

Parental Depression and Conduct Problems in Children: Evidence of Parental service use and costs after attending the Incredible Years Basic Parenting Programme

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ABSTRACT

Background: There is a co-morbid link between parental depression and parenting a child with conduct disorder. The Incredible Years parenting programmes reduce depression in parents of children with, or at risk of, conduct disorder. Recent trials of the effectiveness and cost-effectiveness of Incredible Years parent programmes have focussed on the frequency and costs of service use by children. Commissioners of services need to know the impact of such public health interventions on parental service use.

Objective: To compare the relationship between parental depression, and health and social service use in these high-risk families.

Method: Secondary analysis of the first UK community-based randomised controlled trial of the 12-week Incredible Years Programme with high-risk families (N=153). Beck Depression Inventory (BDI) II scores were compared to frequencies and costs of parents' service use, at baseline, and 6, 12 and 18 months post-baseline, from a public sector, multi-agency (health and social care) perspective. Further analysis assessed differentiation of depression and service use.

Results: A comparison of BDI II scores and service use 0-6 months between intervention and control found a significant reduction in BDI II total scores.

A significant decrease was found in both BDI II scores and service use for the intervention group at baseline, and 6 months, but not at 12 and 18 months.

BDI II scores predicted service use at baseline and 6 months for the intervention group. Parents in both the intervention and control groups who scored above the clinical cut-off on the BDI II used more services than those who scored below at baseline, 6 and 18 months.

Conclusion: Decreasing depression was accompanied by decreased service use for the intervention group. Parents in high-risk families reporting higher levels of depression also reported more frequent service use than those who scored below the clinical cut off of 19 on the BDI II.

INTRODUCTION

Conduct disorder is defined by a persistent pattern of aggressive and destructive behaviours (DSM-IV-TR; American Psychiatric Association, 2000). It is the most common psychiatric disorder in children, (Metzler et al., 2000) and the most common reason for children and adolescents to be referred to mental health services (Audit Commission, 1999). Unipolar depression in adults is characterised by; enduring depressed mood, a loss of interest in activities previously enjoyed by the individual, disrupted sleep and/or appetite, feelings of guilt and/or low self-worth, and poor concentration (WHO, 2009). Unipolar depression is

expected to become the second most significant cause of global disease burden to services in 2012 increasing from fourth place in 1990 (WHO, 2000).

There is evidence of co-morbidity between depression in parents and conduct disorder in children. Lahey et al. (1988) found mothers of children with conduct disorder exhibited more symptoms of depression than mothers of children without conduct disorder. Alpern & Lyons-Ruth (1993) found 50% of mothers whose children were referred for treatment for behavioural difficulties demonstrated clinical levels of depression measured by the Centre for Epidemiologic Studies Depression Scale (CES-D, Radloff, 1977). Hutchings et al. (2002) also found 50% of mothers whose children demonstrated problematic behaviour as measured by the Eyberg Child Behaviour Inventory (ECBI) (Eyberg 1980) were above the clinical cut-off for depression as measured by the Beck Depression Inventory (BDI) (Beck et al., 1961). There is further evidence to support a link between socio-economic status, depression, and conduct problems. Parents in socially-disadvantaged areas have higher prevalence of parental depression (Farrington 1995). Boyce et al. (1998) in a sample of 193 socially disadvantaged women with children found the 6 month prevalence of major depression was 17% and the lifetime prevalence of major depression was 29%. Attride-Stirling et al. (2000) found 20% of children in socially disadvantaged areas are diagnosed with conduct disorder compared to 6.9% of boys and 2.8% of girls aged five to ten years old in the U.K (NICE, 2006).

Parenting interventions are one of the most effective methods for improving negative or challenging child behaviour (NICE, 2006). These interventions are typically delivered in a group format, 1-session/week for approximately 4-18 weeks, delivered by trained leaders of a particular intervention and focus upon improving parenting skills to manage child behaviour (Hutchings & Lane 2005). Successful, or effective, parenting interventions tend to be multi-faceted containing effective factors such as group discussion, role-play, video-modelling, and homework tasks and have shown psychologically beneficial outcomes for parents (such as reductions in depression and stress levels) (Mihalic et al., 2002), in addition to positive behavioural changes in children (Webster-Stratton & Hancock, 1998; Hutchings et al., 2007).

The studies below outline findings on parental depression from parenting programmes under three categories 1, parents attended a parent programme for their child's behaviour & their depression improved (along with child's behaviour). 2, parents attended a programme aimed at reducing depression as well as improving child behaviour. 3, mediator/moderator analyses conducted to demonstrate the effects of depression on child behaviour outcomes.

Parents attending a parent programme for child behaviour with additional benefits to parental depression

