Research Report DCSF-RW038

Second Great Parenting Experiment Effects of Media-based Delivery of Parenting Advice

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children, schools and families

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ISBN 978 1 84775 202 4

Contents

Tables and Graphs

Acknowledgements

This study would not have been possible without the close collaboration of all those involved in making the TV series, ITV, Triple P International and the families who participated in the study. We extend our grateful thanks to them all, and to the Respect Task Force, who funded the research.

Executive Summary

Introduction

- Parenting programmes are well established as a powerful and cost effective intervention available to assist children at risk of developing conduct problems.

- Despite the demonstrated benefits of parenting programmes, relatively few parents who might benefit complete them and children continue to develop potentially preventable behavioural and emotional problems.

- Concern about the limited reach of parenting programmes has prompted research into other ways of providing parenting support to improve the participation rates of families and thereby increase the population level impact of parenting interventions.

- The mass media has the possibility to overcome many of these barriers, both by providing direct help and information about parenting, and by demonstrating the power of parenting interventions to bring about positive change.

The intervention

- An opportunity to test the value of a parenting intervention delivered via the media presented itself when Matt Sanders collaborated with ITV on the TV series, “Driving Mum and Dad Mad”. This series depicted the experiences and emotional journey of families with severe conduct-problem children as they participated in Group Triple P.

- Parents registered online to take part in the Great Parenting Experiment 2 when the new, second ITV series of “Driving Mum and Dad Mad” was originally aired (July 2006) or when the series was repeated on ITV2 (October 2006 and November 2006).

- Parents were randomly allocated to one of two conditions - a standard condition and an enhanced condition. The design allowed comparison between watching the TV series in addition to receiving additional written resources available via the web and watching the TV series while having a range of other resources available via the web, including personalised email support. It was not possible to randomise to a no-intervention comparison as the TV broadcast and website were freely available to the public, and we could not exert control over what parents watched or looked up on the ITV web resources.

Findings

- 270 parents completed the pre-intervention assessment. Parents reported that their children showed high levels of difficult behaviour, with the average scores within the clinical range. In common with most parenting groups, it was largely mothers who initially signed up for the study

- 123 parents completed the intervention, 73 in the standard condition and 50 in the enhanced condition. There were few significant differences between the standard and enhanced conditions, but significant improvements for the sample as a whole on all variables apart from the Relationship Quality Index.

- These positive changes were maintained over the 6 month follow-up period. Many of the predictors of non-completion seen in other studies using more traditional intervention approaches proved not to have had an impact for these families.

Conclusions

- Taking part in the GPE2 and watching “Driving Mum and Dad Mad”, in combination with having Triple P tip sheets relating to each episode available on the ITV website, was associated with significant improvements in parental self-reported child behaviour problems, parenting practice problems, parental conflict, parental anxiety and depression and parental self-efficacy. This improvement was seen irrespective of condition.

- Furthermore, the clinical change analyses and effect sizes indicated that these changes represented substantial changes in family functioning, and we demonstrated levels of change comparable to, or higher than, other UK face-to-face trials. The fact that these effects endured, and were indeed strengthened over the follow-up period of the study indicates that these were robust, long lasting, helpful changes and that parents had derived significant benefit for their families by participating in the study.

- The overall message from the study therefore is that it is possible to bring about significant improvements in parents’ reports of their child’s behaviour, and in parental adjustment, using a media based universal parenting intervention.

1. Introduction

1.1. Parenting interventions

Parenting programmes are well established as a powerful and cost effective intervention available to assist children at risk of developing conduct problems (Taylor & Biglan, 1998; Scott et al. 2001; National Institute for Health and Clinical Excellence, 2006).

Despite the demonstrated benefits of parenting programmes, relatively few parents who might benefit complete them and children continue to develop potentially preventable behavioural and emotional problems (Sanders, 1999).

Concern about the limited reach of parenting programmes has prompted research into other ways of providing parenting support to improve the participation rates of families and thereby increase the population level impact of parenting interventions. A small number of studies have specifically examine the impact of parenting programmes delivered as a public health approach to parenting support (e.g. Sanders, 1999; Zubrick, Ward, Silburn et al, 2005,).

1.2. Media delivered parenting programmes

One means of increasing parents' exposure to evidence-based parenting programmes is to use the mass media to deliver parenting messages. The Triple P-Positive Parenting Programme (Sanders, 1999) exemplifies a parenting support system that uses the media as an integral part of a five level tiered continuum of parenting interventions within a public health perspective. Universal Triple P, the first of five levels of the system, involves the development of media and communication strategies to promote positive messages about raising children.

Observational documentaries and "coach" shows, where experts help individuals improve their health and daily functioning, are popular. Shows like "Supernanny" and "Little Angels" have reintroduced the topic of raising children into popular culture and have demonstrated audience appeal. Audiences appear receptive to information about the ways other people handle problems (McAlister & Fernandez, 2002). Polling of 3,938 parents conducted for the Family and Parenting Institute (Ipsos-Mori, 2006) indicated that 72% of parents of under 16s have watched at least one programme, and 83% of those found something helpful in this viewing. At least half the parents polled thought that these programmes helped them understand children's needs and feelings, and the contribution of parents to the child's behaviour. Tips on praising children and having fun together were considered particularly helpful. Television programmes were considered the third most useful source of information on bringing up children (37% of parents), after friends and family (59%), and school/playgroup (40%). However, to our knowledge, no TV programmes have been subjected to empirical evaluation to determine their effects on families.

Television is a preferred way for parents to access information about parenting (Centre for Community Child Health, 2004). The capacity to convey messages about effective parenting to target audiences could contribute to greater awareness of children's well-being, effective parenting techniques, and ways of accessing additional help. The media has the potential to reach families who may not otherwise access parenting support. Working parents are one significant group who are often unable to attend conventional group delivered programmes; a recent survey of 660 UK working parents commissioned by Business in the Community and the Respect

Task Force indicated that almost 80% of parents would be more likely to attend a workplace sponsored parenting programme than one at a clinic. Of the families surveyed, 40.5% of participants expressed having concerns about their child's behaviour or emotional adjustment in the past 6 months, however less than 2% reported having ever completed any form of parent support programme (Sanders, Haslam, Stallman, Calam & Southwell, in preparation).

There are other barriers to access which a media-based approach can help to overcome. Some families live in areas where there are low levels of access to services available, perhaps for geographical or service-based reasons. Some families may have ready access to high quality services locally, but opt not to take these up for a wide range of reasons. Research with universally offered group parenting programs show that more disadvantaged families are at risk of receiving fewer hours of intervention and less than a full therapeutic dose (Zubrick et al., 2005). Research with face-to-face interventions identifies a range of factors that increase the risk of non completion of parenting interventions. More socio-economically disadvantaged parents are less likely to know about availability of parenting programs (Sanders, Ralph, Sofronoff et al, 2005), participate in them (Morawska & Sanders, 2006a), and are more likely to terminate their involvement than other parents.

