



**Report to the Queen Elizabeth Centre on the  
Evaluation of the Queen Elizabeth Day Stay  
Program for Mothers with Infants and Toddlers**

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## 3 Executive Summary

### 3.1 Background

The Day Stay program at the Queen Elizabeth Centre is a flexible program that assists parents to learn new parenting strategies to address areas such as feeding and sleeping problems, and managing toddler's difficult behaviour. An evaluation of this program was conducted using randomised controlled trial methodology.

### 3.2 Research aims

The evaluation was conducted to:

- Determine if mothers' attendance at the program had a positive effect on their psychosocial well being and parenting satisfaction
- Establish if parents' attendance at the program resulted in meaningful positive changes in the children's behaviour

### 3.3 Method

Data were collected over a five-month period, during which time 241 parents were eligible for random allocation into an intervention or waitlist condition. Following allocation, 93 parents did not continue with the research for a variety of reasons, and 30 parents did not complete all of the measures, therefore their data were unable to be included in this report.

Participants were 118 mothers with infants and young children who volunteered and were allocated to either the intervention group (n=65) or the waitlist group (n=53) during the Centre's triage process. Measures of parent and child characteristics were

obtained for both groups before and after the Day Stay intervention and at a 6-week follow up. Immediately after the waiting period, the wait-list parents were offered the Day Stay program. Pre-post intervention data sets are available for 100 participants. Pre-to follow up data sets are available for 69 participants.

### 3.4 Results

Prior to intervention, the majority of participants indicated they were experiencing child settling and sleeping difficulties (n=104, 88.1%). Other reasons for referral to the Day Stay program were infant feeding problems (n=6, 5.1%), tantrums (n=3, 2.5%), and general non-compliance (n=2, 1.6%).

As well as a description and analyses of data related to the specific research questions, this report presents information collected prior to intervention about participants' pregnancy and childbirth experience, maternal health, post-natal coping and child characteristics.

Results demonstrated that the mothers who attended the Queen Elizabeth Day Stay program reported improvement in their psychosocial well-being and parental satisfaction. The mothers also reported improvement in their child's problematic behaviour, such as nightwaking, settling and behavioural difficulties, with decreases in problem behaviour severity, and decreases in the frequency of occurrence of problem behaviour. In contrast, there were no such improvements reported by the waitlist group over the same period of time and before attending the program. Improvement in mother's functioning and child behaviour were maintained at the 6-week follow up.

Data for parents who completed the program (from both treatment and waitlist groups) were compared with that of parents who did not complete. Of all of the measured characteristics, reported anxiety and stress were higher for parents who did not complete the program. There were no statistically significant differences for any of the other measures or for demographic variables for the completers, when compared with participants who dropped out.

The results of this study demonstrate that delivery of early parenting education and support, as provided by the Queen Elizabeth Centre Day Stay service, had positive benefits for the attending mothers and their young children, at least in the short term.

### 3.5 Implications of the research

#### 3.5.1 For practice

- This project demonstrates that a systematic scientific evaluation of program effectiveness can be conducted during routine service delivery.
- The fact that this evaluation found discernable differences between outcomes for intervention and waitlist parents underlines the need for routine use of measures that reflect the specific aims of the program and are sensitive enough to detect change when it occurs. In particular, there is need for measures of child behaviour change that are highly relevant to parents' intervention plans for when they return home. In this study, evaluation tools like the Goal Achievement Scale and the Difficult Behaviour Assessment Form have shown promise for this purpose.

- Results of the detailed tracking of participant attrition from the recruitment to the follow up phase illustrates the importance of keeping such records of client service delivery. The outcomes for the parents who completed the program can be known and are positive. The outcomes for parents who did not engage in or complete the service are unknown.

### 3.5.2 For future research.

- A longer term follow up is required to determine the extent to which program gains are maintained.
- It is also of interest to investigate the degree to which the parents' learnings from specific child behaviour change plans have generalised to challenging areas of child rearing that were not targeted in the Day Stay intervention.
- Further research is required to identify factors that predict positive outcomes. Such information could be used to inform the triage process.
- Given that the Day Stay program has many components, it is of interest to conduct a component analysis to determine which program elements are essential for positive outcomes, and which are not needed.
- In future research, there is a need to incorporate measures of the extent to which practitioners and parents adhere to program protocols and principles. This will assist with understanding of differential outcomes and will inform efforts for program improvement.

- Importantly, given the scarcity of public resources for supporting families, there is a need to research the cost-effectiveness of different methods of service delivery and support. To this end, a comparison of the Day Stay program with other types of family support and intervention programs is indicated.

## 4 Introduction

The Day Stay program at the Queen Elizabeth Centre is a flexible program that assists parents to learn new parenting strategies to address areas such as feeding and sleeping problems, and managing toddler's difficult behaviour. The behaviourally based intervention is a combination of a group and individual approach with parents attending the centre for a whole day with their child. This report describes the methodology of, and results from a controlled evaluation of the Day Stay service, using a pre-test post test control group experimental design.

The majority of parents participating in the evaluation of this program presented with problems with their infant's sleep. Sleep disturbance reportedly occurs in 15-35% of infants aged 6 to 24 months and has been associated with maternal depression, parental sleep disturbance and child behaviour problems. (France, Blampied, & Hendeson, 2003). Sleep disturbance in children over 6 months of age is particularly distressing for parents, as the dysfunctional sleep habits can seem intractable.

Research has shown for other child behavioural difficulties in the early childhood period, such as defiance, acting out, and tantrums, that child aversive behaviours are associated with maternal negative behaviour and stress (Calkins, 2002).

Problematic child behaviour has also been identified as a precipitant of decreased self-esteem and lack of confidence in mothers (for a review of relevant literature see Hutchings, Appleton, Smith, Lane, & Nash, 2002). Furthermore, a substantial

proportion of pre-school children with significant behavioural problems continue to have these difficulties later in their childhood (Nixon, 2002). The importance of intervening early when problems first occur is acknowledged by the parenting services offered at the Queen Elizabeth Centre.

There is some evidence that, as well as improving outcomes for young children (Barlow & Parsons, 2003; Sanders, 1999), behaviourally based parenting programs can have positive effects on the psychosocial health of mothers, at least in the short term (Barlow & Coren, 2003). Notably, behavioural interventions for infant sleep disturbance have been well researched and found to be effective. Several reviews have established behavioural strategies as the treatment of choice for infant sleep disturbance (France & Blampied, 1999; France et al., 2003; Kuhn & Weidinger, 2000; J. A. Owens, Palermo, & Rosen, 2002; J. L. Owens, France, & Wiggs, 1999).

How parents are taught to implement sleep intervention strategies, varies and includes self-administered written materials, programs delivered by early childhood professionals with centre-based brief individual intervention, centre-based intensive groups, and centre-based individual intervention (such as the QEC Day Stay), centre-based residential programs, and home-based interventions. However, unlike parenting programs that address other areas of child behaviour difficulty, such as externalising behaviours, there are few investigations comparing the effectiveness of different methods of parent education for infant sleep interventions.

#### 4.1 Rationale

As previously mentioned, behaviourally based treatments for early parenting and infant care have been shown to improve maternal well-being and infant and pre-

schooler behaviour (Sanders, 1999). Furthermore, parenting interventions for parents of very young children have been shown to be effective when conducted in groups (Barlow & Parsons, 2003). However, controlled studies comparing different modes of delivery are rare in the literature and lack rigour. Published research using random allocation of participants is scant, baseline measures of behaviour are rarely taken, and self-reported perceptions of improvement are the typical form of data collection.

In the study reported here, the Day Stay method of providing parenting education to mothers with young children was evaluated using random assignment of participants into treatment and waitlist groups. This enabled a comparison of the telephone triage service provided to the waitlist groups with the treatment groups who attended the one day centre based program.

## 4.2 Research Aims & Questions

The aim of the evaluation of the Queen Elizabeth Day Stay program was to determine if mothers' attendance at the program had a positive effect on their psychosocial well being and parenting satisfaction, compared with mothers who had not attended the program. A second aim was to establish if attendance at the program would result in meaningful changes in their child's behaviour, compared with children of mothers who had not attended the program.

The specific research questions relate to both parent and child outcomes. The research aimed to answer the following questions:

Parent outcomes:

1. What effect does the program have on parents reported depression levels?
2. To what extent does the program change parents reported anxiety levels?

3. What effect does the program have on parents reported stress levels?
4. What effect does the program have on parents' satisfaction with their parenting role?
5. What effect does the Day Stay program have on parents' sense of efficacy related to their parenting practices?

Child outcomes:

1. To what extent are parents' goals for child behaviour change achieved following the intervention?
2. To what extent do parents' perceptions of the severity and frequency of their child's difficult behaviour change following the intervention?

## **5 Method**

### **5.1 Participants**

Participants were mothers who had self-referred to the Queen Elizabeth Day Stay program after experiencing difficulty managing their infants or young children. All mothers attending the Queen Elizabeth Centre were invited to participate in the study, except those who had difficulty reading or understanding English. Over the course of the 5-month data collection period, 284 mothers made a booking to attend the Queen Elizabeth Centre Day Stay program. Forty-three chose not to participate in the research, or did not have sufficient English language skills to complete the measures, leaving 241 participants who were eligible for random allocation into the treatment and waitlist groups.

## 5.2 Procedure

A randomised controlled trial methodology was used, with pre-treatment, post-treatment, and follow-up measurement points. Approval of the research methodology was granted by the RMIT Human Research Ethics Committee.

When parents contacted the centre, triage staff assessed their needs, and clients with possible clinical levels of maternal functioning or infant problems are channelled into the more intensive residential programs. To maintain consistency in the recruitment phase triage staff were provided with a recruitment script, a flow chart instructing them on the procedures for allocation into the treatment and waitlist groups, and a client booking form with pre-allocated numbering system. At this first point of contact triage staff explained the study by reading the prepared script to all eligible mothers, and invited them to participate in the evaluation of the Day Stay program. Consenting participants were then randomly assigned into either the treatment or waitlist group by allocating them into the next available space on the booking sheet. Following usual QEC practice, the triage staff then gave whatever advice was considered necessary at that stage to meet the parents' needs before they had the opportunity to attend the Day Stay program.

Participants in the treatment group were booked to attend the centre within 14 days of the booking date. Participants allocated to the waitlist group were booked to attend the centre at least 21 days after booking. The mean waiting time from booking to attendance was 13.73 (SD = 8.83) days for the treatment group and 27.12 (SD = 6.35) days for the waitlist group. A flowchart detailing client recruitment and measurement points is shown in figure 1.