Barlow et al. (2009) conducted a Cochrane review to assess whether group based parenting programmes aimed at children with ages ranging from 3 months to 21 years are effective in improving maternal psychosocial health including anxiety, depression and self-esteem. Meta-analysis conducted on the 26 eligible studies explored depression, anxiety, stress, self-esteem, guilt, social support amongst other factors of psychosocial functioning. Barlow et al. (2009) concluded that in the short-term parenting programmes are effective in improving parental psychosocial outcomes. Sheeber & Johnson (1994) studied the impact of the 7-session Parent and Child Series (PACS) Programme on depression for parents with children aged between 3-5 years old classed as having “difficult temperaments”. They found a significant reduction in the levels of depression measured by the depression subscale of the Parenting Stress Index (PSI) (Abidin, 1995). Scott & Stradling (1987) demonstrated significant improvements in depression levels as measured by the Irritability, Depression, and Anxiety Scale (IDA) (Snaith et al., 1978) for mothers reporting child behaviour problems after a 7-session behavioural parent intervention aimed at 2-14 years olds. Taylor et al. (1998) found significant improvements in depression as measured by the BDI (Beck et al., 1961) when using a video-tape modelling based intervention aimed at parents of children aged between 3-8 years diagnosed with conduct disorder. More recently, DeGarmo et al. (2004) in a study of single and separated mothers and their sons’ aged between 6-10 years found that changes in parenting behaviour led to reductions in their sons’ behaviour problems. Reductions in the son’s behaviour problems in turn led to reductions in mother’s depressive symptoms over 2.5 years. Hutchings et al. (2004), Hutchings et al. (2007), Bywater et al. (2009) and Gardner et al. (2010) have all noted reductions in parental depression after participation in Incredible Years (IY) parenting programmes. This could be attributed to an increased sense of self-efficacy that results from improved parenting skills, improved parent/child relationships, and reductions in negative child behaviour, due to more confidence, and newly acquired skills to deal with challenging behaviour after participating in a parenting programme. This suggests a possible reduction in service use particularly health and social services for the treatment of depression. The above studies which show effects on depression in parents did not particularly target parents with depression. Instead these parents were targeted because their children had behavioural problems and they lived in disadvantaged areas; therefore, these parents may have additional stressors due to their child’s difficult behaviour and their environment.

Parents attending a parent programme aimed at reducing depression as well as improving child behaviour

Sanders & McFarland (2000) combined an intervention to teach parenting skills and treat parental depression simultaneously. They randomised a small number of families with depressed mothers of children aged between 3-9 years old with behavioural problems to either a behavioural family intervention or a family intervention which integrated Cognitive Behavioural Therapy (CBT) strategies to treat depression. Both interventions reduced depression in the mothers and also reduced behaviour problems in the children when assessed immediately post-intervention. Six months post intervention a larger number of families who received the CBT integrated intervention maintained the reductions in depression and child behaviour problems compared to the families who received the intervention without a CBT element. Bywater et al. (2009) showed maintained reduced depression levels in parents of children with conduct problems 18 months post baseline following attendance on the IY Basic Parenting Programme.

Mediator/moderator analyses conducted to demonstrate the effects of depression on child behaviour outcomes

Gardner et al. (2010) investigated the effects of depression on behaviour outcomes using mediator/moderator analysis on a sample from a previous study by Hutchings et al. (2007). Gardner et al. (2010) found maternal depression to be a significant moderator children whose mothers were depressed showed a greater improvement in conduct problems after participation in the IY Basic Parenting Programme when compared with children in the control whose mothers were also depressed. Building upon the previous work conducted by Gardner et al. (2010) Hutchings et al. (in press) conducted mediator analysis assessing if changes in parental depression measured by the BDI II (Beck et al. 1966) led to changes in child behaviour and parent behaviour. Hutchings et al. (in press) found parental depression partially mediated improvements in both child and parent behaviour. The authors suggest that in order for an intervention to be effective at reducing conduct problems in children, parenting programmes need to include elements that improve parental mental health such as setting realistic goals and rehearsing problem solving (Hutchings et al. in press)

Costs of child conduct disorder and behavioural problems

Previous research has explored the impact of child conduct disorder and behavioural problems on costs and frequency of health, social and education service use. Knapp et al.

(1999) found the costs for publicly resourced services to treat a child with conduct disorder was £2457 (per child, per year in 1999) for the National Health Service (NHS), which equates to £3499.21 for cost year 2008/09. Romeo et al. (2006) used a sample of 80 participants from a previous study (Scott et al. 2001) evaluating parenting groups for childhood antisocial behaviour and found the mean cost of NHS, voluntary services, and education services was £1,277 per child per annum (£1373.11 in 2008/09). Romeo et al. (2006) also found high frequencies of contact with health and education services. Seventy one percent of children in the sample were taken to their GP for consultations relating to their behaviour. Forty percent were admitted to hospital as their reckless behaviour directly or indirectly led to accidents such as head injuries, scalds, and burns. Sixty six point seven percent of parents made additional use of nursery services because of their child's difficult behaviour and thirty three point three percent of children had been assessed by an educational psychologist.

There is evidence to support that overall parent programmes are cost-effective at preventing and managing conduct disorder, although there is a lack of research into this field (Charles et al. 2011). There is some research conducted into the service use of children displaying problem behaviour, (Edwards et al. 2007); however, little investigation has been conducted to assess parents' service use. A co-morbid link between conduct disordered children and depression in parents has been shown in previous research (Lahey et al. 1988; Alpern & Lyons-Ruth 1993). The costs of treating/alleviating depression in the NHS are high. Brown (2001) suggests that by 2020 depressive disorders are expected to be the second highest cause of disease burden world wide. Department of Health 2008/09 figures for the UK show the total investment in adult mental health services has increased from £5,530 billion a year in 2007/08 to £5,892 billion a year in 2008/09. Thomas & Morris (2003) calculated the total costs of depression in adults over 15 years old in England during 2000 using recorded data on health service use by patients with depression and calculating the cost of treatment. They estimated there were 2.6 million cases of depression in adults in England in 2000. In seven two percent of cases the patient was female, and twenty percent of cases occurred in patients aged between 35-44 years of age. The total costs of depression were estimated to be over £9 billion. They estimated the direct costs of treating depression which were predominately borne by the National Health Service was estimated to be around £370 million, this cost included in-patient day and out-patient care, GP consultations and medication. Thomas & Morris (2003) also found claims for incapacity benefit for people in England with depression indicated 109.7 million working days were lost due to depression,

with a total loss of earnings estimated at a cost over £8 billion. In 2000 deaths relating to depression such as suicide and accidental poisoning with drugs, alcohol, medication or biocides was estimated at 2615 cases; the loss of future earnings arising from premature death in the cases above was estimated at £562 million (Thomas & Morris, 2003). Previous research has also found individuals with high levels of depression use greater amounts of services than those with lower levels of depression (Herrman et al. 2002; Johnson et al. 1992).

