goals and hypotheses

The primary goals of the proposed study were: to assess the feasibility of Webster-Stratton's Incredible Years Basic Parent Training-Early Childhood programme (IYPT) for use with families who have young children with developmental delay, and to establish preliminary evidence of efficacy in reducing children's maladaptive behaviours and negative parent–child interactions, often associated with problem behaviour. Webster-Stratton's *Incredible Years* programme has not been used with families who have young children with DD; however, this is a well-established approach for families with children with behaviour disorders without DD.

Because children with mild to moderate developmental delay often experience behaviour problems similar to typical children with behaviour disorders (Pfeiffer & Baker 1994; Einfeld & Tonge 1996); e.g. non-compliance, inappropriate play, aggressive, antisocial, and withdrawn behaviours), it was hypothesised that the IYPT would require only slight modifications to be appropriate for this group (as indicated by parent-reported satisfaction, treatment acceptability and session attendance rates). In addition, it was hypothesised that parents would engage in significantly fewer inappropriate/negative interactions with their children post-treatment when compared with pre-treatment observations. Other outcomes explored were changes in child behaviour problems, family impact and parental depression.

Method

Participants

Parents and their preschool-aged (2–5 years) children with developmental concerns were recruited from early intervention and preschool programmes in two counties in New York State. Parents responded to recruitment flyers and after obtaining consent, were screened over the phone to assess whether their child met the following inclusionary criteria: (1) age between 2 and 5 years; (2) Adaptive Behaviour Composite standard score between 45 and 85 on the Vineland Adaptive Behaviour Scales (VABS; Sparrow *et al.* 1984); (3) ambulatory; and (4) living with the primary caregiver for at least 6 months. Children were excluded if they were deaf, blind or had severe disabilities because individuals with sensory disorders and/or more severe disabilities are at heightened risk for different topographies of maladaptive behaviour, including pica and self-injury. Individuals with mild to moderate disabilities experience behaviour problems that are more similar to those experienced by typically developing individuals (Pfeiffer & Baker 1994; Einfeld & Tonge 1996).

Twenty-eight families met eligibility criteria and consented to participate; however, one dropped out prior to beginning the intervention and two dropped out within the first 2 weeks of the intervention because of family or work commitments, leaving a sample of 25 families. The three families who dropped out prior to completing the study did not significantly differ from the remaining 25 families with respect to child or family demographic characteristics. Table 1 provides child and family demographics. All of the children qualified for and received special preschool or early intervention programmes for toddler and preschool-aged children. The majority of children (92%) received speech therapy and occupational therapy and approximately half (52%) received physical therapy. The sample included children between the ages of 2 and 5 years ($M = 3.99$, $SD = 0.87$) with mild to moderate developmental delays as evidenced by their adaptive behaviour scores on the Vineland. Not all children communicated using speech; however, the mean Communication Domain score on the Vineland was 69.81 ($SD = 15.35$). Mean communication sub-domain raw scores were as follows: receptive communication 19.68 ($SD = 3.42$), expressive communication 21.26 ($SD = 12.81$), and written communication 0.42 ($SD = 1.07$). Twenty-three of the children (92.0%) were enrolled in inclusive early education programmes alongside typically developing peers. One child was in a segregated preschool setting and one child received his early education programming at home.

Table 1 Child and family demographics ($n = 25$)

Variable	*n* (%)	Mean	SD
Child characteristics			
Age (years)		3.99	0.87
Sex (% male)	23 (92)		
Race (% White/Caucasian)	24 (96)		
Diagnosis (% ASD)	13 (52)		
VABS Adaptive Behaviour Composite		63.672	9.97
Communication Domain – standard score		69.81	15.35
Daily Living Skills Domain – standard score		63.81	9.07
Socialisation Domain – standard score		68.57	12.04
Motor Skills Domain – standard score		75.14	18.27
CBCL total problems		65.36	11.71
CBCL (% at-risk/*T* score 65+)	13 (52)		
Siblings (% siblings present)	19 (76)		
(% learning/behaviour problems)	9 (36)		
Primary caregiver characteristics			
Age (years)		33.56	5.34
Mother (% biological)	23 (92)		
Living with partner (%)	23 (92)		
Education (% some college)	21 (84)		
Risk for depression (% clinical CESD)	13 (52)		
Work status (% part- or full-time)	11 (44)		
Family income (% < $35 000/yr)	8 (32)		
Federal aid (% received)	8 (32)		

ASD, autism spectrum disorder; CBCL, Child Behaviour Checklist; VABS, Vineland Adaptive Behaviour Scales.

Setting

The group parent training sessions were held in the evening (Monday or Tuesday 17:30–20:00) at two different community early education programmes. Free childcare and dinner were provided at each session. Intervention locations were selected based on their accessibility to the majority of participants, with one located on a city bus route. If transportation presented a hardship to any participant, complimentary bus tokens were provided or taxis arranged. All assessments (with the exception of the initial phone screen) were conducted in the participating family's home at a convenient time for the family (e.g. evening, weekend).

Procedure

The author has 13 years experience working with children with ID and their families. Prior to implementing the current study, the author received training from certified *Incredible Years* trainers on the implementation of the programme. Additionally, before the programme was used in the current research, the author conducted one pilot intervention group to become more familiar with the procedures and seek input from caregivers on which aspects of the programme were most appropriate for use with families with children with developmental delay or disabilities. Furthermore, input from community stakeholders (e.g. preschool teachers, early childhood specialists, therapists and parents attending support groups for ID) was solicited regarding the most applicable components of the programme for families with children with developmental delay or disabilities. Behavioural theory, specifically the contributions of applied behaviour analysis, guided the modifications. Throughout the sessions and content covered, developmentally appropriate practices were emphasised. Parents were encouraged to think about how the general topics applied to their specific children.

This research received approval from the University's Institutional Review Board. Eligible families were mailed an informed consent form and packet

of questionnaires to be completed either on their own or with the assistance of the research staff at the time of their home visit. Prior to the first parent training session, all families completed a home visit and were videotaped during a 15-min parent–child play interaction. The home visit and packet of questionnaires were completed 1–2 weeks prior to the intervention and then 1–2 weeks following the intervention.

Measures

Family demographics

Family and child demographics were obtained at the initial home visit. Variables of interest were: maternal and paternal age, ethnic/racial background, education, employment, family income, and child educational and therapeutic services received.