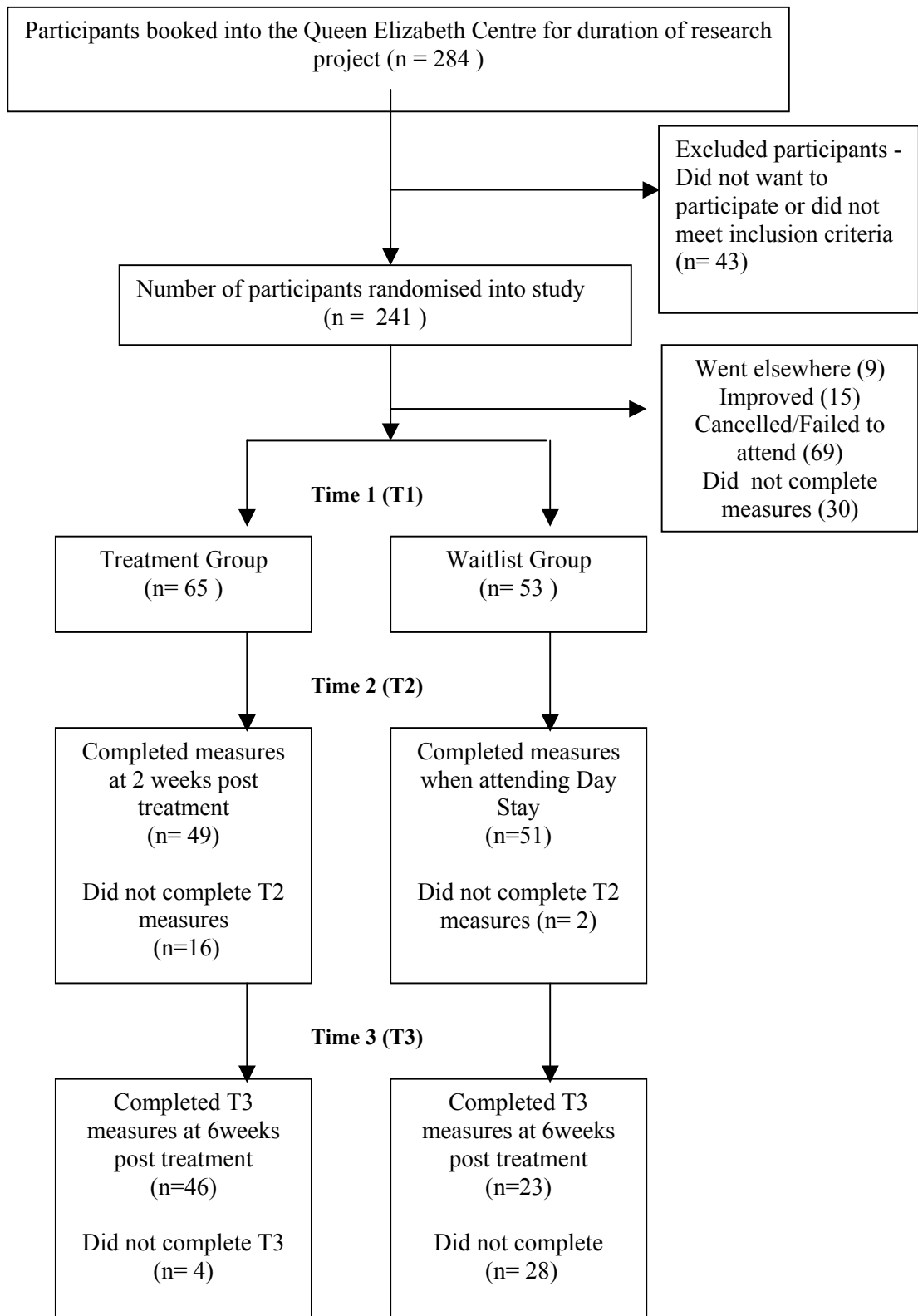


Figure 1. Procedure for allocation into treatment and waitlist groups

### 5.3 Attrition Rates

Of the 241 mothers who agreed to participate, 123 dropped out of the study before treatment. The reasons for dropping out of the research are shown below in Table 1, with the main reason being cancellation or failure to attend. There was a higher drop out rate among the waitlist group, although this difference was not statistically significant according to a chi square analysis of expected group size. This higher drop out rate is likely to be a consequence of longer waiting times. Of the 69 participants who failed to attend for reasons other than child improvement, the reasons given for not attending included: infant unwell, mother unwell, no transport, having no care for older children, and bad weather. The final number of participants included in the study after dropouts was 118, and this comprised 65 in the treatment group and 53 in the waitlist group (see figure 1).

Table 1

Participant Group Allocation and Attendance Rates

	n	Treatment %	n	Waitlist %	
Attended	65	54.2%	53	43.8%	
Went elsewhere	7	5.8%	2	1.7%	
Failed to Attend					
- Infant improved	7	5.8%	8	6.6%	
- Other reason	26	21.7%	43	35.5%	
Did not complete paperwork	15	12.5%	15	12.4%	
Unknown	0	-	3	2.5%	
Total	120	100.0%	121	100.0%	
Number of Days from booking to attendance ( <i>M, SD</i> )	13.73	8.83	27.12	6.35	<.001

Note: All chi-square group comparisons on attrition rates were NS.

## 5.4 Measures

### 5.4.1 Measurement Times

The participants in both groups were assessed at three points. For the treatment group and waitlist group pre-intervention measures were completed at the time of booking into the centre (T1). Therefore, T1 represents the situation applying for all parents before any intervention occurs. The T1 measures and consent forms were posted out to all participants (treatment and waitlist groups) immediately after the booking was taken, along with informed consent forms for the study.

The second time period, however, is different for the treatment and the waitlist groups. At T2, the treatment group completed post-intervention measures two weeks after they had completed the Day Stay program. Whereas, the waitlist group completed T2 measures at the start of their day at the centre, before treatment began. Thus, for the waitlist parents T2 represented another pre-intervention assessment. The time period between T1 and T2 was approximately the same for treatment and waitlist groups. Finally, both groups completed the follow-up measures (T3) six weeks after attending the centre.

As the waitlist group had attended the Day Stay program, no control versus experimental group comparisons are possible at follow-up (ie. T3). The follow-up assessment, however, was designed to indicate whether behaviour change was maintained six weeks after intervention.

### 5.4.2 Measures Used

Both parenting perceptions and child behavioural outcomes were assessed. There were two measures of parent outcome data; the Depression Anxiety Stress Scale (DASS, (P. F. Lovibond & S. H. Lovibond, 1995)) and the Parenting Sense of

Competence Scale (PSOC, (Johnston & Mash, 1989). There were also two measures of child outcome data, the Goal Achievement Scale, and the Difficult Behaviour Assessment form.

#### 5.4.3 Depression Anxiety Stress Scale

The Depression Anxiety Stress Scale (DASS, (P. F. Lovibond & S. H. Lovibond, 1995; Rogers & Matthews, in press) is a 42 item self-report scale which measures the full range of core symptoms attributed to anxiety and depression, and situational stress. The DASS is comprised of three sub scales, Depression, Anxiety, and Stress. Each item is scored using a 4-point Likert scale ranging from 0 - *did not apply to me at all* through to 4, - *applied to me very much or most of the time*. The Depression scale provides a measure of negative affect including dysphoria, hopelessness, devaluation of life, and self-deprecation. The Anxiety scale is a measure of autonomic arousal, situational anxiety, and anxious affect. The Stress scale is a measure of situational arousal including, difficulty relaxing, nervous arousal, agitation, irritability and impatience. Higher scores indicate greater severity in depression, anxiety, or stress. The psychometric properties of the DASS have been repeatedly established in clinical samples (Brown, Chorpita, W., & Barlow, 1997) and non clinical populations (P. F. Lovibond & S. H. Lovibond, 1995). Satisfactory internal consistency has been reported with alpha coefficients of .91, .81, and .89, respectively (P. F. Lovibond & S. H. Lovibond, 1995).

#### 5.4.4 Parent Sense of Competence Scale

The Parenting Sense of Competence Scale (PSOC, (Johnston & Mash, 1989) is a widely used parenting scale that provides a measure of parental self-esteem. The scale comprises 16 self-report items. The items are rated on a 6-point Likert scale, ranging from 1 – *strongly agree* to 6 – *strongly disagree*. The psychometric properties of the PSOC have been previously established (Johnston & Mash, 1989).

For this study, a three-factor approach was used comprising subscales for Satisfaction, Efficacy, and Interest (Rogers & Matthews, in press). This new three-factor structure has recent norms derived from a large sample of Australian mothers, and sound psychometric properties (Rogers & Matthews, in press). The Satisfaction subscale consists of seven items and reflects parenting frustration, anxiety, and motivation. The Efficacy subscale also has seven items, and reflects parenting competence, problem-solving ability, and capability in the parenting role. The Interest subscale is a two-item factor, and provides a measure of parental interest in the parenting role. The two items on the Interest scale are (a) my talents and interests lie in other areas, not being a parent; and (b) if only parenting were more interesting I would be motivated to do a better job. Higher scores on each subscale are indicative of greater perceived competence. Reliability estimates using the new three-factor structure were .77 for the Satisfaction subscale, .78 for Efficacy, and .58 for the Interest subscale (Rogers & Matthews, in press).

#### 5.4.5 Goal Achievement Scale

The Goal Achievement Scale (GAS) (Hudson, 1998) is a measure of success in clinical interventions, and provides an estimate of the percentage of success that has been achieved for nominated problem behaviours. As such, the GAS can be conceptualised as an index of one aspect of social validity, that is, the social significance of the effects of intervention (Wolf, 1978).

For the Goal Achievement Scale parents were asked to set individual goals for child behaviour change, in consultation with the Day Stay staff. These goals were based on the current rate (or baseline) of child behaviour, and reflected behaviours that could reasonably be expected to change within a two-week period. The selected behaviours were recorded by parents at home for one week at three time periods

for the treatment group (T1, T2, and T3) and for two time periods for the waitlist group (T1 and T3). At each measurement time, parents were provided with a seven-day GAS recording and tally chart. They were given written instructions on how to identify and label the specific behaviour being targeted, and also how to measure behaviours using either frequency or duration. Parents were requested to keep this chart in a prominent place for seven days and record the selected behaviour whenever it occurred.

The GAS is calculated using a simple formula that measures change using the baseline rate of behaviour, the targeted rate of behaviour, and the achieved rate of behaviour. The formula for calculating GAS scores is shown below in Table 2. For example, an infant’s night waking is the behaviour targeted for change and the behaviour is measured for seven days. The baseline rate of night waking is found to be five times per night. A goal is then established between parent and clinician of the acceptable target rate, in this example one incident of waking per night becomes the goal. The behaviour is measured again for seven consecutive days at post treatment and is found to be two wakings per night. The GAS score would be 75%; therefore, the parent has achieved 75% success in meeting their goal.

Table 2

Calculation of Behaviour Change Scores Using the Goal Achievement Scale

Formula for behaviours that need to increase	$\frac{\text{Obtained rate of behaviour} - \text{Baseline rate of behaviour}}{\text{Target rate (goal)} - \text{Baseline rate of behaviour}}$	X 100
Formula for behaviours that need to decrease	$\frac{\text{Baseline rate of behaviour} - \text{Obtained rate of behaviour}}{\text{Baseline rate of behaviour} - \text{Target rate (goal)}}$	X 100
Night waking example described in text	$\frac{5 \text{ per night} - 2 \text{ per night}}{5 \text{ per night} - 1 \text{ per night}}$	X 100 = 75% of goal achieved

#### 5.4.6 Difficult Behaviour Assessment Form

The Difficult Behaviour Assessment Form was developed using the format of items in the Scales of Independent Behaviour – Revised (Bruininks, Woodcock, Weatherman, & Hill, 1996), and is a two-item measure in which parents nominate two problem behaviours of their child. Each behaviour is then rated on a five-point scale on how frequently the behaviour occurs, and how serious it is to the parents. Higher scores indicate higher frequency and increased seriousness.

