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***Preparing for Life* Early Childhood
Intervention
Impact Evaluation Report 1:
Recruitment and Baseline Characteristics**

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***Preparing for Life* Early Childhood Intervention**
Impact Evaluation Report 1:
Recruitment and Baseline Characteristics

EVALUATION OF THE
'PREPARING FOR LIFE'
EARLY CHILDHOOD
INTERVENTION PROGRAMME

By

UCD GEARY INSTITUTE

October 2010



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Noel Kelly,
Manager, Preparing for Life.

Executive Summary

The intergenerational transmission of socioeconomic inequalities in children's health, and cognitive, behavioural, and emotional development emerge early, and can persist throughout life (Najman et al., 2004; Shonkoff & Phillips, 2000). Evidence suggests that targeted, early intervention programmes aimed at disadvantaged children and their families are an effective means of reducing these inequalities. *Preparing for Life (PFL)* is a new preventative programme which aims to improve the life outcomes of children and families living in North Dublin, Ireland through a five year home visiting parenting programme. The programme is being evaluated by the UCD Geary Institute and aims to provide evidence on the effectiveness of such early interventions.

The inclusion criteria for the *PFL* Programme were based on geographical residence and pregnancy status, and include both primiparous and non-primiparous women. In total, 233 women were recruited and randomised into the *PFL* Programme between January 2008 and August 2010. Randomisation resulted in 118 participants assigned to the low treatment group and 115 participants assigned to the high treatment group. On average, *PFL* participants were 21.5 weeks pregnant when completing the baseline interview and comparison community participants were, on average, 25.2 weeks pregnant.

The *PFL* Programme is being evaluated using a mixed methods approach, incorporating a longitudinal experimental design and an implementation analysis. The experimental component involves the random allocation of participants from the *PFL* communities to either a low supports treatment group or a high supports treatment group for the duration of the five year programme. As the *PFL* Evaluation is not a classic randomised control trial as both randomised groups receive some form of an intervention, the *PFL* treatment groups also are being compared to a 'services as usual' comparison group, who do not receive the *PFL* Programme. This comparison group displays similar socioeconomic demographics to the *PFL* participants, but does not receive any treatment.

This is the first report of the *PFL* Impact Evaluation and aims to present quantitative baseline information from the first wave of data collection. This report serves primarily as a description of the treatment and comparison groups and examines any baseline differences among the three groups. As future waves of data collection are completed, the baseline data will be used to conduct longitudinal analyses relating baseline characteristics to future child outcomes and to examine the impact of the programme on changes in behaviour over time. The information presented in this report is based on mother reported responses to the baseline interview.

Recruitment into the *PFL* Evaluation occurred through one of two sources: 1) in the maternity hospital or 2) in the community. Based on public health nurse records, the population-based recruitment rate for the *PFL* cohort, *based on all live births during the recruitment phase*, was 52%. Twenty two percent of pregnant women in the area were not identified in the recruitment phase and a further 26% were approached and not interested in participating. The sample-based recruitment rate for the *PFL* cohort, *based on all approached eligible participants during the recruitment phase*, was 67%. The sample-based recruitment rate for the comparison community was 36%.

The analyses in this report are based on data from 205 *PFL* participants and 99 community comparison participants. The analyses test for baseline differences between the low and high *PFL* treatment groups and the aggregate *PFL* cohort and the comparison community across a wide range of parental and family characteristics and behaviours. In total, 123 measures were analysed for the low and high treatment groups and 114 measures were analysed for the combined *PFL* group and the comparison community. The low *PFL* treatment group and the high *PFL* treatment group did not statistically differ on 97% of these measures, thus indicating that the randomisation process was successful. The aggregate *PFL* group and the comparison community did not statistically differ on 75% of these measures. However, measures where differences emerged suggest that the comparison community is a relatively higher socioeconomic status cohort. Details of these results are presented by chapter in Table 1.