Child characteristics

Child developmental functioning

The Vineland Adaptive Behaviour Scales (Sparrow *et al.* 1984) was administered to parents to determine if children met the developmental functioning criterion for inclusion (Adaptive Behaviour Composite standard scores between 45 and 85). The VABS is a structured interview pertaining to individuals with or without disabilities to assess adaptive behaviour in four areas: (1) Communication; (2) Daily Living Skills; (3) Socialisation; and (4) Motor Skills. These sub-scales are combined to make up the Adaptive Behaviour Composite standard score (M = 100; SD = 15).

Child behaviour problems

Parents completed the Child Behaviour Checklist for Ages 1.5–5 (CBCL; Achenbach 2000) pre- and post-intervention. The CBCL has 99 items that indicate child problems. The child's parent indicates, for each item, whether it is 'not true' (0); 'somewhat or sometimes true' (1); or 'very true or often true' (2); now or within the past 2 months. The CBCL yields a total problem score, broad-band externalising and internalising scores, and narrow-band scales. The total problems *T* score (M = 50; SD = 10) was used in this study. A *T* score of 1.5 standard deviations above the mean (≥65) was used to indicate 'risk' for developing a behaviour disorder. Internal consistency reliability at the initial time point for the current sample was alpha = 0.92 for the total problems scale.

Family functioning and well-being

Family impact of the child

The Family Impact Questionnaire (FIQ; Donenberg & Baker 1993) is a 50-item questionnaire that was administered at the pre- and post-intervention home visits. The FIQ asks about the 'child's impact on the family compared with the impact other children his/her age have on their families. Five scales measure negative impact, on feelings about parenting (nine items), social relationships (11 items), finances (seven items), siblings (nine items) and marriage (seven items). One scale measures impact on positive feelings about parenting (seven items). The negative impact on feelings about parenting and social relationships scales were combined to create a negative impact/stress composite (current sample alpha = 0.89), and the positive feelings about parenting items formed the positive impact scale (current sample alpha = 0.80). Previous work has demonstrated the utility of the positive and negative impact composite scores for families with and without children with DD (e.g. Baker *et al.* 2003; Blacher & McIntyre 2006).

Parent depression

The Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff 1977) is a 20-item self-report that was administered pre- and post-intervention to measure caregiver's depressive symptoms of moods and feelings. Internal consistency reliability for the current sample was alpha = 0.91. A cut-score of 16 or higher indicates risk for depression. This scale has been used in previous studies to assess maternal depressive symptomatology in caregivers who have a child with ID (e.g. Blacher *et al.* 1997).

Parent–child interactions

Parent and child observed behaviour

Parent–child interactions during unstructured activities are important indices of the quality of the

Table 2 Parent and child behaviours collected during observed parent–child interactions

Parent/child	Category	Example
Parent behaviours	Inappropriate play behaviour	– Parent directed play – Competitiveness – Quiz questions – Insensitive to child's signals/cues
	Intrusion on child's independence	– Parent assists child with task when unnecessary – Parent insists on completing a task his/her way
	Positive consequences for child's inappropriate behaviours	– Inappropriate delivery of tangible – Delivery of verbal and/or non-verbal attention after inappropriate behaviour
	Inappropriate command	– Ambiguous command – No-opportunity commands – Repeated commands – Stop commands – Don't command without options – Threatening commands
	Lack of follow through	– Withdrawing commands – Ignoring compliance to commands – Lack of praise after compliance
	Criticism	– Negating child's statements – Expressing discontent with child's performance
	Aggression	– Physical aggression – Verbal aggression
	Combined inappropriate	– Composite of the seven inappropriate behaviours.
	Appropriate praise	– Reinforcing a positive behaviour through attention, a hug, a smile or verbal praise
Child behaviour	Combined inappropriate	– Physical aggression, disruptive behaviour, screaming or other negative vocalisations

dyadic relationship. Unstructured, naturally occurring interactions between parents and their children are an important means of collecting data on dyadic exchanges. An observational system was developed in pilot testing for the current study with observation categories rationally derived based on the *Incredible Years* Parent Training core content areas. This observation system (Phaneuf & McIntyre 2007) uses partial-interval coding for seven parent inappropriate behaviour categories (Inappropriate play behaviour, Intrusion on child's independence, Attention/Rewards for child's inappropriate behaviours, Inappropriate commands, Lack of follow through, Criticism and Aggression) and inappropriate child behaviours (aggression, disruption, negative vocalisations). Appropriate child-directed praise is coded using event/frequency coding. Of interest to the present study were the seven categories of inappropriate parent behaviour and the combined inappropriate index of parent behaviour. Intervals were coded for the presence or absence of an inappropriate behaviour. An interval can be coded as 'positive' for more than one inappropriate behaviour category. Thus, the combined inappropriate index of parent behaviours is not simply a sum of the seven inappropriate behaviours; rather it is the total number of intervals containing an inappropriate behaviour divided by 100. Parents' use of appropriate praise was also investigated. Because of low base rates of specific child maladaptive behaviour (i.e. physical aggression, disruption, screaming), only the combined inappropriate index of children's behaviour was used in the current study. Table 2 provides a description of each of the behavioural categories used in the present study.

Consumer satisfaction with intervention

An adaptation of the Consumer Satisfaction Questionnaire (CSQ; Forehand & McMahon 1981) was

utilised to assess parents' perceptions of the group leader's effectiveness, the group dynamics, the videotape vignettes, the usefulness of content covered and the effectiveness of the programme's methods. This scale has 44 items assessed on a seven-point scale and five summary scales: overall programme satisfaction (11 items; alpha = 0.74), programme usefulness (nine items; alpha = 0.87), leader/therapist satisfaction (five items; alpha = 0.80), satisfaction with teaching tools (10 items; alpha = 0.76),and specific parenting strategies/techniques (nine items; alpha = 0.88). This adaptation of the CSQ has been used in previous evaluations of the *Incredible Years Parent Training* series (e.g. Reid *et al.* 2001).