#### 5.4.7 Program Content

The Day Stay Service provides a six to seven-hour short-term intervention, which includes intensive parenting education and support for groups of parents. Six families per day are booked into the day stay program. Mothers and fathers are welcome to attend the program, however for the purposes of this evaluation the psychological wellbeing of mothers were the measured variables of interest.

The teaching methods follow adult learning principles and include: one-to-one consultations with staff; discussion groups with other parents facilitated by staff; modelling and demonstration of positive parenting practices, followed by guided practice, and advice to parents about practising the techniques at home. Parents are assisted to formulate a goal and a careplan to guide their program.

Positive parenting strategies are influenced by the World Health Organisation's holistic definition of health, and the work of internationally recognised child development theorists, and current behavioural theorists. A strengths based approach is used to sensitively engage with families and support them to identify their strengths and build on their current parenting practices. The child focused family centred practice is implemented by a trained staff team, which includes a maternal and child health nurse team leader, and two early childhood workers.

The aim of the program is to develop parenting competence, confidence, and enjoyment. The program also aims to enable families to nurture and protect their children and enhance family health and development

At the end of the day, it is expected that each parent will be able to:

- demonstrate increased parenting competence by being able to describe in detail at least one appropriate strategy or intervention they will apply at home;
- express greater personal confidence in parenting;
- Identify at least one resource in their own community from which they can access further parenting support and guidance if needed.

#### 5.4.8 Statistical Assumptions and Data Screening

Data were analysed using the SPSS statistical software program. Data from the DASS and PSOC were screened to ensure the data set met the assumptions of normality necessary for statistical analysis (Table 3). Examination of graphical normality plots show the data were approximately normally distributed. Univariate values of skewness indicated the DASS and PSOC variables were within the assumptions for normality on all variables. Analysis of kurtosis suggested that the distributions on the DASS scores had some skewness, however this was within limits for the robust multivariate tests used. Where possible a multivariate approach was used with the inferential testing. In order to minimise the possibility of reporting results of random significance Bonferroni adjustments to significance levels were made whenever family-wise comparisons were conducted.

Table 3

Data Screening on DASS and PSOC

	n	M	SD	Skewness	Kurtosis
DASS					
Depression T1	118	5.80	6.47	2.44	7.85
Depression T2	103	3.92	5.00	2.62	10.10
Depression T3	68	2.32	3.60	2.70	8.42
Anxiety T1	115	2.60	3.34	1.85	3.16
Anxiety T2	104	1.96	3.16	2.28	5.33
Anxiety T3	67	.88	1.84	2.36	4.98
Stress T1	109	11.26	7.64	.85	.44
Stress T2	96	8.12	7.16	1.14	.97
Stress T3	66	5.69	4.69	.55	-.32
PSOC					
Satisfaction T1	115	24.94	6.26	.03	-.88
Satisfaction T2	98	27.31	6.35	-.35	-.35
Satisfaction T3	69	29.66	6.14	-.51	.23
Efficacy T1	106	27.43	5.58	-.43	-.26
Efficacy T2	97	29.41	5.68	-.32	-.33
Efficacy T3	68	30.48	5.11	-.34	-.54
Interest T1	117	10.54	1.62	-1.22	1.09
Interest T2	99	10.62	1.70	-1.36	1.58
Interest T3	69	10.55	1.49	-.85	.11

## 6 Results

### 6.1 Demographic and Descriptive Data on Participants

#### 6.1.1 Characteristics of Mothers

The average age of mothers attending the centre was 31.84 years ( $SD = 4.77$ ), and they were mainly Australia born ( $n = 93, 78.9\%$ ). Just over half the participants ( $53.5\%$ ) reported secondary level education, and  $47.5\%$  of participants reported they had a tertiary level education. The majority of participants were living with their partner ( $n = 100, 84.7\%$ ), with 15 participants ( $12.7\%$ ) reporting they were sole parents. Demographic characteristics of the treatment and waitlist groups are shown in Table 4. There was no significant difference in demographic characteristics between the two groups.

Table 4

Demographic Characteristics of Mothers by Group

Variable	Treatment (N=65)		Waitlist (n=53)		Group comparisons
	n*	% of n	n*	% of n	
Age ( <i>M, SD</i> )	32.17 (4.59)	-	31.45 (5.01)	-	NS
Australian born	53	81.5%	40	75.5%	NS
Education - Secondary	31	47.6%	32	60.4%	NS
- Tertiary	33	50.8%	23	43.4%	NS
Living with husband and children	59	90.8%	41	77.4%	NS
Length of relationship (years) ( <i>M, SD</i> )	7.47 (3.84)		8.09 (4.48)	-	NS
Number of sole parents	4	6.2%	11	20.8%	NS

Note: \* Column shows number of participants, unless otherwise indicated in the variable column  
Significance test = chi square analysis for expected group size with alpha of  $p < .05$

### 6.1.2 Characteristics of Pregnancy and Childbirth

The majority of participants (n=118, 68.7%) reported their pregnancy was planned, and most pregnancies were full term (n=113, 95.8%). Eighty participants (67.8%) reported a normal vaginal delivery, and 24 (20.3%) reported delivery via caesarean section. There were 41 (34.7%) participants who were given an intravenous drip to start or strengthen their labour. Chi square comparison of group allocations found no significant differences in the pregnancy characteristics between the treatment and waitlist groups. The characteristics of the participants' pregnancies and infant health, for the treatment and waitlist group are shown in Table 5.

Table 5

Characteristics of Pregnancy by Group

Variable	Treatment (N=65)		Waitlist (n=53)		Group comparison
	n*	% of n	n*	% of n	
Planned pregnancy	40	64.5	41	80.4	NS
Primiparous	43	66.2	31	58.5	NS
Full term pregnancy	61	93.8	52	98.1	NS
Duration of pregnancy in weeks (M, SD)	39.30 (2.50)		39.7 (1.56)		NS
Hours in labour (M, SD)	10.77 (11.28)		11.56 (14.67)		NS
Birth:					
Normal Vaginal Delivery	42	64.6	38	71.7	NS
Caesarean	15	23.1	9	17.0	NS
Forceps	7	10.8	6	11.3	NS
Breech	1	1.5	-	-	NS
Drip	19	29.2	22	41.5	NS

Note: \* Column shows number of participants, unless otherwise indicated in the variable column  
Significance test = chi square analysis for expected group size with alpha of p<.05

### 6.1.3 Infant Characteristics

The majority of participants (n=110, 93.2%) reported their infant's health was good. The ratio of male to female infants was higher for male infants in the treatment group (41:23) compared with the waitlist group (27:25), however this difference was not statistically significant using chi square analysis for expected group size. The mean age of the children was 8.7 months (SD = 6.58), with the youngest child aged 1.4 months and the oldest child aged 40.5 months. The mean age of the children in the treatment and waitlist groups is shown below, and the difference between groups was not significant.

Table 6

Characteristics of Children by Group

Variable	Treatment (N=67)		Waitlist (n=54)		Group comparison
	n*	% of n	n*	% of n	
Child's sex: Male	41	63.1	27	50.9	NS
Female	23	35.4	25	47.2	-
Child's Age in months ( <i>M, SD</i> )	7.81 (6.04)		9.81(7.10)		NS
Healthy infant	61	96.8	49	92.4	NS

Note: \* Column shows number of participants, unless otherwise indicated in the variable column  
Significance test = chi square analysis for expected group size with alpha of p<.05

### 6.1.4 Complication During Pregnancy

There were 45 (38.1%) participants who had experienced complications throughout the pregnancy, and there was no significant difference between the waitlist and treatment groups. The most frequently reported complications were bleeding (n=17, 14.4%), high blood pressure (n=5, 4.2%), premature labour (n=9, 7.6%), and pre-eclampsia (n=8, 6.8%).

Table 7

#### Pregnancy Complications by Group

Variable	Treatment (N=67)		Waitlist (n=54)		Group comparison
	n	% of n	n	% of n	
Pregnancy complications (past & present):	25	39.1	20	38.5	NS
Nature of Complications: Bleeding	6	9.2	11	20.1	-
High blood pressure	3	4.6	2	3.8	-
Premature labour	4	6.2	5	9.4	-
Weight loss	-	-	2	3.8	-
Miscarriage/termination	3	4.6	-	-	-
Pre-eclampsia	2	3.1	3	5.7	-
Infection	3	4.6	-	-	-
Depression	2	3.1	1	1.9	-
Premature rupture membrane	4	6.2	4	7.5	-
Excessive vomiting	-	-	2	3.8	-

Note: significance test = chi square analysis for expected group size with alpha of  $p < .05$

### 6.1.5 Mother's Health and Attitude to Pregnancy

Mothers were asked to rate their health status and attitudes towards their pregnancy using visual analogue scales provided on the Queen Elizabeth Centre's Client Intake form. Mean scores for health are shown for the treatment and waitlist group in Table 8.

Table 8

#### Mothers Self-reported Health and Medication

Variable	Treatment (N=67)		Waitlist (n=54)		Significance
	M	SD	M	SD	
Mother's: Physical health	3.64	.89	3.10	.99	.003
Sleep patterns	1.73	1.27	1.66	1.11	NS
Appetite	3.42	1.09	3.05	1.05	NS
Anxiety	2.50	1.18	2.32	1.07	NS
Emotional well being	2.91	1.13	2.46	.952	.027
Communication with partner	3.11	.97	2.44	1.26	.002
Taking prescribed medication	18	27.7%	12	22.6%	NS

Note: Visual analogue scale measured in centimetres was used for each item. Minimum score was 0.1, and maximum score was 4.5

The majority of mothers considered themselves to be in good physical health, with the treatment group and waitlist groups scoring 3.64 and 3.10 respectively, from a possible score of 4.50. Thirty participants (25.4%) reported they were taking some prescribed medication. The self-reported sleep patterns of mothers were low for both the treatment group (1.73), and waitlist group (1.11). Mean scores on Appetite were in the 'good' range at 3.42 for the treatment group, and 3.05 for the waitlist group. Mothers perceived their Anxiety levels to be in the 'medium' range for both the treatment (2.50) and waitlist group (2.32). Scores on Emotional Well-being also

fell in the 'medium' range for the treatment (2.91) and waitlist groups (2.46).

Finally, Communication with Partner was rated in the 'good' range for the treatment group (3.11), and slightly lower for the waitlist groups (2.44). Univariate comparisons of the mean scores using One-Way ANOVA revealed a significant difference in the mean scores for the treatment and waitlist groups in physical health, emotional well-being, and communication with partner.