The aim of this study is to explore whether there is an association between parental depression and frequency of parents' health and social service use in a community sample of parents of children aged 3-4 years, (at baseline) with conduct problems who were at risk of developing CD participating in a 12-week IY parenting programme. The study aims to answer the following research questions;

1. does depression for those who score above the clinical cut off on the Beck Depression Inventory II (BDI II, Beck et al. 1966) change over time?
2. does service use change over time?
3. do parents who score above the clinical cut off on the Beck Depression Inventory II (BDI II, Beck et al. 1966) use more or less services measured by the Client Service Receipt Inventory (CRSI, Beecham & Knapp, 1992) compared to those who scored below?
4. what costs are associated with parental service use before and after participation in a parenting programme and do costs differ for parents who score above the clinical cut off on the Beck Depression Inventory II (BDI II, Beck et al. 1966) compared to those who score below?
5. can depression scores predict frequencies of total health and social service use measured by the CRSI, (Beecham & Knapp, 1992)?

METHOD

Sample

The clinical sample consisted of 153 parents and their children aged 3-4 years old (at baseline) living in 11 disadvantaged Sure Start Areas in North and Mid Wales (see Hutchings et al. 2007 for more information). This was a targeted sample; parents were eligible to take part in the research if their child scored above the clinical cut off on either the ECBI (Eyberg, 1980) Problem Scale or Intensity Scale (11 or 127 respectively). The sample was considered to have conduct problems with a risk of developing CD in later life. Parents were randomly

assigned on a 2:1 ratio by the registered North Wales Organisation for Randomised Trials in Health (NORTH) to an intervention or a six-month waiting list control group. Full sample results are available in three papers; the first outlines the clinical results for the whole sample baseline to 6 months post-baseline (Hutchings et al. 2007), the second outlines the cost-effectiveness results for the whole sample baseline to 6 months post-baseline (Edwards et al. 2007), and the third outlines the clinical results and costs of services for children for the intervention group (n=104) baseline to 18 months post-baseline (Bywater et al. 2009). This paper builds upon the long-term analysis set out in Bywater et al's (2009) study, which explored child service; the current paper focuses upon parent's service use, which has been previously unexplored. Service use and depression data was available for 119 (Intervention N=75, Control N=44) participants at baseline, 119 (Intervention N=75, Control N=44) participants at 6 months post-baseline, 75 participants (Intervention N=75, Control N=0) at 12 months post-baseline, and 56 participants (Intervention N=56, Control N=0) at 18 months post-baseline.

Intervention

The Incredible Years Basic Parenting Programme was developed by Webster-Stratton (1984). It is a 12-week group based programme (recently revised to a 12-18 week programme in 2008) designed to equip parents (max 12-14/group) with the skills to manage challenging child behaviour through role-play, group discussion, video-modelling, and homework tasks undertaken with supervision from a trained group leader. The size of the intervention groups varied from 5 to 12 parents across areas, with an average of seven parents attending 2 hour weekly sessions of the IY Basic Parenting Programme (Hutchings et al. 2007).

Leaders

The sessions were facilitated by two group leaders who had attended the 3 day training course. The group leaders were from varied backgrounds including social workers, health visitors, support workers, and psychologists. All group leaders received Incredible Years accreditation shortly after the trial.

Fidelity

Implementation fidelity refers to the level to which an intervention is delivered as intended (Mihalic, 2004). Arthur & Blitz (2000) argue programmes must be implemented with fidelity to preserve any behaviour change resulting from an intervention. In accordance

with the IY creator's policy on fidelity, the group leaders delivering the programme received weekly supervision sessions throughout the running of the programme by an IY accredited trainer for 3 hours each week.

Measures

The standardised and validated measures of interest here form a sub sample of measures administered in the Hutchings et al. (2007), Bywater et al. (2009), and Edwards et al. (2007) trials. They are self-report measures, namely, the Beck Depression Inventory II, Beck et al. 1966), and the Client Receipt Service Inventory (Beecham & Knapp, 1992).

The BDI II (Beck et al. 1966) assesses parental depression. It yields sub-scales of depression from the total score of all 21 items; the minimal depression range is 0-13, mild depression 14-19, moderate depression 20-28, and severe depression 29-63. The clinical cut off point for the BDI II is a score of 19 and over.

A modified version of the CSRI (Beecham & Knapp, 1992) was administered to assess parent's and children's number of contacts with healthcare, social care and education professionals in the 6 months prior to completion.

In addition to the standardised measures a Demographic Questionnaire (based on the Personal Development and Health Questionnaire (PDHQ, Hutchings, 1996) was used to attain basic socio-demographic and general health data on family members.

The three questionnaires were administered within a larger battery of measures at four time points; baseline, 6, 12, and 18 months post-baseline. The main demographics questionnaire (PDHQ, Hutchings, 1996) was only administered at baseline with a follow-up questionnaire administered at follow-up. Data was collected at baseline and 6, 12, and 18 months post-baseline.

Procedure

The intervention group parents attended the 12-week IY Basic Parenting Programme between baseline and the 6 month follow-up. The waiting-list control group parents were offered the intervention after the 6 month follow-up. The researchers conducted home visits to complete the demographic questionnaire and administer the questionnaires to the participants at baseline and the 6, 12, and 18 months post-baseline. The researchers were blind to allocation (Hutchings et al. 2007). Participants were block-randomised by area at a 2:1 ratio (intervention to waiting-list control). Participants were stratified by gender, and age of index child.