Incredible Years Parent Training-Developmental Delay (IYPT-DD) modifications

Based on the pilot work and input from community stakeholders, a slightly modified Incredible years Parent Training for children with developmental delays (IYPT-DD) was developed. Webster-Stratton's main content areas of play, praise, rewards, limit setting and handling challenging behaviours were retained; however, the toddler programme modifications (see Webster-Stratton 2001) were followed because of the chronological and developmental age of the children. In addition to the scripted discussion questions used for each vignette (see Webster-Stratton 2001), all parents were encouraged to identify the key points that could be generalised to their children with developmental delay and were asked to identify which aspects of the vignettes did not relate. Additional modifications included: having parents identify blessings and challenges of raising a child with a delay in addition to articulating their goals for the series (session 1); excluding the content on time out, because of the age and developmental level of the children, and focusing on predicting and avoiding problem behaviour by collecting information on antecedents and consequences to their child's problem behaviours (sessions 6, 7); and, providing informational handouts to parents on disability-related support groups and advocacy organisations in the community (session 10). See Table 3 for the content areas covered and a summary of modifications.

Reliability and treatment integrity

For videotaped parent–child interaction data, two independent observers coded data during 75% of videotaped sessions using interval-by-interval agreement. Kappa coefficients were used to calculate interobserver agreement for each of the parent behaviour categories as well as the combined inappropriate behaviour index for children's maladaptive behaviour. Inter-rater agreement was as follows: inappropriate play behaviour (kappa = 0.90), intrusion on child's independence (kappa = 0.88), positive consequences for child's inappropriate behaviours (kappa = 0.75), inappropriate commands (kappa = 0.83), lack of follow through (kappa = 0.77), criticism (kappa = 0.76), aggression (not applicable; this behaviour was not observed), parent appropriate praise (kappa = 0.86) and children's combined inappropriate behaviour index (kappa = 0.83). To ensure that the parent training intervention was implemented as intended, a treatment manual was followed with treatment component checklists for each session. An independent observer collected treatment integrity data during 50% of sessions by following along with the treatment component checklist and indicating the presence or absence of each treatment step to calculate percentage of steps completed. One hundred per cent of intervention components were implemented as intended.

Results

Feasibility of Incredible Years Parent Training-Developmental Delay (IYPT-DD) modifications

To assess the feasibility of the IYPT-DD modifications, parent feedback during weekly sessions was obtained and consumer satisfaction data were gathered following the last parent training session. Parent attendance data were also collected as an additional indicator of the feasibility of the intervention. Parents evaluated the content, videotape vignettes, teaching and group discussion each week using a four-point scale (1 = not helpful; 2 = neutral; 3 = helpful and 4 = very helpful). Parent ratings indicated that, on average, all aspects of the sessions were helpful. The mean ratings for each of

Table 3 Incredible years parent training – developmental delay modifications

Session	Topic	Modifications
1	Introduction & goals	Blessings and challenges of raising a child with special needs
2	Developmentally appropriate play – I	Consider child's developmental level, interests and support needs. When viewing vignettes, consider which aspects apply to children with DD and which do not.
3	Developmentally appropriate play – II	Consider child's developmental level, interests and support needs. When viewing vignettes, consider which aspects apply to children with DD and which do not.
4	Positive strategies – praise	Consider child's developmental level, interests and support needs. When viewing vignettes, consider which aspects apply to children with DD and which do not.
5	Positive strategies – rewards	Discuss altering traditional token economy systems and sticker charts to children's developmental levels. Discuss conducting preference assessments to identify possible reinforcers.
6	Handling challenging behaviours	Discuss conducting functional assessment (using antecedents, behaviours and consequences). Complete ABC chart.
7	Handling challenging behaviour	Developing behavioural intervention plans based on results of FBAs. Discuss functionally equivalent replacement behaviours.
8	Effective limit setting – part I (commands)	Consider child's developmental level, interests and support needs. When viewing vignettes, consider which aspects apply to children with DD and which do not.
9	Effective limit setting – part II (ignoring and re-directing)	Consider child's developmental level, interests and support needs. When viewing vignettes, consider which aspects apply to children with DD and which do not.
10	Advocacy, working with professionals and transition to kindergarten	Discuss services provided through local agencies. Discuss strategies for engaging in meaningful parent–professional partnerships. Discuss special education law and issues pertaining to transition from preschool to elementary school.
11	Review: challenging behaviour and limit setting	Review material discussed to date, emphasising content from sessions 6 to 9.
12	Putting it all together/ celebration	No modifications made.

The toddler programme modifications were followed (see Webster-Stratton, 2001) in addition to the DD modifications.
DD, developmental disabilities.

the four areas were: content 3.56 (SD = 0.28); videotape vignettes 3.01 (SD = 0.57), teaching 3.60 (SD = 0.34) and group discussion 3.60 (SD = 0.32). Following the last treatment session, parents completed a lengthy CSQ which asked parents to rate their satisfaction with the programme using a seven-point scale (1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neutral; 5 = slightly satisfied; 6 = satisfied; 7 = greatly satisfied). The specific categories and mean ratings were as follows: overall programme 5.65 (SD = 0.50); programme usefulness 5.86 (SD = 0.61); leader/therapist 6.72 (SD = 0.41); teaching tools 5.47 (SD = 0.87) and specific parenting strategies/techniques 5.12 (SD = 1.01). The average score across all 44 items was 5.71 (SD = 0.49), indicating slightly satisfied to satisfied. Another indicator of satisfaction and feasibility was participant attendance. The attendance rate was high, with the majority of parents (n = 21; 84%) completing 80% or more of all treatment sessions (range 58–100%).

Preliminary evidence of efficacy

Although the main goal of this study was to demonstrate the feasibility of implementing the *Incredible Years* series with minor modifications for parents of young children with developmental delay (IYPT-DD), preliminary evidence of efficacy was also explored. Table 4 displays pre- and post-intervention data for observed parent and child behaviour during parent–child interactions, child behaviour problems (CBCL), child positive and negative impact on the family (FIQ) and maternal depression (CES-D).