Similarly parents who have significant adjustment difficulties defined by higher levels of depression, relational conflict with partners or dysfunctional parenting are at risk of poorer outcome (Zubrick et al, 2005). However, it is unknown whether these same factors predict engagement and program outcomes in media interventions. Haggerty, MacKenzie, Skinner, Harachi, & Catalano (2006), found that many of the variables they studied associated with dropout in face to face parenting intervention research did not apply to uptake or use of a self-directed programme. Others may not be aware of the potential help that would be available. The mass media has the possibility to overcome many of these barriers, both by providing direct help and information about parenting, and by demonstrating the power of parenting interventions to bring about positive change.

1.3. The First Great Parenting Experiment (GPE1)

An opportunity to test the value of a parenting intervention delivered via the media presented itself when, in 2005, Matt Sanders collaborated with ITV to run a newly commissioned TV series, "Driving Mum and Dad Mad". This series depicted the experiences and emotional journey of five families with severe conduct-problem children as they participated in Group Triple P (an eight-session intensive group program). The series was made up of six half hour episodes which showed Matt Sanders working with families as they implemented the Triple P Positive Parenting Programme with their children.

Alongside this, we conducted the first Great Parenting Experiment (GPE1) (Sanders, Calam et al., 2008), which ran simultaneously with the "Driving Mum and Dad Mad" series. We wanted to recruit a large sample to help parents feel part of a large-scale, non-stigmatising initiative to improve parenting, using the vehicle of ITV's website and advertising for the series to draw in families. The study compared the effects of two viewing conditions (standard vs. enhanced). Families in the standard condition watched the six-episode series and had access to written information in the form of tip sheets on the ITV website. This practice of supplementing a programme with informational fact sheets is a standard practice on most TV networks. Families in the enhanced condition also received individually tailored support through a 10-session self-paced workbook and access to a specially designed website

(www.greatparentingexperiment.net), which included downloadable tip sheets corresponding to each episode, email reminders to watch the show, key message prompts to implement program tips, audio-streamed positive parenting messages, video-streamed segments from the Triple P video "Every Parent's Survival Guide" providing more detailed demonstrations and explanations of the parenting techniques, and finally, and email support from trained Triple P providers. By collaborating closely with ITV, it was possible to access pre-production cuts of each episode, plan out a set of hints on what to watch out for, and tips on what they could try for themselves at home, which could be emailed to parents in the enhanced condition each week and which were based directly on what they would be watching.

Parents in both conditions reported significant improvements in their child's disruptive behaviour and improvements in parenting practices, including lax and permissive approaches, authoritarian, angry or irritable parenting and over-reliance on talking. Parents also reported improvement in parental affect (anxiety, depression and stress). Effects were greatest for the enhanced condition, who in addition reported decreased partner conflict over parenting and higher overall levels of programme satisfaction. The level of improvement was related to number of episodes watched with greatest changes occurring in families who watched each episode. Improvements achieved at post-intervention by parents in both groups were maintained at six-month follow up.

1.4. The Second Great Parenting Experiment (GPE2)

The commissioning of a second series of "Driving Mum and Dad Mad" presented the opportunity to run a Second Great Parenting Experiment (GPE2), from July 2006 to June 2007.

2. The study intervention

2.1. The TV series

The TV series followed a group of parents who were experiencing difficulties with their children as they undertook an eight week Triple P positive parenting programme. As with the first GPE, parents taking part in the series took part in the level 4, group based Triple P intervention, an evidence-based program made up of eight sessions, three of which are telephone support. Five families with preschool and primary school aged children took part. The course was led by Clare Halsey, a consultant clinical psychologist and accredited Triple P provider. The parents who were followed in the TV series videoed their own families in the home and some of this footage was reviewed by the group on screen as part of the series.

The Triple P-Positive Parenting Programme, which is based on social learning theory, provides a system of family intervention that promotes positive, caring relationships between parents and their children and helps parents develop effective management strategies for dealing with a variety of behavioural problems and developmental issues.

The participating families consisted of two two-parent families and two one-parent families. Children ranged in age from three to seven years. Families were recruited by ITV following advertising calling for volunteer families to participate in the series. All families experienced significant conduct problems with their children and were typical of families who might present to professionals seeking parenting advice.

The series was filmed over a three month period early in 2006 Triple P International was contracted by the production company London Weekend Television to provide a trained Triple P facilitator to run the group and a consultant who supported the production team and the facilitator. Both were experienced clinical psychologists.

The series was made up of five hour long episodes. The series was screened mid week at 9.00 pm on ITV.

2.2. Advertising and recruitment into the study

Participants registered online to take part when the new, second ITV series of "Driving Mum and Dad Mad" was originally aired (July 2006) or when the series was repeated on ITV2 (October 2006 and November 2006).

Parents were alerted to the study in a number of ways. ITV put a link to the study on their page for the series. ITV also funded the distribution of 2,000 flyers to Government and voluntary sector agencies working with families with children. The University of Manchester included information and the link in email publicity sent to all employees; other agencies were emailed and encouraged to adopt the same approach. The research leaders put out press releases via the University of Manchester and made themselves available for media interviews prior to the series. This led to coverage in TV, radio and newspapers.

In order to run a universal, non-stigmatising study it was advertised with completely open access; any parent with a child aged between three and ten was able to participate. If parents had more than one child they were concerned about they were instructed to complete measures for the one about whom they were most concerned.

No conditions were made concerning the levels of behavioural difficulties needed for entry to the study.

2.3. The GPE2 Website

The research website was hosted by the University of Manchester, and a computer programmer had oversight of its establishment and maintenance. Once the website was established, it required only minimal checks to ensure the study was running smoothly, to mount weekly updates and to send out electronic mailings to families. The ITV website provided a direct link through to the GPE2 website.

The website included a weekly quiz to check parents' learning, tips on what to look out for in each episode, and video streaming of segments from the Every Parent's Survival Guide.

In the 2 weeks prior to screening of "Driving Mum and Dad Mad", there were 1,140 hits on the study website. The number of hits increased once the series went to air, with 1,913 in the first week that the series was screened, and over 1,000 hits for each of the subsequent weeks, declining to 713 in the final week of the first screening. The day of screening was the most common day for access to take place, with the hour of the week showing most activity being 23.00 to 23.59 on the day of screening.

The ITV website carried some basic information about the series and a number of tip sheets which parents could download. Overall, ITV recorded 46,800 hits on the web site over the first and repeat screenings of the series. ITV also collected web statistics for the number of hits on each tip sheet. The names of the tip sheets and the number of downloads are shown in Table 3.

2.4. Measures used in the study

All the families completed the assessment measures (see Box 1) online prior to random allocation to one of two intervention conditions. The measures included questionnaires which would collect demographic information about the family, measures relating to parenting as well as a measure of parental depression and anxiety. A client satisfaction questionnaire was also included in the battery. Data collection occurred before the series was shown (pre-intervention), at the end of the series (post-intervention) and 5-6 months after the end of the series.