Table 1.1

Summary of Permutation Tests Examining Differences at Baseline by Chapter

Chapter	Proportion of Measures Not Significantly Different at Baseline	
	<i>PFL</i> Low – <i>PFL</i> High	<i>PFL</i> – Comparison Community
Chapter 4: <i>Parental Demographics, Education, and Employment, and Household SES Indicators</i>	33/33	27/33
Chapter 5: <i>Maternal Well-being and Personality</i>	24/24	18/24
Chapter 6: <i>Maternal Health & Pregnancy</i>	35/35	26/35
Chapter 7: <i>Cognition, Thoughts About Parenting, and Intentions for Baby</i>	10/13	6/13
Chapter 8: <i>Social Support</i>	17/18	9/9
TOTAL NOT STATISTICALLY DIFFERENT	119/123 (97%)	86/114 (75%)

In addition to testing the degree of similarity of the three groups at baseline, this report also presents a detailed overview of the characteristics of the *PFL* Evaluation cohort. On average, participating mothers living in the *PFL* communities are 25 years old, 18% are teenage mothers, and 52% are primiparous mothers. The large majority (94%) are Irish with 5% being Irish Travellers. Eighty one percent of the cohort is in a relationship, with 16% of the *PFL* sample indicating they are married. Additionally, 30% of mothers reported that their current pregnancy was planned. On average, mothers left school at age 17 and 63% did not continue education beyond obtaining a Leaving Certificate. Thirty-eight percent of mothers in the *PFL* sample are in paid work, with 58% of these mothers in full time employment. Fifty-five percent of the *PFL* cohort are residing in social housing, 63% are in possession of a medical card, and 65% of families are in receipt of social welfare payments. In terms of mental health, 40% of the *PFL* sample are experiencing poor well-being and 20% have been diagnosed with postnatal depression in a previous pregnancy. Eleven percent of *PFL* mothers reported being in ill health, while 9% of the sample report experiencing some type of long term chronic illness, 69% indicated a physical health condition, and 26% reported a mental health condition. In terms of substance use during pregnancy, 49% of the sample reported smoking, 26% reported drinking, and 2% of the *PFL* cohort reported using drugs while pregnant. Finally, 9% of the *PFL* cohort indicated a high risk for abusive parenting and neglect.

1 Chapter 1: Introduction and Background of *PFL* Impact Evaluation

1.1 Description and Objectives of the *PFL* Early Childhood Intervention

The intergenerational transmission of socioeconomic inequalities in children's health, and cognitive, behavioural, and emotional development emerge early, and can persist through life (Najman et al., 2004; Shonkoff & Phillips, 2000). Evidence suggests that targeted, early intervention programmes aimed at disadvantaged children and their families are an effective means of reducing these inequalities. *Preparing for Life (PFL)* is a new preventative programme which aims to improve life outcomes of children and families living in North Dublin, Ireland. This intervention is being evaluated by the UCD Geary Institute and aims to provide evidence on the effectiveness of such early interventions.

PFL is a community-led initiative operated by the Northside Partnership (NSP) in Dublin, Ireland. The programme is jointly funded by The Atlantic Philanthropies (AP) and The Office of the Minister for Children and Youth Affairs (OMCYA). The *PFL* Programme aims to improve levels of school readiness of young children living in several designated disadvantaged areas of North Dublin, by intervening during pregnancy and working with families until the children start school. It was developed based on recognition that children from this area were lagging behind their peers in terms of both cognitive and non-cognitive skills at school entry. More recent research has provided quantitative evidence to support this hypothesis, thus highlighting the need for such an intervention. Specifically, a representative survey assessing levels of school readiness of children aged four to five years old attending the primary schools in the *PFL* catchment areas found that teachers rated children in the *PFL* communities as displaying significantly lower levels of school readiness than a Canadian norm (*PFL* Evaluation Team, 2010) on the domains of physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication and general knowledge. Teacher ratings were lowest in the cognitive domains of language and cognitive development and communication and general knowledge and approximately 30% of children in this cohort scored in the lowest 10% of the cohort on at least one domain of school readiness. In addition, the school readiness capabilities of children living in this area appear to be consistent over time as the teachers indicated that less than 50% of children entering school in the *PFL* catchment area were *definitely ready* for school in 2004 (Murphy et al., 2004) and again in 2009 (*PFL* Evaluation Team, 2010). Collectively, this body of research highlights the need for a school readiness intervention in these communities. The purpose of the *PFL* Programme is to improve these low levels of school readiness by assisting parents in developing skills to help prepare their children for school. As such, *PFL* operates under a holistic definition of school readiness composed of five dimensions: 1) physical health and well-being; 2) socio-emotional development; 3) approaches to learning; 4) language development and emergent literacy; and 5) cognition and general knowledge.