Table 4 Pre- and post-intervention outcomes in parent-child observations, family well-being and child behaviour problems ($n = 25$)

Measure	Pre-intervention Mean (SD)	Post-intervention Mean (SD)	*t* or *F*	*d* or Partial η^2
Parent–child interactions				
Observed parent behaviour negative/inappropriate				
Combined inappropriate	62.75 (19.90)	24.27 (21.69)	7.12***	1.83
Inappropriate play	33.49 (17.09)	9.83 (11.51)	5.30***	1.62
Intrusion	7.06 (10.12)	1.80 (4.02)	2.22*	0.68
Positive consequences following child problem behaviour	2.51 (4.05)	1.33 (2.88)	1.06	0.34
Inappropriate commands	21.14 (9.50)	8.38 (6.93)	6.88**	1.53
Lack of follow through	11.44 (8.98)	4.70 (6.59)	2.81**	0.86
Criticism	2.32 (7.82)	0.20 (0.97)	1.31*	0.38
Aggression	0.00 (0.00)	0.00 (0.00)	–	–
Positive/appropriate behaviour				
Praise (rate per minute)	0.43 (0.37)	0.50 (0.51)	–1.36*	–0.18
Observed child behaviour				
Combined inappropriate	10.12 (13.36)	6.18 (9.73)	1.70*	0.34
Child behaviour problems				
CBCL total problems *T* score	65.21 (11.94)	64.83 (12.12)	0.33	0.03
Child impact on family				
Negative impact – FIQ	32.13 (12.56)	30.92 (12.19)	0.71	0.1
Positive impact – FIQ	8.58 (4.28)	9.88 (4.21)	–1.97**	–0.31
Maternal depression				
CES-D total score†	16.33 (11.60)	17.50 (14.07)	F = 1.94	Partial $\eta^2 = 0.08$

* $P = 0.10$, ** $P < 0.05$, ***$P < 0.001$.

† Child diagnosis (ASD vs. DD) served as a covariate in this analysis.

CBCL, Child Behaviour Checklist; CES-D, Center for Epidemiologic Studies-Depression Scale; FIQ, Family Impact Questionnaire.

Paired comparison *t*-tests are presented using participants scores pre- and post-intervention. Given the hypothesised direction of effects, all *t*-tests used one-tailed tests of significance. Cohen's *d* or partial eta-square effect sizes are included as estimates of the magnitude of intervention effects.

Parent behaviour

The presence of seven inappropriate parent behaviours during home-based parent–child interactions were tallied using partial interval coding. Table 4 displays the combined inappropriate behaviour index followed by each of the seven inappropriate behaviour categories. Prior to participating in the 12-week *IYPT-DD* sessions, mothers averaged 62.75% of intervals containing inappropriate behaviours (combined inappropriate behaviour index). Post-intervention, the mean percentage of intervals containing inappropriate behaviour was reduced to 24.27 [t (24) = 7.12, $P = 0.000$, $d = 1.83$]. Pre-intervention, the most common inappropriate behaviours were inappropriate play (M = 33.49; SD = 17.09), inappropriate commands (M = 21.14; SD = 9.50) and lack of follow through (M = 11.44; SD = 8.98). Post-intervention, there were significant reductions in inappropriate play [t (24) = 5.30, $P = 0.000$, $d = 1.62$], intrusion on child's independence [t (24) = 2.22, $P = 0.018$, $d = 0.68$], inappropriate commands [t (24) = 6.88, $P = 0.000$, $d = 1.53$], and lack of follow through [t (24) = 2.81, $P = 0.005$, $d = 0.86$], with a trend approaching a significant reduction in criticism [t (24) = 1.31, $P = 0.10$, $d = 0.38$]. Frequency of appropriate praise was collected and converted to a rate per minute. Praise increased from pre-intervention (M = 0.43, SD = 0.37) to post-intervention (M = 0.50, SD = 0.41), approaching statistical significance [t (24) = –1.36, $P = 0.093$]; however, this was a small effect ($d = -0.18$).

Child behaviour

Children's inappropriate behaviour was observed during parent–child interactions. On average, children engaged in maladaptive behaviour during 10.12% of intervals (SD = 13.36) pre-intervention. Post-intervention, children's observed maladaptive behaviour significantly reduced to 6.18% of intervals (SD = 9.73) [t (24) = 1.70, P = 0.052, d = 0.34]. Reports of child behaviour problems, as measured by the CBCL total problems T scores, did not significantly differ pre- to post-intervention (see Table 4).

Family well-being

In terms of the child impact on family (FIQ), parents reported more child positive impact post-intervention than pre-intervention [t (24) = –1.97, P = 0.030, d = –0.31]; however, there was no statistically significant reduction in negative impact post-intervention. Because parents who had children with autism spectrum disorder (ASD) reported less depression (M = 10.77, SD = 6.29) pre-intervention than parents who had children with other developmental delays or disabilities (M = 22.75, SD = 12.61), child diagnosis served as a covariate in the analysis examining change in CES-D from pre- to post-intervention. There was no change in maternal depression post-intervention (see Table 4). Percentage of mothers exceeding the clinical cut-score indicating risk for depression (CES-D score of ≥16) was examined pre- and post-intervention for mothers of children with ASD and DD. Pre-intervention, 31% of mothers with a child with ASD were considered at risk for depression in comparison with 75% of mothers with a child with DD [χ^2 (1, n = 25) = 4.89, P = 0.047]. Post-intervention, there were no differences between mothers with children with ASD (31%) and mothers with children with DD (58%) in risk for depression using cut-scores on the CES-D [χ^2 (1, n = 25) = 1.51, P = 0.414].

Clinical significance

The Reliable Change Index (RCI; Jacobson & Truax 1991) was used to assess clinical significance of change from pre- to post-intervention and was calculated using the following formula: RCI = $X1 - X2/S_{diff}$. Jacobson & Truax (1991) suggest that if the calculated RCI score is greater than 1.96 ($P < 0.05$), the change is deemed large enough to be reliable and clinically significant. To calculate RCI, the mean post-score ($X2$) was subtracted from the mean pre-test score ($X1$), and divided by the spread of distribution of change scores that would be expected if no actual change had occurred (S_{diff}). According to Jacobson and Truax, S_{diff} can be computed directly from the standard error of measurement using the following equation: $S_{diff} = \sqrt{(S_E)^2}$. Standard error of measurement (S_E) estimates can be calculated various ways depending on which reliability estimate (e.g. test–retest, internal consistency, kappa) and standard deviation estimate is used (e.g. Gardner 1970; Feldt *et al.* 1985). For this analysis, cronbach alphas were used to estimate reliability of paper–pencil measures (e.g. CBCL, CES-D) and kappa coefficients were used for observational measures of parent–child interactions. The standard deviation of baseline measures was used given the range of scores obtained pre-treatment. Table 5 displays the frequency and percentage of child and parent participants demonstrating clinically significant change in behaviour and well-being variables from pre- to post-intervention. The majority of parents (68%) demonstrated clinically significant change on observed inappropriate behaviour during parent–child interactions, with more than half increasing their use of positive/praise behaviour (56%). Less than one-fifth children (16%) showed clinically significant reductions in observed inappropriate behaviour. Using this index of change, 12% of parents reported increases in child positive impact and decreases in child negative impact on the family (see Table 5).