Box 1: Questionnaires completed by parents

1. ***Family Background Questionnaire*** (Sanders, Markie-Dadds, & Turner, 1999), covering demographic information
2. ***Eyberg Child Behaviour Inventory*** (ECBI; Eyberg & Robinson, 1983), which measures parents' perceptions of their child's behaviour
3. **Parenting Sc*ale*** (PS; Arnold, O'Leary, Wolff, & Acker, 1993), which includes Laxness (permissive discipline), Overreactivity (authoritarian discipline, displays of anger, irritability); and Verbosity (overly long reprimands, reliance on talking)
4. ***Parent Problem Checklist*** (PPC; Dadds & Powell, 1991) which measures conflict between partners over child-rearing
5. ***The Parental Anger Inventory*** (PAI: Lundquist & Hansen 1998) which assesses anger experienced by parents in response to child-related situations
6. ***Parenting Tasks Checklist*** (Sanders & Woolley, 2001) measuring how confident parents are at successfully dealing with their child when the child is displaying a variety of difficult behaviours in various settings.
7. ***Relationship Quality Index*** (Norton, 1983), an index of relationship quality and satisfaction
8. ***Depression Anxiety Stress Scale*** (Lovibond & Lovibond, 1995a) assessing depression, anxiety, and stress symptoms in adults
9. ***Daily Report Checklist*** (Sanders, Markie-Dadds, & Turner, 2001) which requires parents to record whether their child had displayed any of a list of difficult behaviours in the previous two days
10. ***Client Satisfaction Questionnaire*** (Turner, Sanders, & Markie-Dadds, 1999) which addresses quality of service provided

For more detail please see Appendix 1

2.5. The Intervention Conditions

After completing all the study measures online for the first time, parents were randomly allocated to one of two conditions - a standard condition and an enhanced condition. It was not possible to randomise to a no-intervention comparison as the TV broadcast and website were freely available to the public, and we could not exert control over what parents watched or looked up on the ITV web resources. Therefore it was only possible to use a viewing only condition as a standard control for the effects of watching the series. This design meant that is was possible to test for differences between watching a series showing an evidence based programme, with some additional written resources available via the web, comparing this to the effects of watching the series while having a range of other resources available via the web, including personalised email support.

- Standard Condition
  Parents in the standard condition were sent weekly emails reminding and encouraging them to watch the television series. No other intervention was administered. After the six-month follow up, parents received a Self Help Workbook.

- Enhanced Condition
  Parents in the enhanced condition received the Triple P Self Help Workbook (Markie-Dadds et al, 1999) containing specific guidance, activities and recording diaries for families to work through over 10 weeks, and were sent weekly reminder emails encouraging them to watch the series. Parents had access to the website with tip sheets and video clips for each episode, and were emailed with additions to the website. The website included a weekly quiz, focussing on particular principle being demonstrated by the footage in the episode being

shown that week, and pointers on what to look out for. Parents in the enhanced condition could also access an email helpline run by the Parenting and Family Support Centre, University of Queensland.

3. Who were the families taking part in the research?

3.1. Key Findings

- 270 parents completed the pre-intervention assessment
- Parents reported that their children showed high levels of difficult behaviour, with the average scores within the clinical range.
- In common with most parenting groups, it was largely mothers who initially signed up for the study

3.2. Parents who took part in the study

A total of 270 parents were recruited for the study, completed the pre-intervention assessment and were randomly allocated to conditions. These were made up of 252 biological or adoptive mothers, 11 biological or adoptive fathers, 1 step-mother, 3 step-fathers, 2 foster mothers, and 1 grandparent. Sixty two percent of the children in the sample were living with their biological parents. The table below provides further descriptive information. Over a third of the parents first heard of the study via the television or television website. The families were widely geographically spread and from all over the UK.

Table 1 Descriptive information concerning participants

	Whole Sample (N=270)		
	Standard (N=136)	Enhanced (N=134)	Statistics
Girls	57 (40.7%)	51 (39.2%)	X^2 = .062, *df* = 1, *p=.804 n.s*
Boys	79 (60.8%)	83 (59.3%)	
Mean Age	5 years, 2 months (SD = 2.20)	5 years, 4 months (SD = 2.18)	t(268) = -.384, *p=.701 n.s*
Original Families	89 (63.6%)	80 (61.5%)	
Step Families	16 (11.4%)	20 (15.4%)	X^2 = 2.360, *df* = 3, *p=.501 n.s*
Single Parent Families	34 (24.3%)	27 (20.8%)	

3.3. Children in these families

There were 162 (60%) boys and 108 (40%) girls, nearly all described by their carers as White (96%). The age range was 2 to 10 years, with a mean of 5.3 years. With respect to family size, 139 had one sibling, 45, 2 siblings, 17 had 3, and 4 had 4 siblings. Twenty seven lived in two person households, 75, 3 members, 109, 4 members, 31, 5 members and 22, 6 or more members.

3.4. Difficulties experienced by the children in the study

Thirty one (11.5%) of the target children were already in regular contact with a professional regarding emotional or behavioural problems. Parents reported that their children had a range of other difficulties, most commonly needing glasses, (4.8%); an equivalent percentage had hearing difficulties. Four of the children had autistic spectrum disorders. There were a small number of individual children with learning difficulties or specific behavioural disorders (see Table 4).

3.5. Parents' concerns about the children's behaviour prior to intervention

On average, on the ECBI, parents reported 16.7 problems (standard group), 17.3 for the enhanced group, indicating that these were children showing a high number of concurrent difficulties. The most commonly reported difficulties included anger, tantrums, defiance, answering back, whining, refusing to obey, interrupting, shouting and screaming, distractibility and arguing.

Parents who registered for the GPE2 reported that their children showed high levels of difficult behaviour, with the average scores within the clinical range. Overall, at the start of the study, 160 (55%) of the children had parental behaviour ratings on the ECBI Intensity which placed them in the clinical range, and 53% on the ECBI Problem scale. Many of the sample were therefore similar in levels of difficulty to children who present to child and adolescent mental health services for intervention. Parents reported a range of difficulties in relation to their own parenting skills, confidence and mood.

3.6. Representativeness of the sample

Demographic characteristics of the two groups were assessed using the UK National Statistics socioeconomic classification. There were no significant differences between groups on any demographic variables as identified by chi square analysis (see Table 5). The sample is noteworthy for the rather higher levels of higher SES families than the national profile. However, there was representation across all social groups. The higher number of boys in the sample reflects the higher levels of behavioural difficulty seen in boys overall, and would be expected in families attending services. These demographics should be borne in mind when making comparisons to other UK parenting trials (Scott, Spender et al. 2001; Gardner, Burton et al. 2006; Gardner, Shaw et al. 2007), which have recruited for face-to-face parenting trials in low income areas.

4. What changes did parents experience?

4.1. Key Findings

- 123 parents completed the intervention, 73 in the standard condition and 50 in the enhanced condition
- There were few significant differences between the standard and enhanced conditions, but significant improvements for the sample as a whole on all variables apart from the Relationship Quality Index.
- These positive changes were maintained over the 6 month follow-up period.
- Many of the predictors of non-completion seen in other studies using more traditional intervention approaches proved not to have had an impact for these families.

4.2. What were the differences between the two conditions?

There were 123 parents (45.6% of initial participants) who participated in the post-intervention assessment; 108 participants (40%) participated in the 6 month follow up assessment. There was no significant difference in completion rates across by condition (χ^2= 2.38, *df* =1, *p* =.125, *ns*) however analyses were undertaken to understand whether there were specific types of parents were likely to complete the study (see later).