Participants were also asked to rate their feelings toward the pregnancy and birth of their infant (Table 9). The Queen Elizabeth Centre's Client Intake form provided visual analogue scales for these items. For the 'attitude to pregnancy' item, participants were asked to indicate how they felt when they were told they were pregnant. The item ranged from 0.1 'very happy' through to 9 'unhappy'. The mean scores on this item indicated that the majority of participants were happy when told they were pregnant. Three participants in the treatment group and one client in the waitlist group indicated they were not happy when they were told they were pregnant. On the 'Feelings about' scales, participants were required to place a cross on a line indicating their attitude toward several aspects of their pregnancy. Anchors of 'disappointed' through to 'very happy' were provided on each scale, with the minimum score of 0.1 and maximum of 10 (measured in centimetres). Univariate comparisons of the mean scores using One-Way ANOVA revealed no significant differences in the mean scores for the treatment and waitlist groups on these items.

Table 9

## Participants Attitude to Pregnancy, Childbirth, and Postnatal Coping

Variable	Treatment (N=67)		Waitlist (n=54)		
Attitude to pregnancy	1.26	2.15	1.15	1.77	NS
Feelings about: Pregnancy	7.77	2.61	7.20	2.80	NS
Labour	6.09	3.13	6.35	2.91	NS
Birth	7.05	3.63	7.08	3.14	NS
Postnatal first week	6.50	2.87	6.32	3.18	NS
Since going home	6.71	3.05	6.74	2.65	NS

Note: Queen Elizabeth Centre's visual analogue scale measured in centimetres was used for each item. For the attitude toward pregnancy items the minimum possible score was 0.1 and maximum 9.0 (reversed item). For the remaining items the minimum possible score was 0.1 and the maximum possible score was 10.4

### 6.1.6 Reason for Attending the Centre

Participants were asked to provide a qualitative response on the Queen Elizabeth Intake Form, indicating their primary reason for attending the Day Stay program. The majority of participants reported they were experiencing settling and sleeping difficulties (n=104, 88.1%). Other reported reasons for referral were infant feeding problems (n=6, 5.1%), tantrums (n=3, 2.5%), and general non-compliance (n=2, 1.6%). Comparisons between the treatment and waitlist groups are shown in Table 10. There was no statistical difference between the treatment and waitlist groups.

Table 10

#### Participants Primary Reason for Attending the Day Stay Program

	Treatment (N=65)		Waitlist (n=53)	
	n	%	n	%
Sleeping/settling	61	93.8%	43	81.1%
Breast or bottle feeding	2	3.1%	4	7.5%
Breastfeeding to sleep	1	1.5%	1	1.9%
Attention seeking	0	.0%	1	1.9%
Tantrums	0	.0%	3	5.7%
Other behavioural difficulty	1	1.5%	1	1.9%
Total	65	100.0%	53	100.0%

## 6.2 Depression, Anxiety Stress Scale (DASS)

### 6.2.1 Descriptive Data on DASS

Comparison of mean scores for the Depression, Anxiety and Stress scale at each measurement time are shown below in Table 11. Comparisons between the norms (S. H. Lovibond & P. F. Lovibond, 1995) for each sub scale are also shown. For all three scales, the minimum possible score is zero, and the maximum possible score is 42, with higher scores indicating increased distress.

Table 11

Mean and Standard Deviations for Depression Anxiety Stress Scale (DASS)

		Treatment			Waitlist		
		n	M	(SD)	n	M	(SD)
Depression	<i>Norm</i>		6.34	6.97		6.34	6.97
	T1	65	5.57	6.99	52	6.09	5.78
	T2	51	2.37	3.45	52	5.44	5.80
	T3	45	2.04	3.62	23	2.86	3.59
Anxiety	<i>Norm</i>		4.70	4.91		4.70	4.91
	T1	65	2.76	3.76	50	2.38	2.71
	T2	51	.52	.98	53	3.33	3.86
	T3	45	.73	1.60	23	2.26	5.63
Stress	<i>Norm</i>		10.11	7.91		10.11	7.91
	T1	65	11.33	8.16	44	11.84	8.14
	T2	50	5.08	4.90	47	11.97	8.56
	T3	44	5.02	4.47	23	8.43	8.22

Note: Normative data from (S. H. Lovibond & P. F. Lovibond, 1995)

The descriptive data show that the participants scores from both groups were lower than the norm for Depression (6.34), and Anxiety (4.70) at all measurement times, but somewhat higher in Stress (10.11) at T1.

### 6.2.2 Statistical Changes in DASS Depression Scores

To analyse the effects of the Day Stay program on DASS Depression scores a split-plot factorial ANOVA was completed, with the three Depression scores (T1, T2, and T3) as the within subjects factor, and the Group (treatment or waitlist) as the between-subjects factor. A significant main effect for Depression was found, Wilks'  $\Lambda = .694$ ,  $F(2, 63) = 13.881$ ,  $P < .001$ , partial  $\eta^2 = .306$ . Therefore, there was a statistically significant main effect in Depression scores over time, independent of group allocation. There was no significant interaction effect between Depression and Group allocation, Wilks'  $\Lambda = .927$ ,  $F(2, 63) = 2.497$ ,  $P < .09$ , partial  $\eta^2 = .090$ , indicating that the program effect was the same for both groups. Figure 2 shows the Depression scores for the treatment and waitlist groups changed independently of the Day Stay attendance.

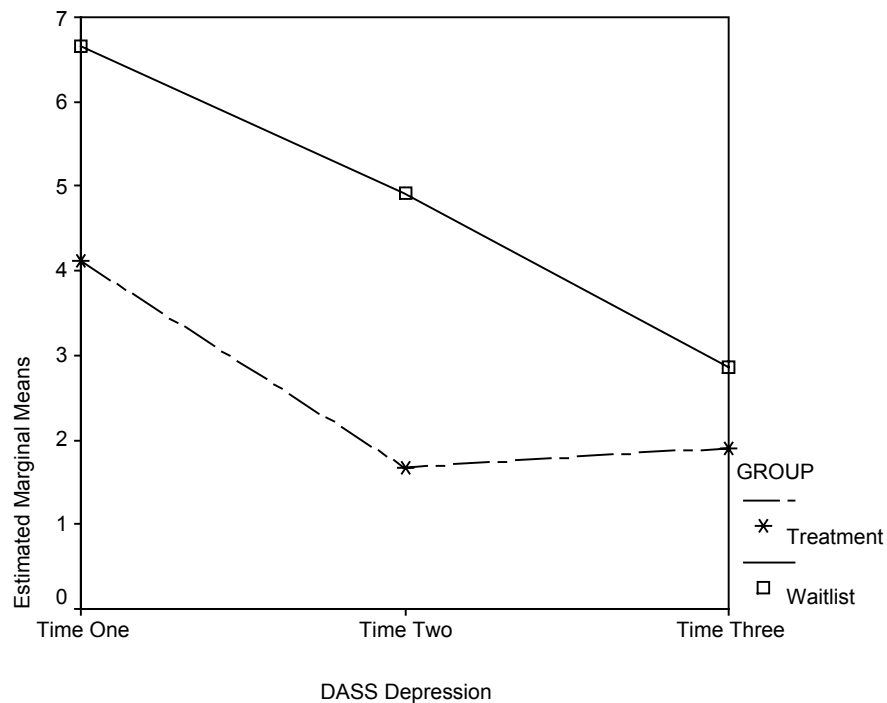


Figure 2. Interaction plot of DASS Depression scores.

Univariate tests on Depression using a Bonferroni corrected alpha of .017, show there was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 64) = 10.87, p < .002$ , partial  $\eta^2 = .14$ . The effect size seen for the treatment group using Cohen's  $d$  was .84. There was no significant difference between the treatment and waitlist groups at T1 or T3. Pairwise comparisons of group differences in Depression over time are shown below in Table 12. There was a significant reduction in the mean Depression scores for the treatment group from T1 to T2,  $p < .002$ ; while the waitlist group showed no significant change. There was also a significant difference in the mean Depression scores for the treatment group from T1 to T3 ( $p < .002$ ), indicating that the changes from the program were maintained at follow-up. The difference in the mean scores on Depression for the waitlist group was also significant from T1 to T3 ( $p < .001$ ).

Table 12

## Pairwise Comparisons of DASS Depression Scores across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Treatment	T1 = 4.116	T1-T2	2.442	.769	.002
	T2 = 1.674 T3 = 1.907	T1-T3	2.209	.666	.002
Waitlist	T1 = 6.652	T1-T2	1.739	1.051	NS
	T2 = 4.913 T3 = 2.870	T1-T3	3.783	.911	.000

In summary, the Depression scores showed considerable instability, particularly with the waitlist group, which showed a sizeable (although non-significant) reduction in Depression scores while waiting to attend the program. The non-significant interaction demands cautious interpretations of the pairwise Depression scores as the change in scores cannot be attributed solely to the effect of the Day Stay

program. Nevertheless, there were significant reductions in the Depression scores from T1 to T3 for both the treatment and waitlist groups, as shown in the changed mean scores in Table 12.

### 6.2.3 Statistical Changes in DASS Anxiety Scores

A split-plot factorial ANOVA was completed on the DASS Anxiety scale, with the three Anxiety scores (T1, T2, and T3) as the within subjects factor, and the Group (treatment or waitlist) as the between-subjects factor. A significant main effect for Anxiety was found, Wilks'  $\Lambda = .796$ ,  $F(2, 62) = 7.95$ ,  $p < .001$ , partial  $\eta^2 = .204$ . Therefore, there was a statistically significant main effect in Anxiety scores over time, independent of group allocation. A significant interaction effect was also found between Anxiety and Group, Wilks'  $\Lambda = .814$ ,  $F(2, 62) = 7.10$ ,  $P < .002$ , partial  $\eta^2 = .186$ . This significant interaction shows the effect on Anxiety scores was different for the treatment and waitlist groups. Figure 3. shows the difference in Anxiety scores for the treatment and waitlist groups over time.

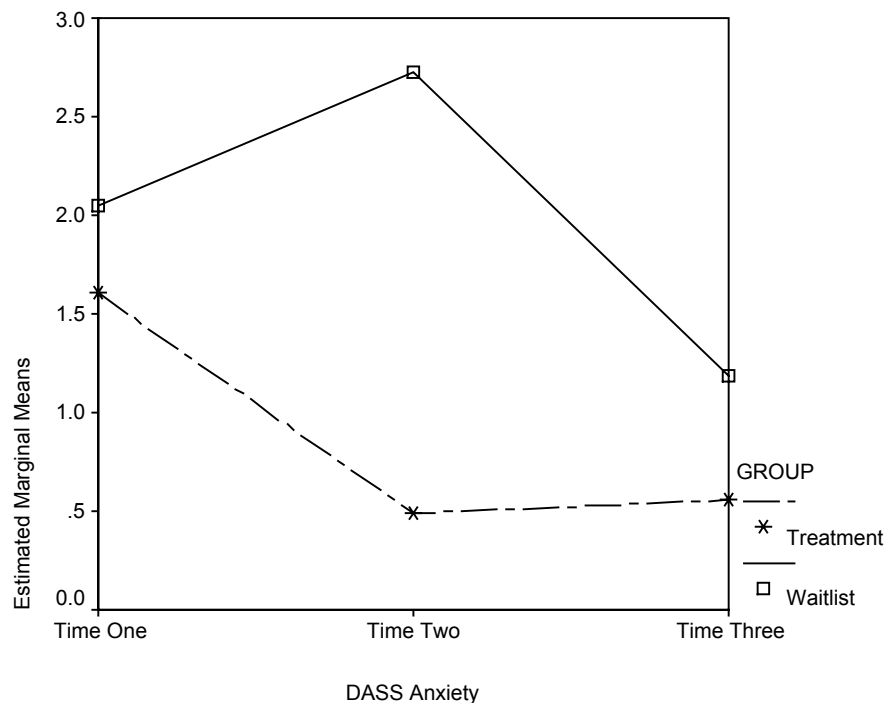


Figure 3. Interaction plot of DASS Anxiety scores.