Correlates of change

Demographic variables and baseline scores on dependent measures were correlated with change scores for dependent measures to determine if there were variables related to change from pre- to post-intervention. Children's adaptive behaviour (Vineland) was significantly correlated with change in CBCL scores (r = –0.48, P = 0.032), observed parental inappropriate behaviour (r = –0.58, P = 0.007) and observed parental appropriate praise (r = 0.59, P = 0.006). In all cases, change in depen-

Table 5 Frequency and percentage of parents and children demonstrating clinically significant change (Reliable Change Index > 1.96) on observed behaviour and well-being from pre- to post-intervention

Measure	*n*	%
Parent–child interactions		
Observed parent behaviour		
Negative/inappropriate		
Combined inappropriate	17	68
Inappropriate play	15	60
Intrusion	5	20
Positive consequences following child problem behaviour	5	20
Inappropriate commands	17	68
Lack of follow through	6	24
Criticism	1	4
Aggression	–	–
Positive/appropriate behaviour		
Praise (rate per minute)	14	56
Observed child behaviour		
Combined inappropriate	4	16
Child behaviour problems		
CBCL total problems *T* score	3	12
Child impact on family		
Negative impact – FIQ	3	12
Positive impact – FIQ	3	12
Maternal depression		
CES-D total score	4	16

CBCL, Child Behaviour Checklist; CES-D, Center for Epidemiologic Studies-Depression Scale; FIQ, Family Impact Questionnaire.

dent measures (in the desired direction) was associated with lower adaptive behaviour scores at baseline. The presence of siblings was significantly correlated with decreased maternal depression ($r = 0.43$, $P = 0.036$). Higher maternal education was significantly correlated to increases in positive impact ($r = 0.50$, $P = 0.014$). Maternal employment status was significantly correlated with changes in observed parental inappropriate behaviour ($r = 0.42$, $P = 0.40$), as was baseline levels of observed parental inappropriate behaviour. Employment outside of the home was related to a reduction in observed parental inappropriate behaviour, as was having higher pre-intervention levels of inappropriate behaviour. Child sex and baseline levels of child inappropriate behaviour were significantly correlated with decreases in observed child inappropriate behaviour ($r = 0.62$, $P = 0.003$ and $r = 0.69$, $P = 0.001$ respectively). That is, there was a significant relationship between child female sex with reduction in child observed inappropriate behaviour. Higher baseline levels of inappropriate behaviour was related to reduction in observed child inappropriate behaviour.

Discussion

This study explored the use of an empirically supported treatment, Webster-Stratton's IYPT series, with a novel population, parents of young children with developmental delay. The literature is replete with studies demonstrating that children with developmental delay and/or ID are at heightened risk for behaviour problems (e.g. Baker *et al.* 2003; Emerson 2003; McIntyre *et al.* 2006). This study explored whether an adapted version of the Incredible years (IYPT-DD) was feasible for use with families with young children with developmental delay. Because negative parent–child interactions may lead to the emergence and maintenance of child behaviour problems (Patterson 1982), this study investigated whether negative and inappropriate parenting behaviours could be reduced following the intervention. Child maladaptive behaviour and indices of family well-being were also explored.

Evidence suggests that individuals with mild to moderate ID display behaviour problems similar to those seen in persons who are typically developing (Einfeld & Tonge 1996). Indeed, results of this investigation suggest that the adaptations of the IYPT are feasible for parents with children with mild to moderate delays. Parents rated the sessions as helpful and the majority (84%) maintained high levels of attendance. Attendance rates and consumer satisfaction data are important in establishing feasibility, as well as evaluating the impact of community-based interventions. Furthermore, significant reductions in inappropriate parental behaviours were observed during naturalistic play sessions pre- to post-intervention and there was a significant increase in perceived positive impact of the child. Parents' reports of negative impact (stress) as well as child behaviour problems on the CBCL did not significantly reduce post-intervention; however, children's observed maladaptive behaviour decreased

post-intervention. Because children with more severe disabilities were excluded from this investigation, the results may not generalise to parents and children with severe ID.

Recent studies suggest that mothers of children with DD experience higher rates of stress and depression (e.g. Blacher *et al.* 2005; Blacher & McIntyre 2006; Singer 2006). In the current sample, 52% of mothers at baseline reported symptoms on the CES-D that met the clinical risk cut score of ≥16. Parents of children with DD may likely need additional intervention to address stress and depression, not included in the IYPT-DD programme. A recent meta-analysis of group-based interventions for parents with children with DD found small effects for behavioural parent training programmes in reducing parental distress and depressed symptomatology, with moderate to large effects for multicomponent interventions or interventions using cognitive behavioural therapy with parents (Singer *et al.* 2007). In the present study, only 20% of mothers had clinically significant reductions in depressed symptomatology based on the RCI calculations. What is more concerning is that six mothers (24%) had clinically significant increases in their depressed symptomatology. It is plausible that weekly ongoing discussion surrounding children's behavioural difficulties could have brought more attention and awareness to their child and family situation, exacerbating depressive symptomatology in some mothers. Conversely, it is conceivable that some mothers were depressed but not symptomatic when initially assessed. Furthermore, factors unrelated to the parent training intervention may have been related to changes in CES-D scores. For example, marital discord (Gordon *et al.* 2005), physical health (Simmons *et al.* 2007) and financial hardship (Groh 2007) have all been shown to relate to depression. Regardless of causal mechanism, additional intervention targeting family well-being may be a crucial treatment component for families experiencing heightened rates of stress and depression.

The IYPT-DD primarily emphasises altering parent–child interactions. Given this focus, it is not surprising that a global measure of children's behaviour problems (CBCL) did not change pre- to post-intervention. It should be noted that there were relatively low levels of maladaptive behaviour at baseline assessments pre-intervention. Negative parent–child interactions during naturalistic play did significantly reduce, as did observed child inappropriate behaviour. Direct observations of parent and child behaviour are much more sensitive to change and may represent a more ecologically valid form of assessment for children and parents (Robinson & Eyberg 1981). The previous work of Webster-Stratton suggests that on average, 30–50% of children with or at-risk for externalising behaviour disorders are still in the clinical range for behaviour problems post-intervention on standardised global behaviour assessments, such as the CBCL and Eyberg Child Behavior Inventory (Webster-Stratton 1994; Webster-Stratton & Hammond 1997).