Analysis Strategy

Analysis was performed for participants for whom complete data-sets of both the clinical and economic measures of interest were available across all time points (baseline N=119, 6 months post-baseline N=119, 12 months post-baseline N=75, and 18 months post-baseline N=56). Participants were also included irrespective of uptake of the intervention providing the above criteria were met. No differences were found of demographics, BDI II total scores (Beck et al. 1966), and total frequency of service use between the intervention and control group at baseline (N=119) using independent samples t-tests prior to conducting analyses. Normality tests revealed non-significant results using a Kolmogorov-Smirnov statistic for BDI II (Beck et al. 1966) scores at baseline, and inspection of histograms and Q-Q plots supported these results. Significant results were found using a Kolmogorov-Smirnov statistic for total frequency of service use at all four time-points, and BDI II (Beck et al. 1966) scores at 6, 12 and 18 months post-baseline and inspection of histograms and Q-Q plots supported these results; therefore, non-parametric tests have been used through the analysis; except in the case of the regression analysis, where a logarithmic transformation was performed on the data in order to conduct the regression analysis.

Non-parametric tests, K related samples; Friedman tests command in SPSS version 16 for Windows was used to assess changes in depression scores within-participants over time. Total BDI II (Beck et al. 1966) scores at baseline, 12, and 18 months post-baseline were compared with total scores at 6 months post-baseline. Effect sizes were calculated for the intervention group only for total (n=75), above clinical cut-off (n=29) and below clinical-cut-off (n=46) as measured by the BDI II (Beck et al. 1966) from baseline to 12 months post-baseline.

Non-parametric, Friedman tests were used to assess changes in frequency of service use within-participants over time. Total frequency of service use measured by CSRI (Beecham & Knapp, 1992) at baseline, 12, and 18 months post-baseline were compared with total scores at 6 months post-baseline. Service use costs were calculated from a multi-agency public sector perspective using national costs for all time-points (Curtis 2009; Department of Health 2008/2009). Costs at 18 months post-baseline were discounted at 3.5% in accordance with NICE guidelines (NICE, 2008). Mann-Whitney U tests were used to explore if an above or below clinical cut off score on the BDI II (Beck et al. 1966) effected the frequency of total service use for the intervention group from baseline to 18 months post-baseline. Follow up pair wise comparisons were conducted using Wilcoxon Signed Rank tests, using Bonferonni adjusted alpha to control for Type 1 errors.

Logarithmic transformation was performed on the total frequency of service use data to normalise the residuals (Field, 2009) in order to perform a simple regression. A standard simple regression was used to assess if BDI II total scores (Beck et al. 1966) can predict total frequencies of health and social service use gathered by the CSRI (Beecham & Knapp, 1992) for the intervention group from baseline to 18 months post-baseline.

RESULTS

Of the 153 parents in the original study sample for this secondary analysis both clinical and economic data was available for 119 participants (intervention N=75, control N=44) at baseline, 119 participants (intervention N=75, control N=44) at 6 months post-baseline, 75 participants (intervention only) at 12 months post-baseline, and 56 participants (intervention only) at 18 months post-baseline. Table 1 below describes the characteristics of the participants in the secondary analysis sample.

Table 1. Participating family characteristics at baseline, 6, 12, and 18 months post-baseline for the secondary analysis sample.

	<u>Baseline</u> (N=119)		<u>6 months post-</u> <u>baseline</u> (N=119)		<u>12 months post-</u> <u>baseline</u> (N=75)		<u>18 months post-</u> <u>baseline</u> (N=56)		<u>Lost between 12</u> <u>and 18 months</u> <u>post-baseline</u> (N=19)	
	<u>Intervention</u> (n=75)	<u>Control</u> (n=44)	<u>Intervention</u> (n=75)	<u>Control</u> (n=44)	<u>Intervention</u> (n=75)	<u>Intervention</u> (n=56)	<u>Intervention</u> (n=19)			
Parent sex: Males	1 (1.3%)	1 (2.3%)	1 (1.3%)	1 (2.3%)	1 (1.3%)	0 (0%)	1 (5.3%)			
Females	74 (98.7%)	43 (97.7%)	74 (98.7%)	43 (97.7%)	74 (98.7%)	56 (100%)	18 (94.7)			
Child sex: Males	42 (56%)	30 (68.2%)	42 (56%)	30 (68.2%)	42 (56%)	31 (55.4%)	11 (57.9%)			
Females	33 (44%)	14 (31.8%)	33 (44%)	14 (31.8%)	33 (44%)	25 (44.6)	8 (42.1%)			
No of single mothers living alone	29 (38.7%)	14 (31.8%)	29 (38.7%)	14 (31.8%)	29 (38.7%)	23 (41.1%)				
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Parents age (years)	29.4	(7.05)	28.0	(5.07)	29.4	(7.05)	29.2	(6.81)	30.1	(7.89)
Age of child (months)	46.2	(6.58)	46.2	(6.35)	46.2	(6.58)	46.09	(6.77)	46.4	(6.16)

Depression over time

As expected this smaller sample reflected the main sample findings (Bywater et al. 2009) (see Table 2). The results of the Friedman test indicated there was a statistically significant difference in BDI II total score across the four time-points, baseline (Median = 15) 6 months post-baseline (Median = 8), 12 months post-baseline (Median = 8), 18 months post-baseline (Median = 9.5), $\chi^2(3, N=56) = 25.72, p < .05$, and the Kendall's coefficient of concordance of .16 indicated fairly strong differences among the four time-points. Follow-up pair wise comparisons

were conducted using Wilcoxon Signed Rank tests and controlling for the Type 1 errors across these comparisons at the 0.01 level (.05/8) using a Bonferonni adjusted alpha value revealed a statistically significant reduction in BDI II total score between baseline and 6 months post-baseline, $z = -4.778, p < 0.01$ with a medium effect size ($r = .32$). A statistically significant reduction in BDI II total score was found between baseline and 12 months post-baseline, $z = -5.042, p < 0.01$ with a medium effect size ($r = .34$). A statistically significant reduction in BDI II total score was also found between baseline and 18 months post-baseline, $z = -3.563, p < 0.01$ with a medium effect size ($r = .23$).