The inclusion criteria for the *PFL* Programme were based on geographical residence and pregnancy status, and include both primiparous and non-primiparous women. In total, 233 women from the *PFL* catchment area were recruited within the local community and from the maternity hospitals at their first booking visit. On recruitment, women were randomly assigned to either a low supports treatment group or a high supports treatment group. Families in both

groups receive developmental toys annually and facilitated access to one-year of enhanced preschool in the local childcare centres. In addition, both groups are encouraged to attend public health workshops focusing on public health messages such as stress control and nutrition. Participants in the programme also have access to a *PFL* support worker who can help them access additional services if needed and they are given a directory of local services. Finally, both groups receive a framed photograph taken by a professional photographer as well as newsletters and special occasion (e.g., birthday) cards. Participants in the high treatment group receive two additional services. First, each family has a dedicated mentor who visits the home for between 30 minutes and two hours per week starting during pregnancy and continuing until the child is five years old. The aim of these weekly home visits is to support and help parents with key parenting issues using a set of *PFL* developed tip sheets. The mentoring involves building a good relationship with parents, providing them with high quality information, being responsive to issues that arise; and in these ways aims to enable parents to make informed choices and signpost them to other relevant services (*Preparing for Life & The Northside Partnership, 2008*). The mentors focus on five general areas related to child development: 1) pre-birth, 2) nutrition, 3) rest and routine, 4) cognitive and social development, and 5) mother and her supports. The *PFL* Programme is therefore similar to the Nurse-Family Partnership (Olds et al., 1999), however its duration extends to age five compared to age two in the Nurse-Family Partnership programme. Second, participants in the high treatment group also participate in group parent training using the Triple P Positive Parenting programme (Sanders, Markie-Dadds, & Turner, 2003) which aims to improve positive parenting through the use of videos, vignettes, role play, and tip sheets in a group-based setting for seven consecutive weeks (two hours per week for first four weeks followed by two weeks of phone support and a final two hour group session on week seven). The Triple P programme has been subject to multiple rigorous evaluations which have demonstrated positive effects for both parents and children (Sanders, Markie-Dadds, Tully, & Bor, 2000).

1.2 Description and Objectives of the *PFL* Impact Evaluation

The *PFL* Programme is being evaluated by the UCD Geary Institute using a mixed methods approach, incorporating a longitudinal experimental design and an implementation analysis. The experimental component involves the random allocation of participants from the *PFL* communities to either a low or high supports treatment group for the duration of the five year programme. However, as the *PFL* Evaluation is not a classic randomised trial, as both randomised groups receive some form of an intervention, the *PFL* treatment groups also are being compared to a ‘services as usual’ comparison group, who do not receive the *PFL* Programme. This comparison group was identified using quasi-experimental methods. Specifically, hierarchical cluster analysis was used to identify a community who rank closely to the *PFL* community in terms of standard socioeconomic demographics, but do not receive any treatment. Ninety-nine pregnant women were recruited from the comparison community to help gauge child developmental trajectories in the absence of an early childhood intervention and to facilitate comparisons with a ‘services as usual’ cohort.

The impact evaluation collects data on children’s physical health and motor skills, social and emotional development, and behaviour, learning, literacy and language development, and the mother’s pregnancy behaviours, physical and psychological health, cognitive ability, personality,

and parenting skills from pregnancy onwards. Data are collected from all three groups at baseline (t0), and when the child is six months (t1), 12 months (t2), 18 months (t3), 24 months (t4), three years (t5), four years (t6) and five years old (t7). In addition to these data collection time points, maternal cognition is assessed one time throughout the duration of the programme (usually between t0 and t1) using the Weschler Abbreviated Scale of Intelligence (WASI; Psychological Corporation, 1999). Although the mother is the primary informant in all waves of data collection, information also is obtained from fathers, the child, siblings, and other independent data sources, such as hospital records. The current report provides a description of maternal responses to the baseline interview.