The intervention in the current study employed group-based parent training rather than individually administered intervention commonly implemented in parent training programmes for children with disabilities (e.g. Roberts *et al.* 2006; Plant & Sanders 2007). Very few studies have compared the same intervention delivered in different formats (e.g. individual, group, self-help). Chadwick and colleagues (2001) randomly assigned parents of children with severe disabilities and behaviour problems to either individually based intervention or group intervention. Results indicated that parents were more likely to accept and participate in individually based intervention than group intervention and that individual interventions resulted in more reported behavioural improvement (Chadwick *et al.* 2001). The current study sought to maximise efficiency by employing a group-based intervention to prevent or intervene early, before severe behaviour disorders emerged. Thus, future research could examine the costs and benefits associated with conducting early intervention in group-based formats vs. conducting early intervention in individually administered sessions for parents who have young children with delays who may be at risk for developing behavioural problems in the future.

Webster-Stratton and colleagues have recognised that parents with multiple risk families (including depression) may not have the same child and family intervention outcomes as parents with fewer risk factors (Webster-Stratton & Hammond 1990). To address this issue, Webster-Stratton created the ADVANCE series to supplement the basic training

programme. The ADVANCE series targets parental risk factors, including stress, depression, anger problems and marital discord by targeting effective coping and communication strategies (Webster-Stratton 2001). Given their mental health risk factors, perhaps parents with children with DD may also benefit from the ADVANCE components targeting. Future research could incorporate additional treatment components to directly address coping with stress and depression in families with children with DD.

These preliminary results are promising; however, this study is not without limitations. Although families reported satisfaction with the intervention, previous research has suggested that there is a positive bias with early intervention programming in general (e.g. McWilliam *et al.* 1995). Furthermore, it has been suggested that parents who are more involved in their children's early childhood intervention programmes report more satisfaction with services (Hamblin-Wilson & Thurman 1990). Thus, parents who participated in this intervention may represent a motivated and involved group of parents who report high levels of satisfaction. The extent to which these findings generalise to other families may be limited.

This investigation provides some evidence for feasibility and preliminary evidence of efficacy; however, the single group pre–post test design limits the conclusions that can made because of threats to internal validity (Campbell & Stanley 1963). Future work could incorporate a control group (e.g. wait-list control) or other comparison group. Although promising outcome data in the areas of observed parent and child behaviour and child positive impact were identified, future research could employ a larger sample size with more sophisticated methodology to evaluate moderators and mediators of intervention effects.

Implications for practice

Practitioners who work with young children with developmental delay and their families are aware of the importance of early intervention to address child, family and environmental risk factors (e.g. Ramey & Ramey 1999). Intervention approaches that build on family strengths, are developmentally appropriate, and emphasise strengthening parent-professional collaboration are considered best practices (Bryant & Graham 1993; Erickson & Kurz-Riemer 1999; Sandall *et al.* 2005). When deciding on which interventions to implement with children and families, practitioners and researchers alike can evaluate the extant evidence supporting the intervention effectiveness. Such evidence-based practices are often valued in educational and clinical arenas because there are published data supporting the utility of those practices (Bates 2005; Carlson & Christenson 2005). Webster-Stratton's parent training programmes have a history of empirical support (Brestan & Eyberg 1998) and employ strategies that are developmentally based and build on family and child strengths. Although further investigation is needed, results of this study provide a springboard for incorporating other best practices and evidence-based treatments into our early childhood intervention repertoire.

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References

Achenbach T. M. (2000) *Manual for the Child Behavior Checklist 1½–5*. Department of Psychiatry, University of Vermont, Burlington, VT.

Baker B. L. (1996) Parent training. In: *Manual of Diagnosis and Professional Practice in Mental Retardation* (eds J. W. Jacobson & J. A. Mulick), pp. 289–300. American Psychological Association, Washington, DC.

Baker B. L. & Brightman A. J. (2004) *Steps to Independence: Teaching Everyday Skills to Children with Special Needs*, 4th edn, Brookes Publishing, Baltimore, MD.

Baker B. L., Blacher J., Crnic K. A. & Edelbrock C. (2002) Behavior problems and parenting stress in families of three-year old children with and without developmental delays. *American Journal on Mental Retardation* **107,** 433–44.

Baker B. L., McIntyre L. L., Blacher J., Crnic K. A., Edelbrock C. & Low C. (2003) Preschool children with

and without developmental delay: behaviour problems and parenting stress over time. *Journal of Intellectual Disability Research* **47,** 217–30.

Bandura A. (1977) *Social Learning Theory*. Prentice Hall, Oxford.

Bates S. L. (2005) Evidence-based family-school interventions with preschool children. *School Psychology Quarterly* **20,** 352–70.

Baumrind D. (1989) Rearing competent children. In: *Child Development Today and Tomorrow* (ed. W. Damon), pp. 349–78. Jossey-Bass, San Francisco, CA.

Blacher J. & McIntyre L. L. (2006) Syndrome specificity and behavioural disorders in young adults with intellectual disability: culture differences in family impact. *Journal of Intellectual Disability Research* **50,** 184–98.

Blacher J., Shapiro J., Lopez S. & Diaz L. (1997) Depression in Latina mothers with children with mental retardation: a neglected concern. *American Journal on Mental Retardation* **101,** 483–96.

Blacher J., Neece C. L. & Paczkowski E. (2005) Families and intellectual disability. *Current Opinion in Psychiatry* **18,** 507–13.

Brestan E. V. & Eyberg S. M. (1998) Effective psychosocial treatments of conduct-disordered children and adolescents: 29 years, 82 studies, and 5272 kids. *Journal of Clinical Child Psychology* **27,** 180–9.

Bronson M. B. (2000) *Self-Regulation in Early Childhood: Nature and Nurture*. Guilford Press, New York.

Bryant D. M. & Graham M. A. (1993) *Implementing Early Intervention: from Research to Effective Practice*. Guilford Press, New York.

Campbell D. T. & Stanley J. C. (1963) *Experimental and Quasi-experimental Designs for Research*. Houghton Mifflin, Boston.