Indices of change

Table 3 shows the indices of change for total BDI II scores for the intervention group (whole sample $n=75$), parents who scored above the clinical cut-off on the BDI II (Beck et al. 1966), and parents who scored below the clinical cut-off (19) on the BDI II (Beck et al. 1966). Using the value of 0.3 of one standard deviation as a minimum index of significant change (Cohen, 1988); 58.7% of the intervention group, 69% of parents who scored above the clinical cut of the BDI II (Beck et al. 1966), and 52.2% of parents who scored below the clinical cut of the BDI II (Beck et al. 1966) made this moderate change of 0.3. A value of 0.8 of one standard deviation indicates a large change (Cohen, 1988); 64% of the intervention group, 55.2% of parents who scored above the clinical cut-off on the BDI II (Beck et al. 1966), and 23.9% of parents who scored below the clinical cut-off on the BDI II (Beck et al. 1966) made this large change. Using an even stricter criterion of a value of 1.5 of one standard deviation as an index of a very large change (Cohen, 1988); 12% of the intervention group, and 31% of parents who scored above the clinical cut-off the BDI II (Beck et al. 1966) made this very large change.

Table 2. Parent BDI II (Beck et al. 1966) total scores (Mean, s.d.) for all families allocated to the intervention group for the secondary analysis

Parent outcome measure	Baseline (n=75)	Intervention, mean (s.d)		
		6 months post-baseline (n=75)	12 months post-baseline (n=75)	18 months post-baseline (n=56)
BDI II total score	16.80 (10.55)	10.68 (9.98)	10.83 (9.61)	12.36 (10.80)

Table 3. Parents in the intervention group (whole sample, parents who scored above clinical cut-off on BDI II, and parents who scored below clinical cut-off on BDI II) who underwent changes in BDI II mean score (Beck et al. 1966) from baseline to 12 months post-baseline.

Measure, size of change ^a	Proportion (%) of parents from intervention group					
	in whole sample (n=75)		sample above clinical cut-off of 19 on BDI II at baseline (n=29)		sample below clinical cut-off of 19 on BDI II at baseline (n= 46)	
	n	%	n	%	n	%
BDI II						
≥ 0.3 s.d.	44	58.7	20	69	24	52.2
≥ 0.8 s.d.	27	36	16	55.2	11	23.9
≥ 1.5 s.d.	9	12	9	31	0	0

a. ≥ 0.3 s.d. denotes a modest improvement, ≥ 0.8 s.d. denotes a large improvement, and ≥ 1.5 s.d. denotes a very large improvement

Parent health and social service use

The results of the Friedman test indicated there was no statistically significant difference in total frequency of service use across the four time-points, baseline (Median = 3) 6 months post-baseline (Median = 2), 12 months post-baseline (Median = 2), 18 months post-baseline (Median = 3), $\chi^2(3, N=56) = 4.50, p > .05$. Table 4 shows the total mean frequencies and associated costs of parent's service use over time. Service use is categorised as primary healthcare services (GP, nurse and health visitor), social services (social worker, community psychiatric nurse, counsellor) and hospital services (outpatient, inpatient and accident and emergency). Mean total frequencies and costs of service use

decreased from baseline at 6 months post-baseline for both the intervention and control group. At 12 and 18 months post-baseline mean total frequencies and costs of service use increased for the intervention group.

Table 4. Frequencies and costs of health, social and hospital services used by parents in the whole sample, intervention and control groups (n=119).*

Type of service	<u>Baseline</u> (N=119)		<u>6 months post-baseline</u> (N=119)				<u>12 months post-baseline</u> (N=75)		<u>18 months post-baseline†</u> (N=56)			
	<u>Intervention</u> (n=75)		<u>Control</u> (n=44)		<u>Intervention</u> (n=75)		<u>Control</u> (n=44)		<u>Intervention</u> (n=75)		<u>Intervention</u> (n=56)	
	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)	<u>Mean</u> Frequency	<u>Mean</u> Cost (£)
Primary healthcare services	3.7	118	4.0	126	3.4	106	3.1	101	3.1	95	4.9	132
Social services	1.4	46	1.3	46	0.6	20	0.3	12	0.7	24	1.2	40
Hospital Services	0.3	35	0.1	13	0.8	73	0.3	25	1.1	108	0.6	55
Total	5.4	199	5.4	185	4.8	199	3.7	138	4.9	227	6.7	227

* Costs were calculated from published national reference costs (Curtis 2009; Department of Health 2008/2009). Costs were rounded up to the nearest pound, £.