In planning the study, it was predicted that in comparison to the standard condition, the enhanced condition, who received a structured self-help work book and had internet support available would show higher levels of improvement. It was predicted that these parents would report: 1) greater improvements in child disruptive behaviour; 2) lower rates of dysfunctional parenting; 3) increased parental self efficacy 4) decreased parental anger, conflict over parenting and parental emotional distress; and 5) higher consumer satisfaction. Improvements were expected to be maintained 6 months after intervention.

A series of tables in the Appendix 2 give details of the data and analyses for the study which is summarised here.

Analysis of Covariance (ANCOVA) analyses were used to examine any difference between outcomes for parents in the standard and enhanced groups (after checks for normality, distribution and gradient) (see Table 6 and Table 7). The ANCOVAs showed no significant difference between the standard and enhanced conditions on any of the measures post-intervention. There were no significant condition differences between the post-intervention scores for any of the questionnaires controlling for pre-intervention scores. Again, there were no significant condition differences between the follow up scores for most of the questionnaires, except for the Relationship Quality Index. This indicates that the enhanced group had a better relationship with their partner after 6 months.

Because the ECBI has been validated on large samples, including children receiving help for their behavioural difficulties, it is possible to use scores above a certain level, or cut-off, to indicate children with levels of difficulty that might be likely to be showing the sorts of levels of problems equivalent to those reported for children attending clinics for professional intervention. The Intensity scale of the ECBI was used, which

assesses how much particular behaviour is a problem for the parent. We can look at how many children are above cut-off at the start of the study and how many are below after intervention. Clinically elevated children were defined as those that scored on or above the clinical range cut off of 132 for ECBI Intensity.

Using this approach, it was shown that following intervention, 44% of the standard condition moved from being above clinical cut-off to below it. The effect was bigger for the enhanced condition, with 52% of children moving from above to below the cut-off. We also looked at children who moved from below to above cut-off. The percentage of children moving from below cut-off to above was different across conditions; in the standard condition 9 (23%) moved from below cut-off to above it, compared to only 2 (11%) in the enhanced condition. In other words, not only did more children improve in the enhanced condition, fewer got worse (Table 8).

There were no significant differences between the standard and enhanced conditions with regards to satisfaction with the study although overall the figures show high level of satisfaction (Table 9). We found no significant relationships between the number of episodes watched and any of the outcome measures. However, satisfaction with the programme post-intervention as measured by the CSQ was significantly related to how many episodes of “Driving Mum & Dad Mad” were watched ($r = .439$, $p < 0.001$), with parents who watched more episodes being more satisfied. In other words, the more of the series the parent watched, the more satisfied they were with the intervention.

4.3. Comparison to changes in GPE 1

In comparison to GPE1, we saw fewer differences attributable to condition in GPE2. The second TV series has been longer (five hour long episodes, rather than six half hour ones), there had been two runs of repeats, so parents would have been able to watch again easily, and the ITV website for the second series carried more information on parenting.

The level of non-completion was relatively high in both conditions, compared to face-to-face approaches. It was not possible to tell the reasons why parents did not complete the study, or whether they completed the intervention but did not return to the website to fill in the questionnaires. This however, can be balanced against the potential population reach of an intervention of this kind. If very large numbers of parents are able to access intervention via this kind of modality, there is the potential for public health level benefit, even if the percentage of parents not completing is higher. Given the relatively low cost of delivery per family, failure to complete does not represent the lost investment that is seen with more resource-intensive interventions.

4.4. What changes were experienced regardless of condition?

Because of the similarity in outcomes between the two conditions, we combined the sample across the standard and enhanced groups, and carried out some further analyses, to test the extent of change brought about by participating in the study overall, irrespective of condition.

Immediately following the intervention, parents reported significantly lower levels of child behaviour problems, parenting practice problems, parental conflict, and parental distress and significantly higher levels of parental self-efficacy. The table below

shows these results. The only measure not showing significant improvement over time was global couple relationship quality.

Table 2 Paired-samples T-test comparing pre- and post-intervention scores for whole sample

	Whole Sample				Paired-samples T-test comparing pre- and post-intervention scores
	Pre		Post		
	M	SD	M	SD	
ECBI Intensity (N = 123)	137.35	33.57	119.28	37.75	T=5.561, *df*=122, *p*<.001
ECBI Problem (N =123)	16.98	8.08	11.47	8.65	T=8.176, *df*=122, *p*<.001
Parenting Problem Checklist (N = 110)	5.85	3.99	4.03	3.41	T=5.184, *df*=109, *p*<.001
Parenting Scale (N = 116)	3.41	0.70	2.96	0.77	T=7.947, *df*=115, *p*<.001
Parent Anger Inventory Problem (N = 108)	22.94	9.39	17.21	9.85	T=6.656, *df*=107, *p*<.001
Parenting Tasks Checklist Total (N = 109)	66.32	16.92	77.82	17.43	T= -8.095, *df*=108, *p*<.001
Depression Anxiety Stress Scales Total (N = 115)	28.01	26.00	23.12	24.76	T = 2.649, *df* = 114, *p*<.001
Relationship Quality Total (N = 103)	5.08	1.96	5.03	2.09	T= .342, *df*= 102, *ns*

Results for those parents who completed the questionnaires at both pre-intervention and the follow up stage 6 months later were also compared (see Table 10). There were significant differences for all the measures, and it should be noted that the Daily Report Checklist, which was only used at pre-intervention and at the follow up, indicated that the children were showing significantly fewer problematic behaviours.

Again, the RQI did not conform to the overall pattern of significant improvement. The negative difference between the pre-intervention and follow up stages for the standard group seems to counteract the positive difference between for the enhanced group, which is reflected in the t-test results for the whole sample.

Given the percentage of parents who did not complete the follow-up questionnaires, we ran intent to treat analyses to check whether we had only kept the families who were most likely to change (see Table 11).

In intent to treat analyses, missing data for participants who do not continue the intervention is replaced with that participant's pre-intervention score, as if they had stayed in the study but had not either improved or deteriorated. This is a very conservative test, and any significant change that is seen once this stringent test is applied indicates a very robust effect of intervention.

These analyses, comparing pre-intervention with post-intervention and 6 month follow up data (with missing data at these two time points replaced with pre-intervention scores), there were significant improvements on all measures, with the exception of the RQI. This indicates that the changes that were seen are highly robust, and even if all of the people who discontinued participation were assumed to

show no improvement, overall there was significant improvement on virtually all our measures across the sample as a whole.

4.5. Were there any factors that predicted completion of the intervention?

Regression analyses were used to identify variables measured pre-intervention that might predict completion of the study. We entered ECBI Problem scores, Parent Problem Checklist problem scores, employment and parent educational data.

The ECBI Problem score at pre-intervention predicted the number of episodes watched ($t(55) = 2.03$, $p<0.05$). That is, parents who experienced more problems with the behaviour of their child watched more episodes of the series.

Scores on the Problem subscale of the Parenting Problem Checklist at the pre-intervention stage significantly predicted those who continued on to complete questionnaires post-intervention ($t(55) = 2.36$, $p<0.05$). Parents who experienced more conflict with partners were more likely to complete the post-intervention assessment. Socio-demographic factors such as employment or education level did not predict whether parents remained in the study.