Carlson C. & Christenson S. L. (2005) Evidence-based parent and family interventions in school psychology: overview and procedures. *School Psychology Quarterly* **20,** 345–51.

Chadwick O., Momcilovic N., Rossiter R., Stumbles E. & Taylor E. (2001) A randomized trial of brief individual versus group parent training for behaviour problems in children with severe learning disabilities. *Behavioural and Cognitive Psychotherapy* **29,** 151–67.

Clark D. B. & Baker B. L. (1983) Predicting outcome in parent training. *Journal of Consulting and Clinical Psychology* **51,** 309–11.

Donenberg G. & Baker B. L. (1993) The impact of young children with externalizing behaviors on their families. *Journal of Abnormal Child Psychology* **21,** 179–98.

Dosen A. & Day K. (2001) Epidemiology, etiology, and presentation of mental illness and behavior disorders in persons with mental retardation. In: *Treating Mental Illness and Behavior Disorders in Children and Adults with Mental Retardation* (eds A. Dosen & K. Day), pp. 3–24. American Psychiatric Association, Washington, DC.

Einfeld S. L. & Tonge B. J. (1996) Population prevalence of psychopathology in children and adolescents with intellectual disability: II. epidemiological findings. *Journal of Intellectual Disability Research* **40,** 99–109.

Emerson E. (2003) Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability. *Journal of Intellectual Disability Research* **47,** 51–8.

Erickson M. F. & Kurz-Riemer K. (1999) *Infants, Toddlers, and Families: A Framework for Support and Intervention*. Guilford Press, New York.

Eyberg N. (1992) Assessing therapy outcome with preschool children: progress and problems. *Journal of Clinical Child Psychology* **21,** 306–11.

Feldman M. A. & Werner S. E. (2002) Collateral effects of behavioral parent training on families of children with developmental disabilities and behavior disorders. *Behavioral Interventions* **17,** 75–83.

Feldt L. S., Steffen M. & Gupta N. C. (1985) A comparison of five methods for estimating the standard error of measurement at specific score levels. *Applied Psychological Measurement* **9,** 351–61.

Fletcher R. J. (2000) *Therapy Approaches for Persons with Mental Retardation*. NADD Press, Kingston, NY.

Floyd F. J., Harter K. S. M. & & Costigan C. L. (2004) Family problem-solving with children who have mental retardation. *American Journal on Mental Retardation* **109,** 507–24.

Forehand R. L. & McMahon R. J. (1981) *Helping the Noncompliant Child: a Clinician's Guide to Parent Training*. Guilford Press, New York.

Gardner P. L. (1970) Test length and the standard error of measurement. *Journal of Educational Measurement* **7,** 271–3.

Gordon K. C., Friedman M. A., Miller I. W. & Gaertner L. (2005) Marital attributions as moderators of the marital discord-depression link. *Journal of Consulting & Clinical Psychology* **24,** 876–93.

Groh C. J. (2007) Poverty, mental health, and women: implications for psychiatric nurses in primary care settings. *Journal of the American Psychiatric Nurses Association* **13,** 267–74.

Gross D., Fogg L., Webster-Stratton C., Garvey C., Julion W. & Grady J. (2003) Parent training of toddlers in day care in low-income urban communities. *Journal of Consulting & Clinical Psychology* **71,** 261–78.

Hamblin-Wilson C. & Thurman S. K. (1990) The transition from early intervention to kindergarten: parental satisfaction and involvement. *Journal of Early Intervention* **14,** 55–61.

Hemmeter M. L. & Kaiser A. P. (1994) Enhanced milieu teaching: effects of parent-implemented language intervention. *Journal of Early Intervention* **18,** 269–89.

Hester P. P., Kaiser A. P., Alpert C. L. & Whiteman B. (1996) The generalized effects of training trainers to teach parents to implement milieu teaching. *Journal of Early Intervention* **20,** 30–51.

Hinshaw S. P. (2002) Process, mechanism, and explanation related to externalizing behavior in developmental psychopathology. *Journal of Abnormal Child Psychology* **30,** 431–46.

Holland J. G. & Skinner B. F. (1961) *The Analysis of Behavior*. McGraw-Hill, New York.

Hudson A. M., Matthews J. M., Gavidia-Payne S. T., Cameron C. A., Mildon R. L., Radler G. A. *et al*. (2003) Evaluation of an intervention system for parents of children with intellectual disability and challenging behaviour. *Journal of Intellectual Disability Research* **47,** 238–49.

Intagliata J. & Doyle N. (1984) Enhancing social support for parents of developmentally disabled children: training in interpersonal problem solving skills. *Mental Retardation* **22,** 4–11.

Jacobson N. S. & Truax P. (1991) Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology* **59,** 12–19.

Kaiser A. P., Hemmeter M. L., Ostrosky M. M., Fischer R., Yoder P. & Keefer M. (1996) The effects of teaching parents to use responsive interaction strategies. *Topics in Early Childhood Special Education* **16,** 375–406.

Kaiser A. P., Hancock T. B. & Nietfeld J. P. (2000) The effects of parent-implemented enhanced milieu teaching on the social communication of children who have autism. *Journal of Early Education and Development* **4,** 423–46.

Kumpfer K. L. & Alvarado R. (2003) Family-strengthening approaches for the prevention of youth problem behaviors. *American Psychologist* **58,** 457–65.

Lerman D. C., Swiezy N., Perkins-Parks S. & Roane H. S. (2000) Skill acquisition in parents of children with developmental disabilities: interaction between skill type and instructional format. *Research in Developmental Disabilities* **21,** 183–96.

McIntyre L. L., Blacher J. & Baker B. L. (2002) Behaviour/mental health problems in young adults with intellectual disability: the impact on families. *Journal of Intellectual Disability Research* **46,** 239–49.

McIntyre L. L., Blacher J. & Baker B. L. (2006) The transition to school: adaptation in young children with and without developmental delays. *Journal of Intellectual Disability Research* **50,** 349–61.

McWilliam R. A., Lang L. & Vandiviere P. (1995) Satisfaction and struggles: family perceptions of early intervention services. *Journal of Early Intervention* **19,** 43–60.

Martin B. (1987) Developmental perspectives on family theory and psychopathology. In: *Family Interaction and Psychopathology: Theories, Methods, and Findings* (ed. T. Jacobs), pp. 163–202. Plenum Press, New York.

Patterson G. R. (1982) *Coercive Family Process: A Social Learning Approach*, Vol. 3. Castalia Press, Eugene, OR.