† Costs at 18 months post-baseline were discounted at 3.5%

Effects of clinical levels of depression and service use

Tables 5a and 5b shows the mean frequencies and costs of service use for the sample depending upon whether parents scored above or below the clinical cut-off of 19 on the BDI II (Beck et al. 1966). A Mann-Whitney U test revealed a statistically significant difference at baseline in the total frequencies of services use of parents in the intervention group who scored below the BDI II clinical cut-off (Median = 2.00, n=46) and parents who scored above the BDI II clinical cut-off (Median = 7.00, n= 29), $U = 351$, $z = -3.47$, $p < .05$, $r = .04$. A statistically significant

difference was found at 6 months post-baseline in the total frequencies of services use of parents in the intervention group who scored below the BDI II clinical cut-off (Median = 2.00, n=62) and parents who scored above the BDI II clinical cut-off (Median = 3.00, n= 13), $U = 250$, $z = -2.17$, $p < .05$, $r = 0.3$. No statistically significant differences were found at 12 and 18 months post-baseline.

Table 5a. Parent total frequencies of service use for all families in the intervention split by whether parent's total BDI II (Beck et al. 1966) score was above or below the clinical cut-off.*

<u>CSRI total service use</u>	<u>Baseline (n=75)</u>				<u>6 months post-baseline (n=75)</u>				<u>12 months post baseline (n=75)</u>				<u>18 months post-baseline† (n=56)</u>			
	<u>Below cut-off (n=46)</u>		<u>Above cut-off (n=29)</u>		<u>Below cut-off (n=62)</u>		<u>Above cut-off (n=13)</u>		<u>Below cut-off (n=59)</u>		<u>Above cut-off (n=16)</u>		<u>Below cut-off (n=42)</u>		<u>Above cut-off (n=14)</u>	
	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>
Intervention (n=75)	3.0	115	15.8	355	3.1	117	13.7	619	5.1	183	1.7	56	5.6	248	11.8	420

* Costs were calculated from published national reference costs (Curtis 2009; Department of Health 2008/2009). Costs were rounded up to the nearest pound, £.

† Costs at 18 months post-baseline were discounted at 3.5%

Table 5b. Parent total frequencies of service use for all families in the control split by whether parent's total BDI II (Beck et al, 1966) score was above or below the clinical cut-off.*

<u>CSRI total service use</u>	<u>Baseline (n=44)</u>				<u>6 months post-baseline (n=44)</u>			
	<u>Below cut-off (n=29)</u>		<u>Above cut-off (n=15)</u>		<u>Below cut-off (n=35)</u>		<u>Above cut-off (n=9)</u>	
	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>	<u>Mean Freq</u>	<u>Mean Cost (£)</u>
Control (n=44)	3.7	126	10.6	264	3.6	125	3.7	165

* Costs were calculated from published national reference costs (Curtis 2009; Department of Health 2008/2009). Costs were rounded up to the nearest pound, £.

Regression analyses

A standard simple regression analysis was used to test if BDI II (Beck et al. 1966) total scores can significantly predict service use for the intervention group (n=75) from baseline to 18 months post-baseline. The results of the regression indicated BDI II scores predicted 21.5%

of the variance in frequency of total service use ($R^2 = F = 1, 61 = 16.67$, $p < .05$ at baseline. At 6 months post-baseline the results of the regression indicated BDI II scores predicted 22.2% of the variance in frequency of total service use ($R^2 = F = 1, 54 = 15.43$, $p < .05$. At 18 months post-baseline the results of the regression indicated BDI II scores predicted 11.9% of the variance in frequency of total service use ($R^2 = F = 1, 53 = 7.157$, $p < .05$. No significant result was found at 12 months post-baseline.

DISCUSSION

Responses to the questions posed by the researchers to answer in this study are discussed under the following sub-headings below; changes in depression and service use over time, BDI II and service use, limitations and future research and conclusion.

Changes in depression and service use over time

Depression results reflect those found in previous studies (Hutchings et al. 2007; Bywater et al. 2009; Gardner et al. 2010), a reduction in parental (self-report) depression levels was found after participation in the IY Basic parenting programme. Depression scores decreased at 6, 12 and 18 months post-baseline compared with baseline, and mean depression scores reduced below the clinical cut-off of 19 on the BDI II (Beck et al. 1966). Over half the sample in the intervention group made modest and large improvements in depression scores, the improvements were greater for those in the intervention who scored above the clinical cut-off on the BDI II (Beck et al. 1966) reflecting similar results found in Bywater et al. (2009). Change in depression levels could be attributed to an increased sense of self-efficacy, from improved parent/child relationships, and reductions in negative child behaviour which have all shown post-intervention improvements in previous RCTs of the IY parenting series (Webster-Stratton & Hancock, 1998; Hutchings et al. 2002, 2004, 2007).

There is little research on the frequencies and costs of parents service use in contrast to the research conducted upon children's costs and frequencies of service use (Knapp et al. 1999; Scott et al. 2001; Romeo et al. 2006). This research is the first to explore the impact a parent programme can have on the health and social service use of parents. Results demonstrate that post-intervention total mean frequencies and costs of service use for the intervention group decreased compared with baseline; however, this decrease was not maintained at 18 months post-baseline. The increase at 18 months post-baseline could be attributed to a change in circumstances, for example five participants reported pregnancy as their principal reason for contact with health services during this time-point. This would have

led to an increase in service use which may be independent from the intervention in question. The reduction in service use at 6 and 12 months post-baseline compared with baseline may be because of fewer child behaviour problems leading to improvements in parents, which in turn lead to less reliance upon health and social services.

Generally the sample in question would be considered high service users. Parents accessed a high number of services, with primary health services gaining the highest frequencies and costs. Further inspection of the data post-analysis showed GP consultations gained the highest frequencies and costs within the above category. Statistics from the Office for National Statistics (2009) states the average number of GP consultations for one adult living in England per year is 3. The participants in the sample reported above the yearly average of GP visits for England within 6 month periods. If mean frequencies were added together to give a picture of GP consultations over a year, the sample used double the reported England average.