Univariate tests on Anxiety using a Bonferroni corrected alpha of .017, show there was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 63) = 15.57, p < .001$ , partial  $\eta^2 = .198$ . The effect size seen for the treatment group using Cohen's  $d$  was 1.02.

There was no significant difference between the treatment and waitlist groups at T1 or T3. Pairwise comparisons of group differences in Anxiety over time are shown below in Table 13. There was a significant reduction in the mean Anxiety scores for the treatment group from T1 to T2,  $p < .006$ ; while the waitlist group showed no significant change. There was also a significant difference in the mean Anxiety scores for the treatment group from T1 to T3 ( $p < .006$ ), indicating that the changes from the program were maintained at follow-up. The difference in the mean scores on Anxiety for the waitlist group from T1 to T3 was not significant, however a reduction in the mean scores was evident.

Table 13

Pairwise Comparisons of DASS Anxiety Scores across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Treatment	T1 = 1.605	T1-T2	1.116	.394	.006
	T2 = .488 T3 = .558	T1-T3	1.047	.366	.006
Waitlist	T1 = 2.045	T1-T2	-.682	.551	NS
	T2 = 2.727 T3 = 1.182	T1-T3	.864	.511	NS

Overall, the changes in Anxiety scores represent significant reductions in Anxiety as a consequence of the Day Stay Program. The treatment groups reported a large reduction immediately after treatment (T2), and this was maintained at follow-up (T3). In contrast, the waitlist group reported increased anxiety at T2, and, while there was some reduction in Anxiety at follow-up (T3) the waitlist group did not change significantly from T1.

#### 6.2.4 Statistical Changes in DASS Stress Scores

To analyse the effects of the Day Stay program on DASS Stress scores a split-plot factorial ANOVA was completed, with the three Stress scores (T1, T2, and T3) as the within subjects factor and the Group (treatment or waitlist) as the between-subjects factor. A significant main effect for Stress was found, Wilks'  $\Lambda = .778$ ,  $F(2, 58) = 8.275$ ,  $P < .001$ , partial  $\eta^2 = .22$ . There was a statistically significant main effect in Stress scores over time, independent of group allocation. There was no significant interaction effect between Stress and Group Wilks'  $\Lambda = .909$ ,  $F(2, 58) = 2.92$ ,  $P < .062$ , partial  $\eta^2 = .09$ , indicating that the program effect was not significantly different for the two groups. Figure 4. shows the difference in Stress scores for the treatment and waitlist groups over time.

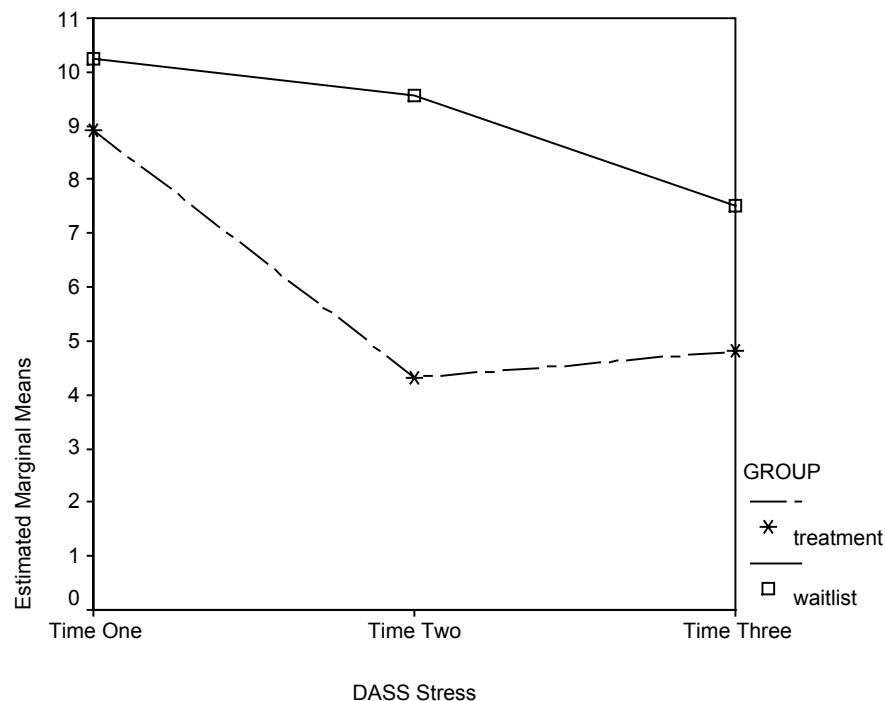


Figure 4. Interaction plot of DASS Stress scores.

Univariate tests on Stress using a Bonferroni corrected alpha of .017, show there was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 59) = 14.46$ ,  $p < .001$ , partial  $\eta^2 = .19$ . The effect size seen for the treatment group using Cohen's  $d$  was 1.02. As anticipated, there was no significant difference between the treatment and waitlist groups at T1 or T3.

Pairwise comparisons of group differences in Stress over time are shown below in Table 14. There was a significant reduction in the mean Stress scores for the treatment group from T1 to T2,  $p < .001$ ; while the waitlist group showed no significant change. There was also a significant difference in the mean Stress scores for the treatment group from T1 to T3 ( $p < .001$ ), indicating that the changes from the program were maintained at follow-up. The difference in the mean scores on Stress for the waitlist group from T1 to T3 was not significant ( $p < .052$ ) using the Bonferroni corrected alpha of .017, however a reduction in the mean scores was evident.

Table 14

Pairwise Comparisons of DASS Stress Scores across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Treatment	T1 = 8.927	T1-T2	4.610	1.078	<.001
	T2 = 4.317 T3 = 4.805	T1-T3	4.122	.967	<.001
Waitlist	T1 = 10.250	T1-T2	.700	1.543	NS
	T2 = 9.550 T3 = 7.500	T1-T3	2.750	1.385	NS

In summary, the Stress scores showed an immediate reduction in Stress for the treatment group, while the waitlist group remained high. At the follow-up the

treatment group had maintained the improvements in stress levels, and although there had been some changes in the waitlist scores from T1 to T3, they were not statistically significant.

### 6.2.5 Clinical Significance of DASS Scores

Results so far have shown that on the DASS there has generally been a statistically significant change in the Depression, Anxiety, and Stress scores following attendance at the Day Stay program. The triage process, at the time of initial contact, screens mothers that have more severe symptoms into the longer residential programs. However, it is still necessary to examine how important the changes in scores are to individual participants and their functioning as mothers; this is generally referred to as clinical significance. To examine if the change in scores has been clinically significant the participants DASS scores at T1, T2 and T3 were compared to the normative scores (see Table 11 for mean and standard deviations). Using this index, a participant with DASS scores one standard deviation above the mean was considered in the clinical range, and calculations of change from T1 to T2, and also T1 to T3 were made. Comparisons of change scores are shown on the following pages.

### 6.2.6 Clinical Changes in DASS Scores from T1 to T2

The change in DASS scores from T1 to T2 for the treatment and waitlist groups are shown below in Table 15. At T1, the majority of participants in both groups were not in the clinical range, and they remained in the non-clinical range at T2. Mothers with more severe symptoms are screened by the triage service and attend more intensive residential programs. The non-clinical to clinical column shows that a small number of participants who were not in the clinical range when T1 measures were taken, had more severe symptoms at T2 and had moved into the clinical range. While this may be anticipated in the waitlist group, a small number of participants from the treatment group were also represented. The clinical to non-clinical column shows the improvement in the treatment group. On the Depression and Stress scale a small number of participants in the waitlist group also improved prior to attending the Day Stay. The clinical to clinical column shows that participants on the waitlist group continued to experience these symptoms while waiting.

Table 15

Comparison of Change Scores in the DASS from Time 1 to Time 2

		Time 1 to Time 2				
	Group	Non-clinical – non- clinical	Non-clinical – clinical	Clinical- non-clinical	Clinical - clinical	Total
Depression	T	49	1	1	0	51
	W	45	0	4	2	51
Anxiety	T	50	0	1	0	51
	W	47	2	0	1	50
Stress	T	44	2	4	0	50
	W	31	3	3	6	43

Note: T = treatment group, W= waitlist group

### 6.2.7 Clinical Changes in DASS Scores from T1 to T3

The change in DASS scores from T1 to T3 for the treatment and waitlist groups are shown below in Table 16. As previously indicated the majority of participants in both groups were not in the clinical range at T1, and they remained in the non-clinical range at T3. The non-clinical to clinical column shows that one participant reported increased severity of symptoms at follow-up, as evidenced by the change from non-clinical at T1 to clinical at T3. The clinical to non-clinical column shows the improvement in both groups at T3. The clinical to clinical column shows that two participants continued to experience more severe depressive symptoms.

Table 16

Comparison of Change Scores in the DASS from Time 1 to Time 3

		Time 1- Time 3				Total
		Non-clinical -non- clinical	Non-clinical - clinical	Clinical - non-clinical	Clinical - clinical	
<b>DASS</b>						
Depression	T	43	1	0	1	45
	W	20	0	2	1	23
Anxiety	T	43	0	2	0	45
	W	22	0	0	0	22
Stress	T	38	0	6	0	44
	W	18	0	2	0	20

Note: T = treatment group, W= waitlist group

## 6.3 Parent Sense of Competence Scale (PSOC)

### 6.3.1 Descriptive Data on PSOC

For the Satisfaction and Efficacy scales the minimum possible scores is 7, and maximum score is 42. For the Interest scale, the minimum possible score is 2 and maximum is 12. Comparisons of mean scores for the Depression scale at each measurement point are shown below in Table 17. Comparisons between the norms (Rogers & Matthews, in press) for each sub scale are also shown.