Information presented in this report was obtained through face to face structured baseline interviews with *PFL* participants 1.4 weeks, on average, after recruitment and on the same day as recruitment for the comparison community. Interviews lasted approximately one to one and a half hours and were conducted using a Computer Assisted Personal Interviewing (CAPI) technique in which the interview was pre-programmed on a laptop computer to ensure accurate routing of questions and reduce errors associated with data entry. Although home interviews are encouraged, participants have the option of conducting the interview in her home or in a local community centre. The majority of both the *PFL* cohort (53%) and the comparison community (81%) completed the interview in their home. Each participant is given a €20 shopping voucher after the baseline interview was completed as a thank you for taking the time to complete the interview. In addition to the mother completed questionnaire, fathers were invited to complete a baseline interview, either face to face or by completing a questionnaire designed for self completion. Thirty-three percent of fathers completed this interview or returned a self-complete questionnaire. Due to the relatively low number of father responses, this report will concentrate on maternal responses, but father's reports will be analysed in the future.

Parallel to this, a process evaluation is being conducted using a multi-sequenced design, integrating focus group methods with *PFL* participants and semi-structured interviews with programme staff to assess programme implementation and fidelity. In addition, implementation data recorded by programme staff (using a Database Management System) also are being tracked on an ongoing basis to measure programme participation and service provision. Future reports will link this qualitative information gained in the process evaluation to quantitative information obtained through the seven waves of data collection.

1.3 Aims and Overview of Report 1

This is the first report of the *PFL* Impact Evaluation and aims to present quantitative baseline information from the first wave of data collection. This report serves primarily as a description of the treatment and comparison groups and examines any baseline differences among the three groups. As future waves of data collection are completed, the baseline data will be used to conduct longitudinal analyses relating baseline characteristics to future child outcomes and to examine the impact of the programme on changes in behaviour over time.

The information presented in this report is based on mother reported responses to the baseline interview. Chapter Two reviews the recruitment process, including the population and sample

based recruitment rates and attrition prior to intervention delivery. Chapter Three describes the methodology used in the analyses presented in the report. Chapters Four through Eight present descriptive statistics on the baseline characteristics of the sample and statistical comparisons of the low and high *PFL* treatment groups and the combined *PFL* treatment groups and the comparison community. Specifically, Chapter Four focuses on family demographics including personal characteristics, parental education and employment status, household composition, and household material deprivation. Chapter Five presents information related to maternal well-being, including previous indications of postnatal depression and measures of self-esteem, self-efficacy, maternal attachment style, and personality. Chapter Six describes self-reported maternal health across the lifespan and information related to the pregnancy. Chapter Seven describes maternal cognition, thoughts about parenting, and intentions for the newborn baby. Chapter Eight focuses on social support and maternal use of local services in the *PFL* communities. Each chapter concludes with a brief summary of the key findings presented in that chapter. Finally, Chapter Nine summarises the description of the cohort and comparisons between the low and high treatment groups, as well as between the aggregate *PFL* sample and the comparison community.

2 Chapter 2: Recruitment

2.1 PFL Catchment Area

Recruitment into the *PFL* Programme began in late January, 2008 in the North Dublin communities of Darndale, Moatview, and Belcamp including Newtown Court and the Traveller Community. Due to the relatively slow uptake rate within these communities, the *PFL* catchment area was expanded to include the areas of Ferrycarrig, Glin, and Greencastle in January, 2009. A second expansion was initiated in late June, 2009 to include additional communities in Dublin 17 and Dublin 5. An in-depth analysis of the demographic similarity of the proposed expansion areas was conducted prior to the addition of any community into the *PFL* catchment area. As illustrated in Table 2.1, the expansion areas were relatively similar to the original *PFL* catchment area on key socio-demographic characteristics. Additionally, all expansion areas were geographically close to the original *PFL* catchment area.