These are important findings, as these factors have been shown to contribute to drop-out in studies of face to face intervention, where a range of factors increase the risk of non completion of parenting interventions. More socioeconomically disadvantaged parents are less likely to know about availability of parenting programmes (Sanders, Ralph, Sofronoff, Gardiner, Thompson, Dwyer & Bidwell, 2005), participate in them (Morawska & Sanders, 2006a), and are more likely to terminate their involvement than other parents. Similarly parents who have significant adjustment difficulties as defined by higher levels of depression, relational conflict with partners or dysfunctional parenting are at risk of poorer outcome (Zubrick et al, 2005). Haggerty, MacKenzie, Skinner, Harachi, & Catalano (2006), found that many of the variables they studied associated with dropout in face to face parenting intervention research did not apply to uptake of a self-directed programme or the amount of use made of that programme. Our findings lend further support to this possibility.

4.6. How big were differences at follow-up?

Table 12 shows the effect sizes for the intervention. Large effect sizes were found for several of the measures for the sample as a whole. These statistics allow some comparison to other trials and indicate that the GPE effect size of .72 for change from pre-intervention to follow-up on the ECBI Problem scale compares favourably to high quality UK trials of face-to-face intervention with young children, where effect sizes between .48 (Gardner et al 2006) and .63 (Hutchings, Gardner et al. 2007) have been reported for changes in parent-rated child problem behaviour. Effect sizes for the standard and enhanced conditions are shown in Table 13.

4.7. Differences between GPE1 and GPE2

In GPE1 families in the enhanced condition showed even higher levels of improvement than the standard condition. We had expected to see the same effect with the present study. In fact, given that the enhancement of the intervention with additional web-based resources did not lead to the expected significantly higher levels of improvement in GPE2, when subjected to the conservative analysis of

covariance statistical tests, we need to consider differences between the two studies that might explain these findings. A number of factors are probably important in considering the outcomes.

Firstly, it is important to note that the lack of difference reflects substantial levels of improvement seen in the standard condition, so that between-condition comparisons are not so evident. Secondly, although the randomisation to condition produced groups that were comparable on a range of demographic characteristics, the initial ECBI scores for children in the enhanced condition were higher, so that parents may have faced greater challenges in working to improve their children's behaviour. There may have been other aspects of sampling that we did not test for which affected outcome.

The third group of factors that may have contributed to the lack of difference relate to enhancements in the ITV series and website for the second series. For this second series of "Driving Mum and Dad Mad", the ITV website itself was enhanced, and included easily accessible Triple P tip sheets prominently displayed above the web link to GPE, and also included links to the Triple P website. For the first study, the GPE link was more prominent and above the tip sheet links. Whether this made a difference, and parents felt they had accessed sufficient information before coming to the GPE2 link is open to question. Further, the second series itself was more intensively packed with information, as it took the form of 5 one hour shows rather than the 6 half hour shows presented in the first series which GPE1 was based on. The series itself may therefore have presented more detailed information on the Triple P intervention, and parents viewing may have been able to see the techniques demonstrated more fully.

5. Conclusions

Taking part in the GPE2 and watching “Driving Mum and Dad Mad”, in combination with having Triple P tip sheets relating to each episode available on the ITV website, was associated with significant improvements in parental self-reported child behaviour problems, parenting practice problems, parental conflict, parental anxiety and depression and parental self-efficacy. This improvement was seen irrespective of condition.

Furthermore, the clinical change analyses and effect sizes indicated that these changes represented substantial changes in family functioning, and we demonstrated levels of change comparable to, or higher than, other UK face-to-face trials. The fact that these effects endured, and were indeed strengthened over the follow-up period of the study indicates that these were robust, long lasting, helpful changes and that parents had derived significant benefit for their families by participating in the study.

The overall message from the study therefore is that it is possible to bring about significant improvements in parents’ reports of their child’s behaviour, and in parental adjustment, using a media based universal parenting intervention. Parents appear to have self-selected into the study on the basis of their children’s difficult behaviour, and this, and their difficulties in dealing with these problems, provide an important motivator in maintaining their engagement with a study of this kind.

Although the present findings are encouraging and show the potential of media based parenting programmes, there are some caveats that should be kept in mind in interpreting the findings. First, “Driving Mum and Dad Mad” captured the experiences of parents undergoing a well tested clinical intervention available in the community that has a substantial evidence base. It cannot be assumed that the same findings would be found for other reality parenting programmes.

Secondly, the absence of a non-treatment control condition cannot allow us to rule out maturational effects in explaining the improvements in children’s behaviour and parenting. However, antisocial behaviour tends to be stable in the absence of intervention (Moffitt & Caspi, 2001). It was not possible to include a non-treatment control condition in the study because of our inability to randomise parents to not watching the free to air broadcast of the show.

It is also important to note that, while a large sample of families was recruited to the study, the ITV website itself recorded over 46,800 over the course of the series, and 26,654 tip sheets were downloaded. Clearly, the study sample was only a tiny proportion of the families who were interested in going beyond watching the show and in finding out more about ways of improving their child’s behaviour. There is no information on the extent to which these parents were comparable to the ones who engaged with GPE. This level of public interest does however show the potential for engagement with high quality, media-based parenting intervention to bring about population-level changes in children’s behaviour in a highly cost-effective way. Given that TV is the third most popular source of information for parents after friends and family, and school and playgroup, high quality programming of good, evidence-based approaches has the potential to permeate the popular culture through its interaction between families, friends and schools.

5.1. Policy implications

This study has demonstrated that this novel approach can produce positive change in families and promote improvements in child behaviour.

In contrast to the common predictors of dropout from more traditional, face-to-face interventions, a striking finding has been the lack of predictors of continuation in the study. Families from low socioeconomic status backgrounds, with children with high levels of behavioural difficulty, stayed engaged with the study throughout. This indicates that this approach has the potential to greatly increase the accessibility of expert services for families who might not otherwise access resources, or who might be at high risk of disengagement.

The media forms part of a larger system of support available to families, complementing more intensive support and extending the reach of parenting programmes to those who might not otherwise be reached. There is much to learn about the best combinations of forms of delivery. The fact that the hour before midnight was the time that parents were most likely to access the study website indicates the way that parents manage their time, and when they want to be able to access information. There is little research examining the effects of web based delivery of parenting programmes or whether other web-based resources are effective in changing parenting practices. Grasping these issues has tremendous potential to offer parents constructive guidance at exactly the moment when they need it. The technological developments that allow viewers to access televised material and the internet at their own convenience provides the potential for parents to have expert exemplars on tap day or night, however isolated the family. Including telephone helplines and email support using a common model has the potential to create a more personalised, comprehensive multi-level system of services which are coherent, accessible and non-stigmatising, and which suit the needs of many parents for privacy or for contact outside working hours.

This study was opportunistic, and built upon a TV company's interest and investment. While the study demonstrated that this approach works, it raises many questions with respect to mainstream delivery. Establishing ways of delivering sustainable media based parenting interventions has the potential to save Government large sums of money, both in terms of reduced contact time for intervention, and in terms of the long-term costs known to be associated with behavioural difficulties.

Appendix 1 Measures

Family Background Questionnaire **(Sanders, Markie-Dadds, & Turner, 1999)**

This questionnaire requests demographic information about the family, such as the number of children in the family, the education and employment background of the parents, and the child's current health. This was administered at the pre-intervention stage only.