Table 17

Means and Standard Deviations of PSOC compared to Normative Data

		Treatment			Waitlist		
		n	M	(SD)	n	M	(SD)
Satisfaction	<i>Norm</i>		24.08	7.21		24.08	7.21
	T1	65	25.72	6.27	50	23.94	6.15
	T2	49	30.22	5.64	49	24.40	5.70
	T3	46	30.97	5.74	23	27.04	6.19
Efficacy	<i>Norm</i>		22.47	5.81		22.47	5.81
	T1	61	26.95	5.88	45	28.08	5.14
	T2	49	30.18	6.16	48	28.62	5.08
	T3	45	31.00	5.18	23	29.47	4.91
Interest	<i>Norm</i>		10.22	1.77		10.22	1.77
	T1	66	10.60	1.62	51	10.47	1.62
	T2	49	10.91	1.39	50	10.34	1.93
	T3	46	10.80	1.34	23	10.04	1.66

Note: Normative data from (Rogers & Matthews, in press)

These descriptive scores show that parental satisfaction scores approximate the mean normative score at T1, with improvements, particularly for the treatment group, following attendance at the Day Stay. For the Efficacy scores the mean scores were higher for both groups, prior to attendance at the Day Stay program. The interest scale scores approximated the mean normative scores.

### 6.3.2 Statistical Changes in PSOC Satisfaction scores

A split-plot factorial ANOVA was completed, with the three PSOC Satisfaction scores (T1, T2, and T3) as the within subjects factor, and the Group (treatment or waitlist) as the between-subjects factor. A significant main effect for Satisfaction was found, Wilks'  $\Lambda = .646$ ,  $F(2, 61) = 16.723$ ,  $P < .001$ , partial  $\eta^2 = .354$ . Therefore, there was a statistically significant main effect in Satisfaction scores over time, independent of group allocation. There was also a significant interaction effect between Satisfaction and Group allocation, Wilks'  $\Lambda = .867$ ,  $F(2, 61) = 4.679$ ,  $P < .013$ , partial  $\eta^2 = .133$ , indicating that the program effect was different for the groups. Figure 5. shows the difference in Satisfaction scores for the treatment and waitlist groups over time.

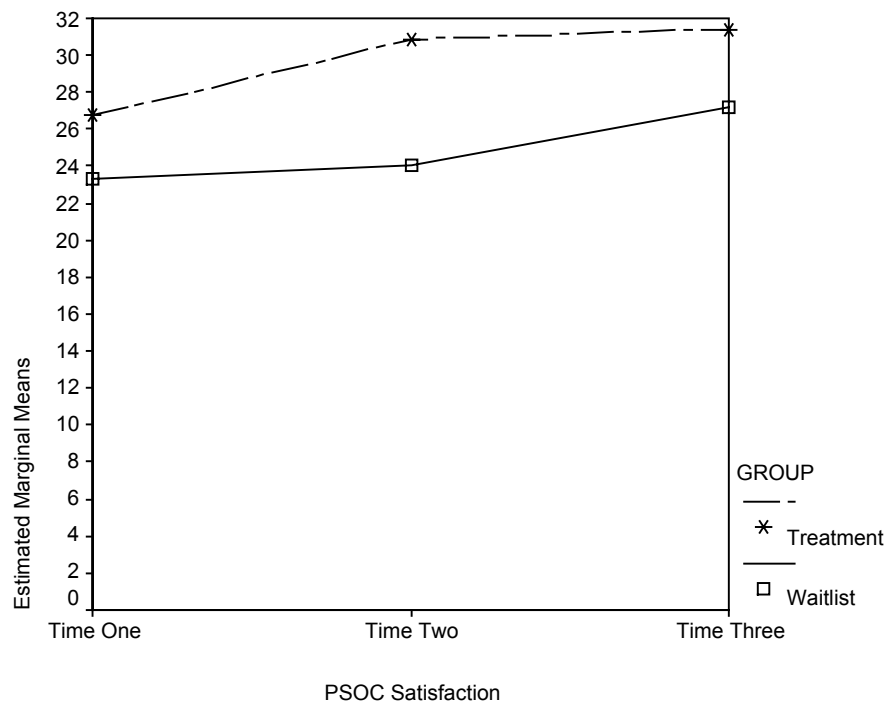


Figure 5. Interaction plot of PSOC Satisfaction scores.

Univariate tests on Satisfaction using a Bonferroni corrected alpha of .017 found there was no significant difference in the groups at T1. There was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 62) = 19.37, p < .001$ , partial  $\eta^2 = .23$ . This significant difference was still evident at T3  $F(1,62) = 7.49, p < .008$ , partial  $\eta^2 = .10$ .

Pairwise comparisons of group differences in Satisfaction over time are shown below in Table 18. There was a significant reduction in the mean Satisfaction scores for the treatment group from T1 to T2,  $p < .001$ ; as expected the waitlist group showed no significant change from T1 to T2. There was also a significant difference in the mean Satisfaction scores for the treatment group from T1 to T3 ( $p < .001$ ), indicating that the changes from the program were maintained at follow-up. The difference in the mean scores on Satisfaction for the waitlist group was also significant from T1 to T3 ( $p < .002$ ). The effect sizes for the PSOC Satisfaction were also large with Cohen's  $d$  at 1.16.

Table 18

Pairwise Comparisons of PSOC Satisfaction Scores across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Treatment	T1 = 26.72	T1-T2	-4.14	.713	<.001
	T2 = 30.86 T3 = 31.42	T1-T3	-4.69	.837	<.001
Waitlist	T1 = 23.33	T1-T2	-.76	1.021	NS
	T2 = 24.10 T3 = 27.14	T1-T3	-3.81	1.197	.002

### 6.3.3 Statistical Changes in PSOC Efficacy scores

Comparisons using split-plot factorial ANOVA on the PSOC Efficacy scores were made, with the three times (T1, T2, and T3) as the within subjects factor, and the Group (treatment or waitlist) as the between-subjects factor. A significant main effect for Efficacy was found, Wilks'  $\Lambda = .605$ ,  $F(2, 54) = 17.657$ ,  $P < .001$ , partial  $\eta^2 = .40$ . Therefore, there was a statistically significant main effect in Efficacy scores over time, independent of group allocation. There was also a significant interaction effect between Efficacy and Group allocation, Wilks'  $\Lambda = .891$ ,  $F(2, 54) = 3.31$ ,  $P < .044$ , partial  $\eta^2 = .10$ , indicating that the program effect was different for the groups. Figure 6. shows the difference in Efficacy scores for the treatment and waitlist groups over time.

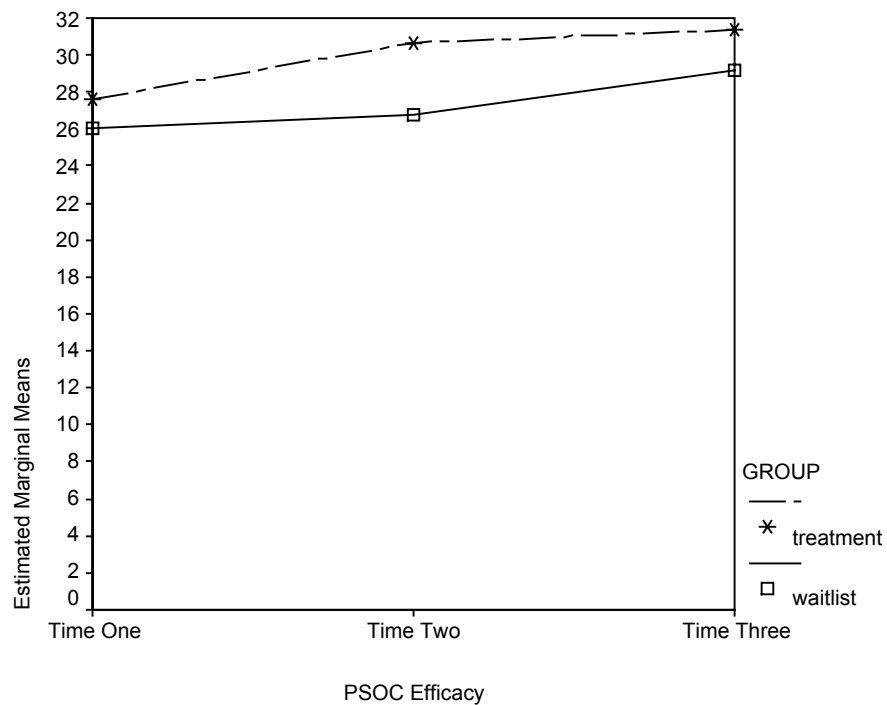


Figure 6. Interaction plot of PSOC Efficacy scores.

Univariate tests on Efficacy using a Bonferroni corrected alpha of .017 found there was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 55) = 7.08$ ,  $p < .01$ , partial  $\eta^2 = .11$ . As anticipated, there was no significant difference between the treatment and waitlist groups at T1 or T3.

Pairwise comparisons of group differences in Efficacy over time are shown below in Table 19. There was a significant reduction in the mean Efficacy scores for the treatment group from T1 to T2,  $p < .001$ ; while the waitlist group showed no significant change. There was also a significant difference in the mean Efficacy scores for the treatment group from T1 to T3 ( $p < .001$ ), indicating that the changes from the program were maintained at follow-up. . The difference in the mean scores on Efficacy for the waitlist group was also significant from T1 to T3 ( $p < .002$ ). The effect sizes for the PSOC Efficacy was large with Cohen's  $d$  at .74.

Table 19

Pairwise Comparisons of PSOC Efficacy Scores Across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Treatment	T1 = 27.61	T1-T2	-3.053	.652	<.001
	T2 = 30.66 T3 = 31.37	T1-T3	-3.763	.688	<.001
Waitlist	T1 = 26.05	T1-T2	-.737	.923	NS
	T2 = 26.79 T3 = 29.16	T1-T3	-3.105	.974	.002

### 6.3.4 Statistical Changes in PSOC Interest scores

A split-plot factorial ANOVA on the PSOC Interest scores (T1, T2, and T3) showed there was no significant main effect for Interest, and no significant interaction effect. Therefore, the Interest scores did not appear to change significantly across the groups, or across time. The interest scale is a two-item scale with a maximum possible score of 12. Analysis of the individual scores suggests a ceiling effect has occurred, with the majority of participants in both groups reporting maximum interest scores, this is expected as mother's who self-referred to the program are likely to have a higher interest in parenting.

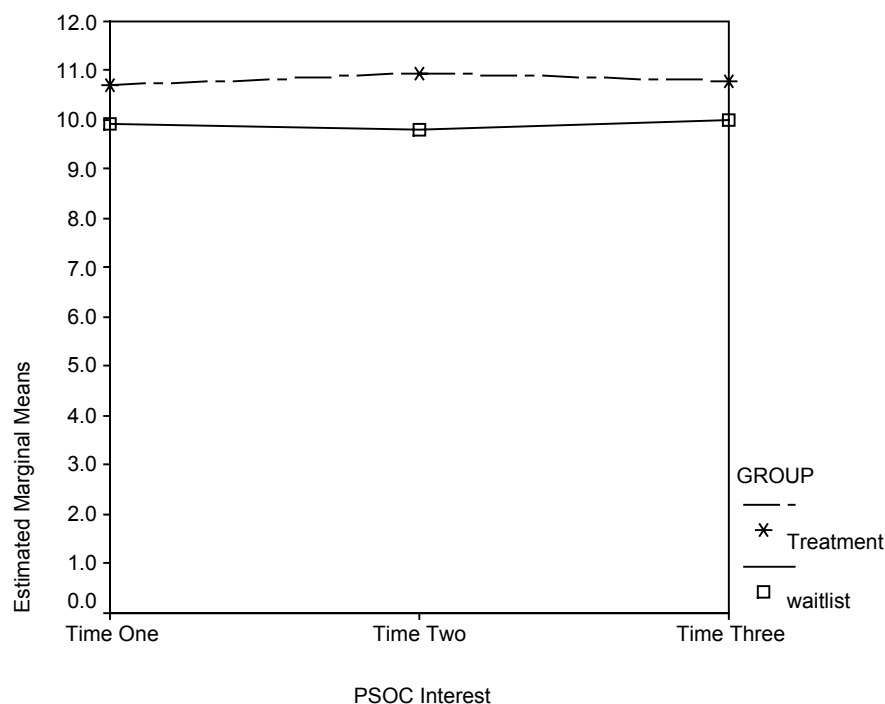


Figure 7. Interaction plot of PSOC Interest scores.