Enumeration Area (EA) level data from the 2006 Census indicate that the original *PFL* catchment area comprised 6,439 inhabitants, with 7% being born outside Ireland. Approximately 60% of the original catchment area were living in social housing, 16% were unemployed, and 5% had completed a third level education. The socio-demographics remained relatively similar when the two expansion areas were combined with the original catchment area. Specifically, the final *PFL* catchment area, including the two expansions, is composed of 15,384 inhabitants, 7% of whom were born outside Ireland, 42% were living in social housing, 12% were unemployed, and 7% had completed a third level education. Of the 233 participants recruited into the *PFL* Programme, 172 (74%) are from the original catchment area, 39 (17%) are from the first expansion area, and 22 (9%) are from the second expansion area.

2.2 Comparison Community Catchment Area

Hierarchical cluster analysis was used to identify the degree of similarity between the matched community comparison group and the *PFL* treatment groups by calculating the Euclidean pairwise distance between communities. Small area population statistics (SAPS) from Census 2006 were used to rank all 322 communities in Dublin in terms of their closeness to the *PFL* community based on standard demographic and socio-economic characteristics. Dissimilarity matrices showing the degree of similarity between communities were constructed, allowing comparisons of results across variable inputs. Although the selected comparison community areas were similar to the *PFL* catchment areas, they were not the closest ranking communities. Several communities were more closely ranked to the *PFL* catchment area, but were already experiencing some form of early childhood intervention. Therefore, the selected communities were identified as they were the most similar socio-demographically communities not receiving an early childhood intervention. While this quantitative approach provided suitable rankings based on statistical data, researchers cross checked the reliability of the quantitative analysis with a qualitative approach. This involved bringing the quantitative analysis to local service providers in the comparison community to gauge the comparability of the selected catchment areas. Figure 2.1 displays EA level data from the 2006 Census demonstrating that the comparison community

consists of 13,657 inhabitants, 5% of which were born outside Ireland, approximately 35% of individuals living in this area were living in social housing, 10% were unemployed, and 7% had completed a third level education.

Table 2.1

Figures Illustrating Socio-demographic Similarity of Catchment Areas

Measure	Original Catchment Area	1 st Expansion (January, 2009)	2 nd Expansion (June, 2009)	Combined PFL Areas	Comparison Community
Inhabitants	6439	3325	5620	15384	13657
Born Outside Ireland	7%	8%	6%	7%	5%
Social Housing	60%	29%	33%	42%	35%
Third Level Education	5%	10%	7%	7%	7%
Unemployment	16%	9%	8%	12%	10%

Source: Small Area Population Statistics, Census (2006).

2.3 Randomisation

2.3.1 Benefits of Randomisation

Randomised controlled trials are the gold standard methodology for evaluating the effectiveness of policies or interventions (Solomon, Cavanaugh, & Draine, 2009). The *PFL* Evaluation is a randomised controlled trial, or a quantitative comparative assessment of various levels of intervention treatments in which participants are randomly allocated to one of two treatment groups (Jadad, 1998). It has been argued that assigning participants to treatment groups *wholly at random* is the most effective way to maintain balance between two groups of individuals receiving different treatments (Burtless, 1995). Therefore, randomisation of *PFL* participants into the low or high treatment group is central to the evaluation design as it ensures the even distribution of baseline characteristics across each treatment group. Randomisation provides each participant with an equal opportunity to receive either the low or high treatment intervention and therefore, on average the observed and unobserved characteristics of the participants should be distributed evenly across the two groups before the programme begins. This, in turn, allows investigators to more effectively examine treatment effects over the course of the programme (Jadad, 1988). Finally, randomisation of participants into treatment groups removes selection bias and provides a more reliable assessment of treatment effects (Burtless, 1995). By incorporating such random assignment into a programme evaluation, differences in observed outcomes may be causally linked to the intervention or programme being evaluated and provide strong quantitative evidence recognised to assess effectiveness (Solomon et al., 2009).