Eyberg Child Behaviour Inventory **(ECBI; Eyberg & Robinson, 1983)**

The ECBI is a 36-item multi-dimensional measure of parents' perceptions of their child's behaviour. It has high internal consistency for Intensity (α = .92) and Problem (α = .90) scores, good test-retest reliability (*r* = .86), and reliably discriminates problem and non-problem children (Robinson, Eyberg et al. 1980).

Parenting Scale **(PS; Arnold, O'Leary, Wolff, & Acker, 1993)**

This 30-item questionnaire measures dysfunctional discipline styles in parents. It has three factors: Laxness (permissive discipline); Overreactivity (authoritarian discipline, displays of anger, irritability); and Verbosity (overly long reprimands, reliance on talking). Test-retest reliabilities for the three subscales with the present sample were .83, .82 and .79 respectively. This measure reliably discriminates between parents of clinical and non-clinical children (Arnold et al, 1993).

Parent Problem Checklist **(PPC; Dadds & Powell, 1991)**

This 16-item scale measures conflict between partners over child-rearing. The PPC has high internal consistency for both the problem (α=.92) and intensity (α=.96) scales, and high test-retest reliability (r=.90) (Dadds & Powell, 1991).

The Parental Anger Inventory **(PAI:`Lundquist and Hansen 1998)**

assesses anger experienced by parents in response to child-related situations. It yields a Problem and an Intensity score. The PAI is moderately correlated with other measures of anger and child behavior and in the present sample, had good internal consistency for both the Problem and Intensity scales (*r* = 0.92 and 0.95, respectively).

Parenting Tasks Checklist **(Sanders & Woolley, 2001)**

This 28-item rating checklist measures how confident parents are at successfully dealing with their child when the child is displaying a variety of difficult behaviours in various settings. The measure has high reliability for both the behaviour (α=.97) and setting (α=.91) subscales (Sanders & Woolley, 2005).

Relationship Quality Index **(Norton, 1983)**

The RQI is a 6-item index of relationship quality and satisfaction. Five items assess various aspects of marital relationships on 7-point scales, and one global item assesses the happiness of the relationship on a 10 point scale. The RQI has adequate internal consistency, with inter-item correlations ranging from .68 to .86 (Norton, 1983). The measure also has high reliability (α=.97) and discriminant validity (Heyman, Sayers & Bellack, 1994).

Depression Anxiety Stress Scale **(Lovibond & Lovibond, 1995a)**

The DASS is a 42-item scale that assesses depression, anxiety, and stress symptoms in adults. Each item is rated on a 4-point scale from 0 *(did not apply to me at all)* to 3 *(applied to me very much, or most of the time)*. This measure yields Depression, Anxiety, Stress and Total scores with higher scores indicating more difficulties. The scale has high reliability for the Depression (α = .91), Anxiety (α = .81) and Stress (α = .89) scales, and good discriminant and concurrent validity (Lovibond and Lovibond 1995; Lovibond and Lovibond 1995).

Daily Report Checklist (Sanders, Markie-Dadds and Turner, 2001)

This measure required parents to record whether there children had displayed any of list of X difficult behaviours in the previous two days (e.g. answering back, getting into trouble at school, firesetting, running away or getting into trouble with the police). This was completed at times 1 and 3 only. Because it includes some specific severe behavioural difficulties not included in the ECBI, it was used to give an additional indication of the range of behaviours that children were showing.

Client Satisfaction Questionnaire **(Turner, Sanders, & Markie-Dadds, 1999, Sanders, Markie-Dadds, Tully, & Bor, 2000)**

The 13 item CSQ addresses quality of service provided; how well the programme met the parents' needs, increased parental skills and decreased problem behaviours. Higher scores indicate higher satisfaction. The scale has high internal consistency (alpha = .96), and item-total correlation of .66 and interim correlations of .30-.87 (Sanders et al., 2000). This was administered only at Time 2.

Appendix 2 Supplementary Tables

Table 3 Number of tip sheet downloads from website

Tip sheets available	Number of .pdf downloads
What is Triple P & Causes of behaviour problems	14,804
Encouraging desirable behaviour	5,440
Coping with difficult behaviour	3,417
Going shopping & Bedtime problems	3,647
Fighting and aggression	1,827
Help for parents in the UK	1,166

Table 4 Difficulties reported by parents prior to intervention

Difficulty reported	N	%
Glasses	13	4.81
Hearing Difficulties	13	4.81
Speech Difficulties	7	2.59
Diet	4	1.48
Educational	3	1.11
Autistic Spectrum Disorder	4	1.48
Vision Difficulties	2	.74
Dyslexia	3	1.11
Autistic Spectrum Disorder (undiagnosed)	3	1.11
Attention Deficit Hyperactivity Disorder	2	.74
Pervasive Developmental Disorder	1	.37
Epilepsy	1	.37
Obsessive Compulsive Disorder	1	.37
Dyspraxia	2	.74
Developmental Coordination Disorder	1	.37
Cerebral Palsy	1	.37
Cancer	1	.37
Attachment Disorder	1	.37
Asthma, Eczema	1	.37

Table 5 Socio-demographic characteristics of the sample

	Standard				Enhanced				
	1st Parent		Partner		1st Parent		Partner		Statistics
SES*	N	%	N	%	N	%	N	%	
1.1	5	3.6	6	4.3	2	1.5	4	3.1	
1.2	9	6.4	13	9.3	10	7.7	10	7.7	
2	26	18.6	21	15.0	26	20.0	25	19.2	
3	31	22.1	17	12.1	28	21.5	14	10.8	
4	2	1.4	9	6.4	4	3.1	10	7.7	
5	1	0.7	2	1.4	0	0	2	1.5	
6	5	3.6	9	6.4	7	5.4	6	4.6	
7	4	2.9	20	14.3	3	2.3	20	15.4	1st parent X^2 =6.82,*df* = 9, *ns*
8	11	7.9	2	1.4	6	4.6	3	2.3	Partner X^2 = 8.02, *df* = 9, *ns*
In Paid Employment									
Yes	32	43.8	58	79.5	32	64	41	82	1st parent X^2 =.835,*df* = 1, *ns*
No	41	56.2	15	20.5	18	36	9	18	Partner X^2 =.118, *df* = 1, *ns*
Education									
None	3	4.1	8	11.0	3	6	1	2	
GCSEs	20	27.4	20	27.4	14	28	16	32	
A levels	18	24.7	9	12.3	10	20	6	12	
Trade	1	1.4	8	11.0	0	0	10	20	
University degree	22	30.1	14	19.2	12	24	8	16	1st parent X^2 =3.72,*df* = 5, *ns*
Other	8	11	5	6.8	10	20	2	4	Partner X^2 =5.149, *df* = 5, *ns*
Receive benefits									
Yes	34	46.6	-		25	50	-		X^2 = .011, *df* = 1, *ns*
No	39	53.4	-		25	50	-		

*(1.1 = highest e.g. own company, 8 is lowest e.g. unemployed)

Table 6 Effects of intervention on child, parent and parental adjustment measures at post-intervention