Univariate tests for simple effects on Interest using a Bonferroni corrected alpha of .017 found there was a significant difference in the treatment and waitlist Groups at T2,  $F(1, 63) = 6.52$ ,  $p < .013$ , partial  $\eta^2 = .19$ . However, there was no significant difference between the treatment and waitlist groups at T1 or T3. Pairwise

comparisons of group differences in Interest over time showed no significant change from T1 to T3 for either group.

### 6.3.5 Clinical Significance of PSOC Scores

Statistical analyses on results so far have shown that there have been small, yet statistically significant changes in the PSOC Satisfaction and Efficacy measures following the Day Stay program, with no statistically significant changes on the Interest scale. Shown over the page is an evaluation of the clinical importance these changes in scores to individual participants. To determine if the change in scores has been clinically significant the change in participants PSOC scores were compared to the normative scores (see Table 17 for mean and standard deviations). Using this index a participant with PSOC scores one standard deviation below the mean was considered in the clinical range, and calculations of change from T1 to T2, and also change from T1 to T3 were made.

### 6.3.6 Clinical Changes in PSOC Scores from T1 to T2

The change in PSOC scores from T1 to T2 for the treatment and waitlist groups are shown below in Table 20. At T1, the majority of participants in both groups were not in the clinical range, and they remained in the non-clinical range at T2. For the Satisfaction scale, the non-clinical to clinical column shows one client in the treatment group and one client in the waitlist group reported clinically lower satisfaction at T2. For the Satisfaction and Efficacy scales, the clinical to non-clinical column shows that a small number of participants reported improvement in scores in both the treatment and waitlist groups. The clinical to clinical column shows that several participants on the waitlist group continued to experience lower parental satisfaction. The clinical changes in the Interest scale scores are not meaningful as the limited range and ceiling effects of this scale translates to small changes in scores readily moving participants from one category to another.

Table 20

Comparison of Change Scores in the PSOC from Time 1 to Time 2

	Group	Time 1 to Time 2				Total
		Non-clinical – non-clinical	Non-clinical – clinical	Clinical-Non-clinical	Clinical - Clinical	
<b>PSOC</b>						
Satisfaction	T	45	1	2	0	48
	W	41	1	2	3	47
Efficacy	T	42	0	1	1	44
	W	42	0	1	0	43
Interest	T	43	3	2	1	49
	W	37	5	5	3	50

Note: T = treatment group, W= waitlist group

### 6.3.7 Clinical Changes in PSOC Scores from T1 to T3

The changes in scores from T1 to T3 for the treatment and waitlist groups are shown below in Table 21. As previously indicated the majority of participants in both groups were not in the clinical range at T1, and they remained in the non-clinical range at T3. For both groups a small number of participants showed improvement in their Satisfaction and Efficacy scores and moved from the clinical to non-clinical range, while no participants reported deterioration (non-clinical to clinical). Two participants remained in the clinical range with low scores on parental satisfaction. Again, the clinical changes in the Interest scale scores are not meaningful as this scale has few items and a limited range of scores.

Table 21

#### Comparison of Change Scores in the PSOC from Time 1 to Time 3

		Time 1- Time 3				
		Non-clinical -non- clinical	non-clinical - clinical	Clinical - non-clinical	Clinical - Clinical	Total
PSOC						
Satisfaction	T	44	0	2	0	46
	W	18	0	2	2	22
Efficacy	T	38	0	3	0	41
	W	19	0	1	0	20
Interest	T	43	1	0	2	46
	W	14	3	3	2	22

Note: T = treatment group, W= waitlist group

## 6.4 Goal Achievement Scale

### 6.4.1 GAS Scores for Treatment group at T2

The GAS score represents a percentage score of the child's actual behaviour change, when compared to the goal set by the participants. For the treatment group at T2, 86.4% of clients reported improvement in their infant's behaviour. A score of 100% suggests the participant has achieved 100% of their goal. GAS scores achieved at T2 for the treatment group only is shown below in Table 22. In the treatment group, 31.8% (n=14) of participants achieved 80% or better toward their behaviour goal, as measured at two-weeks post treatment. Some deterioration in child behaviour was reported by 13.6% (n=6) of participants. The mean GAS scores achieved at T2 for the treatment groups was 0.602, or 60.2%, however there was considerable variation in this score with a standard deviation of .509 (51%). GAS targets were not calculated for the waitlist group at T2 as they had not attended the Day Stay program.

Table 22

Frequency of GAS Scores for Treatment Group at T2

	Treatment	
	<u>n</u>	<u>% of n</u>
Deterioration <0%	6	13.6%
1% to 19%	2	4.5%
20% to 39%	8	18.2%
40% to 59%	6	13.6%
60% to 79%	8	18.2%
80% to 99%	5	11.4%
100%	9	20.5%
Total	44	100.0%

#### 6.4.2 GAS Scores for Treatment and Waitlist Groups at T3

Degree of goal achievement was measured for all participants at follow up, that is, six weeks after the original treatment group and waitlist groups had attended the day stay program. Overall, 84.1% of clients reported improvement in their infant's behaviour. At T3, 47.6% (n=20) of treatment group participants achieved 80% or better toward the behaviour goal set for their child, and in the waitlist group, 42.9% (n=9) of participants achieved 80% or better toward their behaviour goal. The total number of participants who reported achieving better than 80% of their goal was 30 (47.6%). Deterioration in behaviour was reported by 9.5% (n=4) of the treatment group, and 28.6% (n=6) of the waitlist group. Chi-square analysis of expected frequencies found there was no significant difference in % achieved groupings for the treatment and waitlist groups at T3, as shown in Table 23

The mean GAS scores achieved at T3 for the treatment groups was .905, or 90.5% (SD = .901). The mean GAS scores achieved at T3 for the waitlist group was .446, or 44.6% (SD = .629). A two-tailed independent samples t-test of the mean GAS scores based on equal variances found there was a significant difference between the treatment and waitlist groups in GAS scores at T3,  $t(65) = 2.18$ ,  $p = .03$ , the treatment group achieved significantly higher GAS scores than the waitlist group.

Table 23

## Frequency of GAS Scores Achieved at Follow up (T3)

	Treatment		Waitlist		Total	
	<u>n</u>	<u>% of n</u>	<u>n</u>	<u>% of n</u>	<u>n</u>	<u>% of n</u>
Deterioration <0%	4	9.5%	6	28.6%	10	15.9%
20% to 39%	4	9.5%	4	19.0%	8	12.7%
40% to 59%	8	19.0%	1	4.8%	9	14.3%
60% to 79%	6	14.3%	1	4.8%	7	11.1%
80% to 99%	4	9.5%	4	19.0%	8	12.7%
Over 100%	16	38.1%	5	23.8%	21	33.3%
Total	42	100.0%	21	100.0%	63	100.0%

## 6.5 Changes in Difficult Behaviour

### 6.5.1 Descriptive Data on Frequency and Severity of Difficult Behaviour

For the Difficult Behaviour Assessment Form participants rated the frequency and severity of two nominated problem child behaviours. This scale is a five point Likert scale, with higher scores indicating increased frequency and severity. As many participants did not nominate a second problem behaviour, analyses will concentrate on the primary problem behaviour for each participant. Table 24 shows the frequency of problem behaviour rated by participants in the treatment and waitlist group. The majority of participants in both groups reported their most important problem behaviour was either frequent nightwaking, sleeping during the day (ie. failure to sleep during the day, or difficulty with settling).

Table 24

#### Participants Nominated Difficult Child Behaviour

	Treatment (N=65)		Waitlist (n=52)	
	n	%	n	%
Frequent night waking	13	20.0	19	36.5
Sleeping during day	25	38.5	8	15.4
Settling	22	33.8	12	23.1
Breast or bottle feeding	1	1.5	4	7.7
Breastfeeding to sleep	1	1.5	1	1.9
Reflux	-	-	1	1.9
Frequent cuddling	-	-	1	1.9
Attention seeking	2	3.1	1	1.9
Tantrums	-	-	3	5.8
Other behavioural difficulty	1	1.5	2	3.8
Total	65	100.0	52	100.0

### 6.5.2 Changes in Difficult Behaviour Across Time

Factorial ANOVAs were conducted on the Difficult Behaviour scores for both Frequency and Severity across T1, T2, and T3. A significant main effect for Frequency was found, Wilks'  $\Lambda = .585$ ,  $F(2, 58) = 20.58$ ,  $P < .001$ , partial  $\eta^2 = .41$ , and there was also a significant interaction effect Wilks'  $\Lambda = .800$ ,  $F(2, 58) = 7.26$ ,  $P < .002$ , partial  $\eta^2 = .20$ . This significant interaction shows the effect on Frequency scores was different for the treatment and waitlist groups (Figure 7).

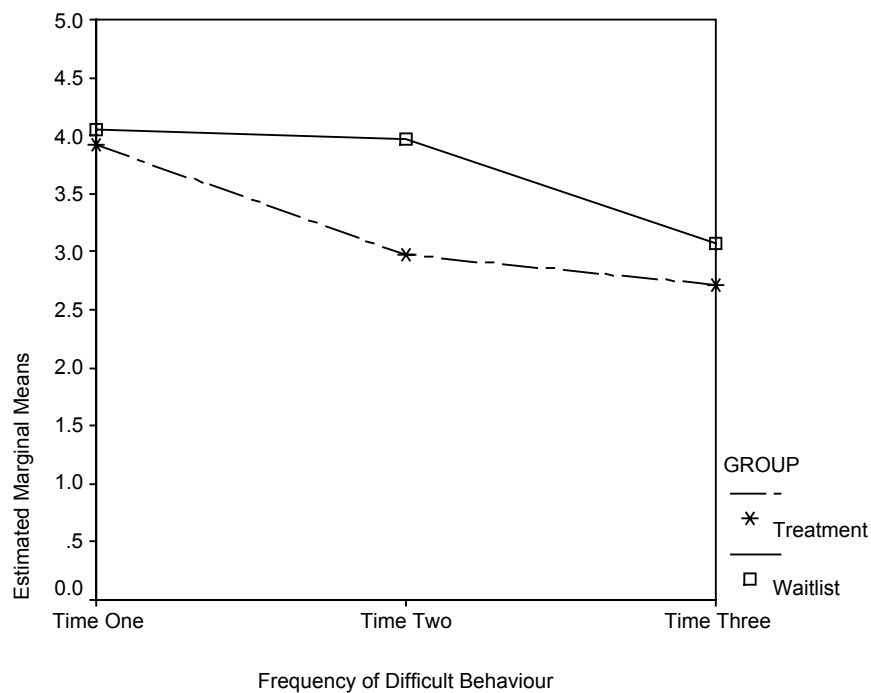


Figure 8. Interaction plot on Frequency of Difficult Behaviour scores.