2.3.2 Description of Randomisation Process

PFL participants were randomised after informed consent was obtained. An unconditional probability computerised randomisation procedure presented each participant with an equal chance of being randomised into the low or high treatment group. After consenting to take part in

the *PFL* Programme and Evaluation, the participant pressed a key on a computer which randomly allocated her treatment group assignment. The computerised randomisation program created an array to the size of the number of people to be in the randomised group. In the case of the *PFL* Programme this array consisted of 250 possible *PFL* numbers populated with a one or zero. This array was then shuffled using a random number generator to randomly assign the numbers a location in the array. This process resulted in a list of ones and zeros where the numbers are in a random order and are written to a file one per line. As each participant clicked on the randomisation website she was assigned a one or zero which corresponded to the two treatment groups in the study and her *PFL* code was inserted beside the one or zero in the file.

In total, 233 *PFL* participants were randomised, with 118 assigned to the low treatment group and 115 assigned to the high treatment group.

2.4 Recruitment Progression

Recruitment for the *PFL* cohort commenced in late January, 2008 and finished in August, 2010. A total of 233 *PFL* participants were recruited during this 32 month period, resulting in an average of just over seven new participants recruited per month. Recruitment of the comparison community began in September, 2008 and finished in September, 2010. During this 25 month period, a total of 99 comparison participants were recruited, resulting in an average of approximately four new recruits per month.

Figure 2.1 represents the number of new participants recruited each month throughout the recruitment phase of the *PFL* Evaluation. Participants from the *PFL* communities are indicated in blue and participants from the comparison communities are indicated in grey. Similarly, Figure 2.2 illustrates the progression of overall recruitment throughout the duration of the recruitment phase of the *PFL* Evaluation.

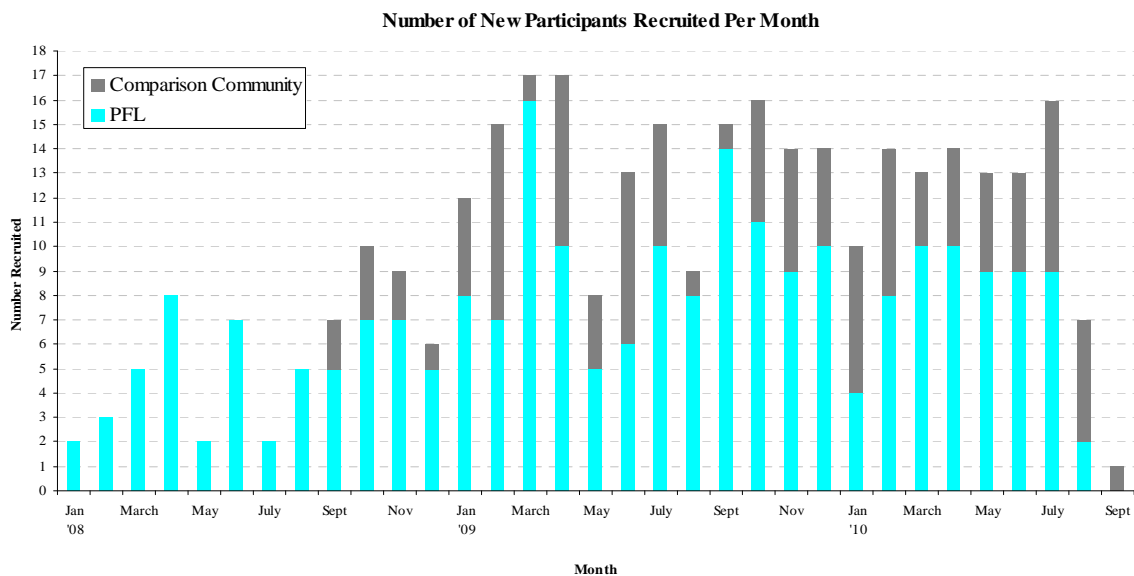


Figure 2.1. Number of participants recruited into the *PFL* Evaluation by month of recruitment.