BDI II and service use

Parental depression affects the frequency and cost of health and social service use. Parents who scored above the clinical cut-off on the BDI II (Beck et al. 1966) had higher mean frequencies and costs of service use than those who scored below at baseline, 6 and 18 months post-baseline for both the intervention and control group, supporting previous evidence stating high levels of depression lead to high service use (Herrman et al. 2002; Johnson et al. 1992). At 12 months post-baseline parents who scored below the clinical cut-off had higher mean frequencies and costs of service use than those who scored above. This may be attributed to the fact that participants who reported pregnancies at this time-point also scored below the clinical cut-off on the BDI II (Beck et al. 1966). Regression analyses performed on the data revealed a significant effect between BDI II (Beck et al. 1966) scores and service use at baseline and at 6 months post-baseline. No significant effect was found between BDI II scores and service use at 12 months post-baseline. The limited amount of variance attributed to depression over the four time-points may be due to the fact that the IY programme is a complex intervention comprising of a multitude of factors; there may be many causal relationships between the factors, resulting in a limited amount of variance.

Limitations and future research

The limitations of the study are as follows, no data was gathered for the control group at both 12 and 18 months post-baseline; therefore, contrast and comparisons cannot be made

between the intervention and control groups at these time points. However it would be unethical to deny families in need access to the intervention. This study adds to a growing evidence base of effective interventions for families who are at higher risks of child conduct disorder and depression; however, there is a lack of research conducted long-term which needs to be addressed in order to build effective interventions that continue to prove beneficial to families as the child grows.

Conclusion

Parents are benefactors of parenting programmes too; however, children have been the primary focus in previous studies. Findings from this study show that increased levels of depression lead to increased levels of service use at baseline, 6 and 18 months post-baseline and the IY programme reduced depression and service use at baseline, and 6 months post-baseline. Previous evaluations of the IY series have shown the programme to reduce parental depression, and be effective and cost-effective in improving child behaviour (Hutchings et al. 2002, 2007; Edwards et al. 2007; Bywater et al. 2009). This research adds further evidence to the link between parental depression, conduct problems and conduct disorder. It also highlights the need for further exploration of parent's service use and research into its cost implications for publicly resourced health and social care services, as this study has shown parenting programmes have more benefits than simply for child behaviour i.e. reductions in parental depression and service use.

REFERENCES

- Abidin, R. R. (1995). *Parenting Stress Index* (3rd ed.) Odessa, Florida: Psychological Assessment Resources.
- Alpern, L., & Lyons-Ruth, K. (1993) Preschool children at social risk: Chronicity and timing of maternal depressive symptoms and child behaviour problems at school and at home. *Development and Psychopathology*, 5, 371-387.
- American Psychiatric Association (2000) *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IVTR)*. American Psychiatric Association, Washington, DC, USA.
- Attride-Stirling, J., Davis, H., Day, C., & Selare, I. (2000) Someone to talk to who'll listen: Addressing the psychosocial needs of children and families. *Journal of Community Applied Social Psychology*, 11, 179-91.
- Arthur, M.W. & Blitz, C. (2000) Bridging the gap between science and practice in drug abuse prevention through needs assessment and strategic community planning. *Journal of Community Psychology*, 28, 241-255.

Audit Commission. (1999) *Children in mind*. London: Audit Commission.

Barlow, J., Coren, E., & Stewart-Brown, S. (2009) Parent-training programmes for improving maternal psychosocial health (Cochrane Review). In: *The Cochrane Database for Systematic Reviews*. Chichester, UK: John Wiley & Sons, Ltd.

Beecham, J., & Knapp, M. (1992) *Costing psychiatric interventions*. In: Thomicroft G, Brewin C, Wing, J. (eds.) *Measuring mental health needs*. Oxford: Oxford University Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An Inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.

Beck, A.T, Steer, R.A & Brown, G.K (1996) "Manual for the Beck Depression Inventory-II". San Antonio, Texas: Psychological Corporation.

Boyce, P., Harris. M., Silove, D., Morgan, A., Wilhelm, K., & Hadzi-Pavlovic, D., (1998). Psychological factors associated with depression, a study of socially disadvantaged women with young children. *Journal of Nervous and Mental Disease*, 186, 3-11.

Brown, P. (2001). Effective treatments for mental illness are not being used, WHO says. *British Medical Journal*, 323, 769.

Bywater, T., Hutchings, J., Daley, D., Whitaker, C., Yeo, S. T., Jones, K., Eames, C. and Tudor Edwards, R. (2009) Long-term effectiveness of a parenting intervention in Sure Start services in Wales for children at risk of developing conduct disorder. *British Journal of Psychiatry*, 195, 318–324.

Bywater, T., Hutchings, J., Linck, P., Whitaker, C.J., Daley, D., Yeo, S.T., & Edwards, R. T. (2010) Incredible Years Parent Training Support for Foster Carers in Wales: A Multi-Centre Feasibility Study. *Child Care and Health Development*. Published online
DOI: 10.1111/j.1365-2214.2010.01155.x

Charles, J.M., Bywater, T., & Edwards, R.T. (2011) Parenting interventions: a systematic review of the economic evidence. *Child, Care, Health, and Development*
DOI: 10.1111/j.1365-2214.2011.01217.x

Cohen, J. (1988) *Statistical Power for the Behavioural Sciences*, Erlbaum.

Curtis, L (2009) *Unit Costs of Health and Social Care*. Canterbury: Personal Social Services Research Unit, University of Kent.

DeGarmo, D.S., Patterson, G.R., and Forgatch, M.S. (2004). How do outcomes in a specified parent training intervention maintain or wane over time? *Prevention Science*, 5, 73–89.