A significant main effect for Severity was found, Wilks'  $\Lambda = .406$ ,  $F(2, 57) = 41.63$ ,  $P < .001$ , partial  $\eta^2 = .59$ , and also a significant interaction effect was evident Wilks'  $\Lambda = .520$ ,  $F(2, 57) = 26.27$ ,  $P < .001$ , partial  $\eta^2 = .48$ . Therefore, the effect on Severity scores was different for the treatment and waitlist groups. Figure 9. shows the difference in Severity scores for the treatment and waitlist groups over time.

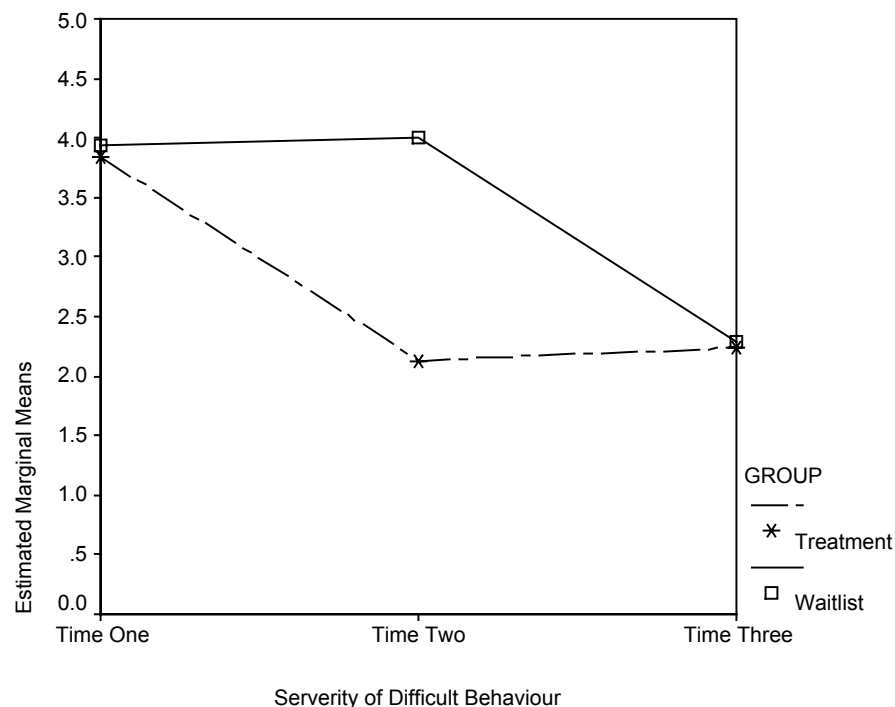


Figure 9. Interaction plot on Severity of Difficult Behaviour scores.

Univariate tests on Frequency using a Bonferroni corrected alpha of .017, show there was a significant difference in Frequency for the treatment and waitlist Groups at T2,  $F(1, 59) = 23.71$ ,  $p < .001$ , partial  $\eta^2 = .28$ , and also in Severity for the treatment and waitlist groups at T2,  $F(1, 58) = 56.04$ ,  $P < .001$ .  $\eta^2 = .49$ . The effect size of these changes was large with Cohen's  $d$  for Frequency 1.29, and Severity 1.98. There was no significant difference between the treatment and waitlist groups at T1 or T3 for Frequency or Severity.

Pairwise comparisons of group differences in Frequency and Severity over time are shown below in Table 25. There were significant reductions in both the Frequency and Severity scores for the treatment group from T1 to T2 ( $p < .001$ ), while the waitlist group showed no significant change. There were also significant differences in the Frequency and Severity scores for the treatment group from T1 to T3 ( $p < .001$ ), indicating that the behaviour changes from the program were maintained at follow-up. There were also significant differences in the mean scores on Frequency and Severity for the waitlist group from T1 to T3 ( $p < .001$ ).

Table 25

## Pairwise Comparisons for Difficult Behaviour Scores across Time

	Mean Scores	Comparisons	Mean Difference	Std. Error	Sig.
Frequency of Difficult Behaviour					
Treatment	T1 = 3.92	T1-T2	.949	.147	.001
	T2 = 2.97 T3 = 2.72	T1-T3	1.21	.205	.001
Waitlist	T1 = 4.05	T1-T2	.07	.196	NS
	T2 = 3.98 T3 = 3.07	T1-T3	.98	.273	.001
Severity of Difficult Behaviour					
Treatment	T1 = 3.84	T1-T2	1.71	.178	.001
	T2 = 2.13 T3 = 2.24	T1-T3	1.60	.214	.001
Waitlist	T1 = 3.93	T1-T2	-.06	.234	NS
	T2 = 4.00 T3 = 2.30	T1-T3	1.63	.281	.001

## 6.6 Comparisons Between Non-completers and Completers

Thirteen participants (from the total of 118 participants who agreed to participate in the study) dropped out of the study after completing the T1 measures; although they went on to attend the Day Stay program. Thus, 'non-completers' refers to participants who did not complete the post-intervention or follow-up measures. Analyses of demographic characteristics of the non-completers did not reveal any important differences between them and the completers.

Comparisons of the DASS and PSOC means and standard deviations for completers and non-completers are shown below in Table 26. The mean scores on Depression, Anxiety, and Stress were higher for the non-completers, while the Satisfaction and Efficacy scores were lower for non-completers. Statistical comparisons were made between the non-completers and the completers to determine if these two groups of participants were significantly different. One way ANOVA was conducted on the T1 DASS scores, and a significant difference between completers and non-completers was found for Anxiety,  $F(1, 113) = 13.23, P < .001, \eta^2 = .11$ , and also for Stress  $F(1,107) = 4.15, p = .04, \eta^2 = .04$ . There was no statistically significant difference in Depression scores, and no statistically significant differences in PSOC scores between completers and non-completers.

Table 26

## DASS and PSOC Scores at Time One for Completers and Non-completers

	Completer			Non-completer			Sig
	n	M	(SD)	n	M	(SD)	
DASS							
Depression	104	5.36	5.83	13	7.23	7.12	NS
Anxiety	102	2.14	2.72	12	5.50	4.96	<.001
Stress	95	10.53	7.02	13	14.92	9.02	.04
PSOC							
Satisfaction	101	25.26	6.03	13	23.15	7.61	NS
Efficacy	92	27.71	5.31	13	25.00	7.03	NS
Interest	103	10.60	1.54	13	10.30	2.13	NS

## 7 Discussion

### 7.1 Summary of major findings

The results demonstrate that mothers' attendance at the Day Stay program had an overall positive effect on their well being and parenting satisfaction. This is evidenced by significant improvements and large effect sizes in the DASS and PSOC for the treatment group following their Day Stay attendance. In contrast, the waitlist group results at time two did not change significantly. This was not unexpected, as the wait list had not yet attended the Day Stay program. Together the results in the DASS and PSOC indicate that participants in the treatment group were experiencing lower levels of distress and higher levels of parenting satisfaction following their attendance at the program.

The results also demonstrate that mothers' attendance at the Day Stay program was associated with notable goal achievement and improvement in severity and frequency of difficult child behaviour. According to the Goal Achievement Scale for the treatment group, 81.9% of the participants reported some improvement in their child's behaviour, and this includes 20.5% who achieved 100% of their targeted goal, and 11.4% who achieved between 80% and 99% of their goal. There were 13.6% of mothers who reported deterioration in their child's behaviour, and 4.5% of mothers who reported only minimal improvement (ie. 1% to 19% goal achievement). The large effect sizes in the frequency and severity of problem behaviour recorded via the Difficult Behaviour Assessment form demonstrate that the treatment group experienced improvement in behaviour, whilst the waitlist group showed no change.

For the waitlist group, there was similar improvement following Day Stay intervention, as demonstrated in the follow-up measures. Comparisons of measures at T1 and T3 revealed improvements in parental functioning for all parenting measures except for the DASS Anxiety and Stress subscales. It is unclear why the anxiety and stress scores for the waitlist group at T3 did not show the same degree of improvement as seen in the treatment group, however their longer waiting time may have had a detrimental effect. The wait list group reported substantial improvements in child behaviour on the Difficult Behaviour Assessment Form at T3, compared with T1.

The clinical cut off scores for the PSOC and DASS showed that the majority of the participants were not in the clinical range when they booked into the centre. This is to be expected as mothers with severe functioning problems would be identified by the triage staff and referred to more intensive services, such as the residential program. Nevertheless, the comparisons of participants' DASS scores with clinical cut offs demonstrate that the small proportion of clients who were in the clinical range at T1, moved into the non-clinical range at T3 on the DASS. Only one participant reported greater severity in DASS scores and moved from the non-clinical range into the clinical range, and one participant, who was in the clinical range at T1, remained in this range at T3.

## 7.2 Limitations

The randomised methodology used for the recruitment and group allocation have enabled clear comparisons to be made of the advantages to mothers in attending the Day Stay program. Nevertheless, some limitations on the conclusions are evident. The waitlist group size was smaller at T1 as this group experienced a higher dropout rate prior to attending the centre, most likely as a consequence of

the longer waiting time and mother's seeking alternative services. The waitlist group was also smaller at T3, as all follow-up measures for the waitlist group could not be collected within the research deadline. Finally, a measure of parental adherence to the program would have provided a measure of the ratio of uptake in implementing the strategies. Although the program uses established social learning content, no program integrity measures were taken, and these would have enhanced the generalisation of this program.

### 7.3 Conclusion and Future Directions

The results of this study clearly demonstrate that mothers who attended the Day Stay program showed significant improvement in their psychosocial well being. In addition, mothers reported significant improvement in their child's behaviour, particularly in nightwaking, settling, and behavioural difficulties. In contrast, mothers who were waitlisted for the Day Stay service continued to experience a greater degree of parenting difficulty. These results lend further support to the established literature which demonstrates that behaviourally based programs can have positive effects on mothers and their children (Barlow & Coren, 2003; Sanders, 1999).

As with all behaviourally based programs, the intensity of service delivery is balanced between the severity of presenting problems and access to services. A comparison of this present Day Stay service with other modes of delivery would be beneficial. In early parenting services, future studies are needed that provide comparisons of treatment intensity across the spectrum of services, including, single day stay programs, telephone triage, home visits, residential programs, and self-directed parenting programs. In this way, mothers may be more readily provided with an appropriate level of service.

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