Patterson G. R. (1998) Continuities – a search for causal mechanisms: comment on the special section. *Developmental Psychology* **34,** 1263–8.

Patterson G. R., DeBaryshe B. D. & Ramsey E. (1989) A developmental perspective on antisocial behavior. *American Psychologist* **44,** 329–35.

Peterson S. M. P., Derby K. M., Harding J. W. & Weddle T. (2002) Behavioral support for school-age children with developmental disabilities and problem behavior. In: *Families and Positive Behavior Support: Addressing Problem Behavior in Family Contexts* (eds J. M. Lucyshyn, G. Dunlap & R. W. Albin), pp. 287–304. Brookes Publishing, Baltimore, MD.

Pfeiffer S. I. & Baker B. L. (1994) Residential treatment for children with dual diagnoses of mental retardation and mental disorder. In: *When There's No Place Like Home: Options for Children Living Apart from Their Natural Families* (ed J. Blacher), pp. 273–98. Brookes Publishing, Baltimore, MD.

Phaneuf L. & McIntyre L. L. (2007) Effects of individualized video feedback combined with group parent training on maternal inappropriate behavior. *Journal of Applied Behavior Analysis* **40,** 737–41.

Plant K. M. & Sanders M. R. (2007) Reducing problem behavior during care-giving in families of preschool-aged children with developmental disabilities. *Research in Developmental Disabilities* **28,** 362–85.

Prieto-Bayard M. & Baker B. L. (1986) Parent training for Spanish-speaking families with a retarded child. *Journal of Community Psychology* **14,** 134–43.

Radloff L. S. (1977) The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement* **1,** 385–401.

Ramey S. L. & Ramey C. T. (1999) Early experience and early intervention for children 'at risk' for developmental delay and mental retardation. *Mental Retardation and Developmental Disabilities Research Reviews* **5,** 1–10.

Reid M. J., Webster-Stratton C. & Beauchaine T. P. (2001) Parent training in head start: a comparison of program response among African American, Asian American, Caucasian, and Hispanic mothers. *Prevention Science* **2,** 209–27.

Research Units on Pediatric Psychopharmacology [RUPP] Autism Network (2007) Parent training for children with pervasive developmental disorders: a multi-site feasibility trial. *Behavioral Interventions* **22,** 179–99.

Rimm-Kaufman S. E. & Pianta R. C. (2000) An ecological perspective on the transition to kindergarten: a theo-

retical framework to guide empirical research. *Journal of Applied Developmental Psychology* **21,** 491–511.

Roberts C., Mazzucchelli T., Taylor K. & Reid R. (2003) Early intervention for behaviour problems in young children with developmental disabilities. *International Journal of Disability, Development and Education* **50,** 275–92.

Roberts C., Mazzucchelli T., Studman L. & Sanders M. R. (2006) Behavioral family interventions for children with developmental disabilities and behavioral problems. *Journal of Clinical Child and Adolescent Psychology* **35,** 180–93.

Robinson E. A. & Eyberg S. M. (1981) The dyadic parent–child interaction coding system: standardization and validation. *Journal of Consulting and Clinical Psychology* **49,** 245–50.

Russell A. & Russell G. (1996) Positive parenting and boys' and girls' misbehavior during a home observation. *International Journal of Behavioral Development* **19,** 291–307.

Sameroff A. & Chandler M. (1975) Reproductive risk and the continuum of caretaking casuality. In: *Review of Child Development Research, vol. 4* (ed F. Horowitz) pp. 187–243. University of Chicago Press, Chicago, IL.

Sameroff A. & Fiese B. H. (2000) Transactional regulation: the developmental ecology of early intervention. In: *Handbook of Early Childhood Intervention*, 2nd edn (eds J. P. Shonkoff & S. J. Meisels), pp. 135–59. Cambridge University Press, New York.

Sandall S., Hemmeter M. L., Smith B. & McLean M. E. (2005) *DEC Recommended Practices: A Comprehensive Guide for Practical Application in Early Intervention/Early Childhood Special Education*. Sopris West, Longmont, CO.

Sanders M. R. (1999) The Triple P-positive parenting program: towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review* **2,** 71–90.

Shearer D. E. & Snider R. S. (1981) On providing a practical approach to the early education of children. *Child Behavior Therapy* **3,** 78–80.

Simmons L. A., Huddleston-Casas C. & Berry A. A. (2007) Low income rural women and depression: factors associated with self-reporting. *American Journal of Health Behavior* **31,** 657–66.

Singer G. H. S. (2006) Meta-analysis of comparative studies of depression in mothers of children with and without developmental disabilities. *American Journal on Mental Retardation* **111,** 155–69.

Singer G. H. S., Ethridge B. L. & Aldana S. I. (2007) Primary and secondary effects of parenting and stress management interventions for parents of children with developmental disabilities: a meta-analysis. *Mental Retardation and Developmental Disabilities Research Reviews* **13,** 357–69.

Sparrow S. S., Balla D. A. & Cicchetti D. V. (1984) *Vineland Adaptive Behavior Scales*. American Guidance Service, Circle Pines, MN.

Sturmey P. (1995) DSM-III-R and persons with dual diagnoses: conceptual issues and strategies for future research. *Journal of Intellectual Disability Research* **39,** 357–64.

Tonge B., Brereton A., Komall J., Mackinnon A., King N. & Rinehart N. (2006) Effects on parental mental health of an education and skills training program for parents of young children with autism: a randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry* **45,** 561–9.

Webster-Stratton C. (1984) A randomized trial of two parent training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology* **52,** 666–78.

Webster-Stratton C. (1994) Advancing videotape parent training: a comparison study. *Journal of Consulting and Clinical Psychology* **62,** 583–93.

Webster-Stratton C. (2001) The Incredible years Training series. *Office of Juvenile Justice and Delinquency Prevention Bulletin Review* **June,** 1–24.

Webster-Stratton C. (2001) *The Incredible years: Parents, Teachers, and Children Training Series. Leader's Guide*. Author, Seattle, WA.

Webster-Stratton C. & Hammond M. (1990) Predictors of treatment outcome in parent training for families with conduct problem children. *Behavior Therapy* **21,** 319–37.

Webster-Stratton C. & Hammond M. (1997) Treating children with early-onset conduct problems: a comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology* **65,** 93–109.

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