Department of Health (2009) *The 2008/09 National Survey of Investment in Mental Health Services*. Department of Health, UK.

Edwards, R.T, Ó Céilleachair A.J., Bywater T, & Hutchings J. (2007) A Parenting Programme for Children at risk of developing Conduct Disorder: A Cost-Effectiveness Analysis. *British Medical Journal*, 10, 334-682.

EuroQoL Group (1990). EuroQoL—a new facility for the measurement of health-related quality of life. *Health Policy*, 16, 199-208.

Eyberg, S.M. Eyberg child behaviour inventory. *Journal of Clinical Child Psychology*. 1980, 9, 27.

Farrington, D.P. (1995) The development of offending and antisocial behaviour from childhood: Key findings from the Cambridge Study in Delinquent Development. *Journal of Child Psychology and Psychiatry*, 36, 929-964.

Field, A.P (2009) *Discovering statistics using SPSS*, 3rd Edition, London Sage

Forehand, R., Furey, W., McMahon, R.J. (1984). The role of maternal distress in a parent training programme to modify child noncompliance. *Behavioural Psychotherapy*, 12, 93-108.

Gardner, F., Hutchings, J. & Bywater, T. (2010). Who benefits and how does it work? Moderators and mediators of outcomes in a randomised trial of parenting interventions in multiple 'Sure Start' services. *Journal of Clinical Child & Adolescent Psychology*, 39, 568-580.

Hutchings, J., Appleton, P., Smith, M., Lane, E., & Nash, S. (2002) Evaluation of two treatments for children with severe behaviour problems: child behaviour and maternal mental health outcomes. *Behavioural and Cognitive Psychotherapy*, 30, 279-295.

Hutchings, J., & Lane, E. (2005) The role of parenting to the development and prevention of child mental health problems. *Current Opinion in Psychiatry*, 18 (4). 386-391.

Hutchings, J., Bywater, T., Daley, D., Gardner, F., Whitaker, C., Jones, K., Eames, C., & Edwards, R.T. (2007). Parenting Intervention in Sure Start Services for Children at Risk of Developing Conduct Disorder: Pragmatic Randomised Controlled Trial. *British Medical Journal*, 334, 678-681.

Knapp, M., Scott, S., & Davies, J. (1999). The cost of antisocial behaviour in younger children a pilot study of economics and family impact. *Journal of Clinical Child Psychology*, 4, 457-473.

McMahon, R.J., Forehand, R., Griest, D.L., & Wells, K.C. (1981). Who drops out of therapy during parent behavioural training? *Behavioural Counselling Quarterly*, 1, 79-85.

Meltzer H, Gatward R, Goodman R, Ford T. (2000) The mental health of children and adolescents in Great Britain. London: Office for National Statistics.

Mihalic, S. (2004). The importance of implementation fidelity. *Emotional and Behavioural Disorders in Youth*, 4, 83-105.

National Institute for Health and Clinical Excellence (2006) Parent-training/education programmes in the management of children with conduct disorders. www.nice.org.uk/

National Institute for Health and Clinical Excellence (2008) Guide to the Methods of Technology Appraisal. <http://www.nice.org.uk/>

Office for National Statistics www.statistics.gov.uk

O'Hara, M.W., & Zekoski, E.M. (1988). *Postpartum depression: A comprehensive review* In R.Kumar & I.F Brockington (Eds.) *Motherhood and mental illness 2: Causes and consequences*. London: Butterworth.

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.

Romeo, R., Knapp, M., & Scott, S. (2006) Economic cost of severe anti-social behaviour in children - and who pays it. *British Journal of Psychiatry*, 188, 547-553.

Sanders, M.F., and McFarland, M. (2000). Treatment of depressed mothers with disruptive children: A controlled evaluation of cognitive behavioural family intervention. *Behaviour Therapy*, 31, 89–112.

Scott, S., Knapp, M., Henderson, J., & Maughen, B. (2001) Financial cost of social exclusion: follow up study of antisocial children into adulthood. *British Medical Journal*, 323, 191-196.

Sheeber, L.B., and Johnson, J.H. (1994). Evaluation of a temperament-focused, parent-training programme. *Journal of Clinical Child Psychology*, 23, 249–259.

Snaith, R.P., Constantopoulos, A.A., Jardine, M.Y., McGuffin, P., (1978). A clinical scale for the self-assessment of irritability. *British Journal of Psychiatry* 132, 164–171.

Thomas, C.M., & Morris, S. (2003). Cost of depression among adults in England in 2000. *The British Journal of Psychiatry*, 183, 514-519.

Taylor, T.K., Schmidt, F., Pepler, D., & Hodgins, C.A. (1998). A comparison of eclectic treatment with Webster-Stratton's parents and children series in a children's mental health center: A randomized controlled trial. *Behaviour Therapy*, 29, 221–240.

Webster-Stratton, C. (1984) Randomized trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology*, 52, 666-678.

Webster-Stratton, C., & Hancock L. (1998) *Parent training for young children with conduct problems. Content, methods and therapeutic process*. In: Schaefer CE, ed. *Handbook of parent training*. New York: Wiley.

Webster-Stratton, C. (2004). Quality training, supervision, ongoing monitoring, and agency support: Key ingredients to implementing. *The Incredible Years programs with fidelity*. www.incredibleyears.com/library

World Health Organisation (WHO) (2000) *Women's Mental Health: An Evidence Based Review*. Mental Health Determinants and Populations, Department of Mental Health and Substance Dependence. World Health Organization. Geneva

World Health Organisation (WHO) (2009) www.who.int/mental_health