	Standard				Enhanced				ANCOVA condition difference on post-intervention score, controlling for pre-intervention score
	Pre		Post		Pre		Post		
Measure	M	SD	M	SD	M	SD	M	SD	
ECBI Intensity (N = 123)	134.72	36.99	120.67	40.20	141.06	33.47	117.31	34.31	$F(1, 120) = 1.342$, $p = .249$, *ns*
ECBI Problem (N =123)	16.74	8.27	11.78	9.02	17.33	7.87	11.04	8.16	$F(1, 120) = .784$, $p = .378$, *ns*
Parenting Problem Checklist (N = 110)	5.64	4.02	3.71	3.21	6.18	3.91	4.50	3.67	$F(1, 107) = .921$, $p = .339$, *ns*
Parenting Scale (N = 116)	3.42	0.71	2.98	0.72	3.40	0.69	2.94	0.83	$F(1, 113) = .056$, $p = .813$, *ns*
Parent Anger Inventory Problem (N = 103)	22.58	9.45	16.49	9.56	23.47	9.38	18.30	10.29	$F(1, 105) = .644$, $p = .424$, *ns*
Parenting Tasks Checklist Total (N = 109)	66.64	16.32	77.10	17.40	65.82	17.99	78.93	17.64	$F(1, 106) = .782$, $p = .378$, *ns*
Depression Anxiety Stress Scales Total (N = 115)	28.01	26.32	22.80	23.71	28.00	25.79	23.62	26.59	$F(1,112) = .059$, $p = .808$, *ns*
Relationship Quality Total (N = 103)	5.08	1.98	5.03	2.14	5.08	1.95	5.03	2.04	$F(1,100) = .000$, $p = .990$, *ns*

Table 7 Effects of intervention on child, parent and parental adjustment measures at follow up

	Standard				Enhanced				ANCOVA condition difference on scores after 6 months, controlling for pre-intervention score
	Pre		6 months		Pre		6 months		
Measure	M	SD	M	SD	M	SD	M	SD	
ECBI Intensity (N = 108)	132.13	34.84	115.63	34.46	139.98	30.98	117.41	42.25	$F(1, 105) = .335$, $p = .564$, *ns*
ECBI Problem (N =108)	15.90	7.56	9.36	8.24	15.88	8.82	10.73	9.43	$F(1, 105) = .799$, $p = .373$, *ns*
Parenting Problem Checklist (N = 101)	5.61	4.20	3.72	3.43	5.86	4.28	4.35	4.19	$F(1, 98) = .614$, $p = .435$, *ns*
Parenting Scale (N = 104)	3.39	0.73	2.87	0.81	3.26	0.74	2.77	0.80	$F(1, 101) = .001$, $p = .973$, *ns*
Parent Anger Inventory Problem (N = 99)	22.58	9.07	17.34	11.55	21.97	9.27	19.57	14.54	$F(1, 96) = 1.423$, $p = .236$, *ns*
Parenting Tasks Checklist Total (N = 101)	69.28	15.83	83.57	13.21	72.53	15.77	84.79	13.22	$F(1, 98) = .035$, $p = .852$, *ns*
Depression Anxiety Stress Scales Total (N = 96)	27.78	27.39	19.88	22.95	28.51	26.40	27.46	30.66	$F(1,93) = 2.974$, $p = .088$, *ns*
Relationship Quality Total (N = 106)	4.94	1.98	4.57	2.16	5.02	1.99	5.33	2.03	$F(1,100) = 4.110$, $p < .05$
Daily Report Checklist (N = 81)	20.17	9.84	12.96	11.55	15.04	10.96	8.89	7.50	$F(1,78) = .538$, $p = .465$, *ns*

Table 8 Clinically significant changes in child behaviour problems (ECBI Intensity) in the Standard and Enhanced Conditions

ECBI Intensity	Standard				Enhanced		
	Post-intervention				Post-intervention		
Pre-intervention	Below clinical cut-off	Above clinical cut-off	Statistic	Pre-intervention	Below clinical cut-off	Above clinical cut-off	Statistic
Below clinical cut-off	30 (77%)	9 (23%)	$\chi^2 = 8.952$, *df = 1* p<.005	Below clinical cut-off	17 (89%)	2 (11%)	$\chi^2 = 7.088$, *df = 1* p<.05
Above clinical cut-off	15 (44%)	19 (56%)		Above clinical cut-off	16 (52%)	15 (48%)	
ECBI Problem	Standard				Enhanced		
	Post-intervention				Post-intervention		
Pre-intervention	Below clinical cut-off	Above clinical cut-off	Statistic	Pre-intervention	Below clinical cut-off	Above clinical cut-off	Statistic
Below clinical cut-off	34 (94%)	2 (6%)	$\chi^2 = 21.555$, *df = 1,* p<.001	Below clinical cut-off	21 (91%)	2 (9%)	$\chi^2 = 12.978$, *df = 1* p<.001
Above clinical cut-off	16 (43%)	21 (57%)		Above clinical cut-off	11 (41%)	16 (59%)	

Table 9 Summary of the Client Satisfaction Questionnaire items

	Time 2					
	Whole sample (N=133)		Standard (N=79)		Enhanced (N=54)	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
1. How many episodes of Driving Mum & Dad mad were watched? (out of 5)	4.29	1.45	4.51	1.40	3.96	1.47
2. How informative did you find the programme? (1-7)	5.45	1.51	5.41	1.48	5.52	1.56
3. How interesting did you find the programme? (1-7)	5.86	1.52	5.89	1.48	5.83	1.60
4. How useful did you find the programme? (1-7)	5.26	1.65	5.16	1.65	5.41	1.64
5. How practical did you find the programme? (1-7)	5.18	1.59	5.19	1.52	5.17	1.69
6. How would you rate the quality of help you and your child received? (7 = Excellent, 1 = poor)	4.68	1.44	4.59	1.50	4.80	1.37
7. Did you receive the type of help you wanted from the programme? (7 = Yes definitely, 1 = No, definitely not)	4.65	1.37	4.57	1.41	4.78	1.31
8. To what extent has the programme met your child's needs? (7 = Almost all have been met, 1 = No needs have been met)	4.04	1.50	4.04	1.46	4.04	1.57
9. To what extent has the programme met *your* needs? (7 = Almost all have been met, 1 = No needs have been met)	4.10	1.53	4.00	1.54	4.24	1.52
10. How satisfied were you with the *amount of help* you and your child received? (7 = Very satisfied, 1 = Quite dissatisfied)	4.49	1.37	4.32	1.38	4.74	1.32
11. Has the programme helped you to deal more effectively with your child's behaviour? (7 = Yes it has helped a great deal, 1 = No it has made things worse)	4.68	1.49	4.56	1.57	4.87	1.36
12. Has the programme helped you to deal more effectively with problems that arise in your family? (7 = Yes it has helped a great deal, 1 = No it has made things worse)	4.71	1.37	4.65	1.44	4.81	1.28
13. Do you think your relationship with your partner has been improved by the programme? (7 = Yes definitely, 1 = No, definitely not)	3.20	1.61	3.30	1.71	3.06	1.47
14. In an overall sense, how satisfied are you with the programme you and your child received? (7 = Very satisfied, 1 = Quite dissatisfied)	4.86	1.30	4.70	1.29	5.11	1.28
15. If you were to seek help again, would you come back to Triple P? (7 = Yes definitely, 1 = No, definitely not)	5.14	1.45	5.01	1.47	5.33	1.40
16. Has the programme helped you to develop skills that can be applied to other family members? (7 = Yes definitely, 1 = No, definitely not)	4.77	1.49	4.77	1.50	4.76	1.49
17. In your opinion, how is your child's behaviour at this point? (7 = Greatly improved, 1 = Considerably worse)	5.03	1.35	5.01	1.39	5.06	1.30
18. How would you describe your feelings at this point about your child's progress? (7 = Very satisfied, 1 = Very dissatisfied)	5.04	1.51	4.94	1.56	5.19	1.43

Table 10 Paired-samples T-test comparing pre-intervention and follow up scores at 6 months for the whole sample

	Whole Sample				Paired-samples T-test comparing pre - intervention and follow up scores
	Pre		6 months		
	M	SD	M	SD	
ECBI Intensity (N = 108)	135.11	33.50	116.31	37.42	T=6.107, *df*=107, *p*<.001
ECBI Problem (N =108)	15.89	8.02	9.88	8.69	T=7.126, *df*=107, *p*<.001
Parenting Problem Checklist (N = 101)	5.70	4.21	3.95	3.72	T=4.571, *df*=100, *p*<.001
Parenting Scale (N = 104)	3.34	0.73	2.83	0.81	T=8.099, *df*=103, *p*<.001
Parent Anger Inventory Problem (N = 99)	22.35	9.10	18.17	12.72	T=3.769, *df*=98, *p*<.001
Parenting Tasks Checklist Total (N = 101)	70.50	15.80	84.02	13.16	T= -10.341,*df*=100, *p*<.001
Depression Anxiety Stress Scales Total (N = 96)	28.06	26.88	22.80	26.30	T = 2.352, *df* = 95,*p*<.05
Relationship Quality Total (N = 73)	5.01	2.02	4.85	2.18	T= .835, *df*= 72, *ns*
Daily Report Checklist (N = 81)	18.46	10.45	11.60	10.51	T=5.817, *df*=80, p<.001

Table 11 Intent to treat T-tests including participants who dropped out

Whole Sample

	Pre		Post		Paired samples t-test comparing pre- and post-intervention scores	Pre		6 months		Paired samples t-test comparing pre-intervention and 6 month follow-up scores
	M	SD	M	SD		M	SD	M	SD	
ECBI Intensity (N = 270)	142.16	40.19	133.93	42.99	T=5.225, *df*=269, *p*<.001	142.16	40.19	134.64	43.79	T=5.570, *df*=269, *p*<.001
ECBI Problem (N = 270)	17.64	8.67	15.13	9.51	T=7.191, *df*=269, *p*<.001	17.64	8.67	15.24	9.84	T=6.305, *df*=269, *p*<.001
Parenting Problem Checklist (N = 270)	5.99	4.22	5.24	4.14	T=4.855, *df*=269, *p*<.001	5.99	4.22	5.33	4.18	T=4.312, *df*=269, *p*<.001
Parenting Scale (N = 270)	3.48	.77	3.29	.85	T=6.952, *df*=269, *p*<.001	3.48	.77	3.28	.87	T=6.886, *df*=269, *p*<.001
Parent Anger Inventory Problem (N = 270)	23.46	9.80	21.17	10.48	T=5.974, *df*=269, *p*<.001	23.46	9.80	21.93	11.50	T=3.619, *df*=269, *p*<.001
Parenting Tasks Checklist Total (N = 269)	65.71	19.17	70.37	20.31	T= -6.959, *df*=268, *p*<.001	65.71	19.17	70.78	20.76	T= -8.032, *df*=268, *p*<.001
Depression Anxiety Stress Scales Total (N = 270)	32.79	29.44	30.71	29.43	T=2.610, *df*=269, *p*<.05	32.79	29.44	30.92	29.67	T = 2.317, *df* = 269,*p*<.05
Relationship Quality Total (N = 270)	4.80	2.07	4.78	2.11	T= .343, *df*=269, *n.s*	4.80	2.07	4.75	2.13	T= .733, *df*= 269, *ns*
Daily Report Checklist (N = 270)						21.15	12.23	19.08	13.08	T= 5.134, *df*= 269, *p*<.001

In intent to treat analyses, missing data for participants who do not continue the intervention replaced with that participant's pre-intervention score, as if they had stayed in the study but had not either improved or deteriorated. This is a very conservative test, and any significant change that is seen once this stringent test is applied indicates a very robust effect of intervention.

Table 12 shows that when the whole sample was included in t-test analysis comparing pre-intervention with post-intervention and 6 month follow up data (with missing data at these two time points replaced with pre-intervention scores), there were significant improvements on all measures, with the exception of the RQI.

Table 12 Effect Sizes for Pre-Post Intervention and Pre-6 month Follow-Up Outcomes

Measures	Whole Sample			
	Pre to Post		Pre to Follow Up	
	d	CI	*D*	CI
ECBI Intensity	.51	.25-.76	.53	.26-.80
ECBI Problem	.66	.40-.91	.72	.44-.99
Parent Problem Checklist	.49	.22-.76	.44	.16-.72
Parenting Scale	.61	.35-.87	.66	.38-.94
Parent Anger Inventory	.60	.32-.87	.38	.10-.66
Parenting Tasks Checklist	.67	.39-.94	.93	.64-1.22

This table clearly shows quite large effects were found. The only moderate effect sizes were in the PPC and ECBI Intensity, with small effect sizes being found for the DASS and the RQI. For some measures, namely the ECBI scores, Parenting Scale, and Parenting Tasks Checklist, the effect size increased as time went on, with the long term intervention results having larger effect sizes than the short term intervention results.

Table 13 Effect sizes for pre-post intervention and pre- to 6 month follow up outcomes, Standard and Enhanced

Measures	Standard				Enhanced			
	Pre to Post		Pre to Follow Up		Pre to Post		Pre to Follow up	
	d	CI	*d*	CI	*d*	CI	*d*	CI
ECBI Intensity	.36	.11-.61	.48	.20-.74	.70	.44-.96	.61	.33-.88
ECBI Problem	.57	.32-.83	.82	.54-1.10	.78	.52-1.04	.56	.29-.83
Parent Problem Checklist	.53	.26-.80	.49	.21-.77	.44	.17-.71	.36	.08-.63
Parenting Scale	.62	.35-.88	.67	.39-.95	.60	.34-86	.64	.35-.91
Parent Anger Inventory	.64	.36-.92	.50	.22-.79	.53	.25-.80	.20	.08-.48
Parenting Tasks Checklist	.62	.35-.89	.98	.68-1.27	.74	.46-1.01	.84	.55-1.13
Depression Anxiety Stress Scale	.21	-.47-.05	.31	.03-.60	.17	-.43-.09	.04	-.32-.25
Relationship Quality Index	.02	-.30-.25	.18	.09-.45	.03	-.30-.25	.15	-.12-.42
Daily Report Checklist			.67	.35-.99			.65	.34-.97

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Ref: DCSF-RW038

ISBN: 978 1 84775 202 4

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