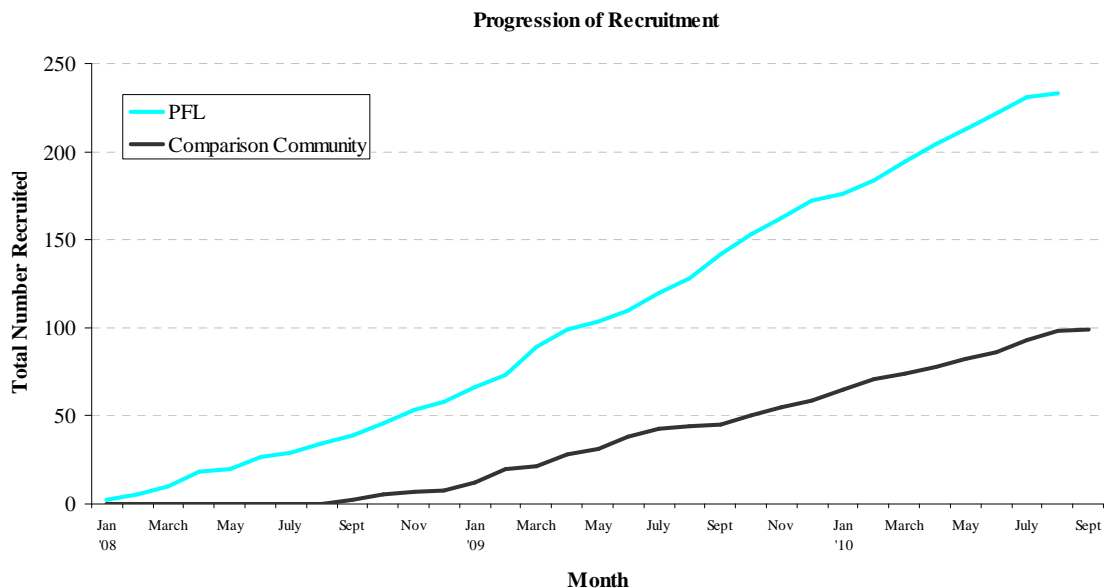


Figure 2.2. Aggregate total of participants recruited into the *PFL* Evaluation throughout the recruitment phase.

2.5 Recruitment Rate

Recruitment into the *PFL* Evaluation occurs through one of two sources: 1) in the maternity hospital or 2) in the community. The *PFL* Evaluation gained ethical approval from two maternity hospitals to facilitate the recruitment process. This process involved meeting women at their first booking visit to describe *PFL* and gauge their interest in the programme. If a woman was interested, her contact details were obtained and she was contacted to schedule a recruitment meeting. Community recruitment occurred through referrals in the community as well as in community pregnancy and health clinics. The population-based recruitment rate for the *PFL* cohort, based on all live births during the recruitment phase, was 52%. Twenty six percent of pregnant women in the area were approached and not interested in participating in the programme and a further 22% were not identified in the recruitment phase. These figures are based on public health nurses' records of all recorded births in the three catchment areas during the inclusion period and are displayed in Table 2.2. It is important to note that ethical approval to recruit in the maternity hospital was gained in May, 2008, four months after recruitment began. During these four months, community recruitment was the only mechanism by which participants were recruited into the *PFL* Programme. This time lag may have contributed to missing 22% of eligible participants.

Table 2.2

Population-based Recruitment Rate Figures for the PFL Catchment Area

Total Number of Live Births	447
Total Number Recruited	233 (52%)
Total Number Not Interested	117 (26%)
Total Number Missed (did not meet)	97 (22%)

Note. Information regarding the number of live births in the comparison community is not yet available.

The recruitment rate by catchment area is presented in Table 2.3 and shows that the recruitment rate was lowest in the first expansion area and highest in the second expansion area.

Table 2.3

Figures Illustrating Live Births in the PFL Catchment Areas as Indicated by Public Health Nurse Records

Category	# Live Births	# Recruited into PFL	% Captured
Original Catchment Area	320	172	54%
1 st Expansion Area	94	39	41%
2 nd Expansion Area	33	22	67%
Total	447	233	52%

Note. Information regarding the number of live births in the comparison community is not yet available.

Table 2.4 indicates that the sample-based recruitment rate for the *PFL* cohort, based on all approached eligible participants during the recruitment phase, was 67%. It also shows that the *PFL* community recruitment rate (88%) was higher than the *PFL* hospital recruitment rate (51%). As community recruitment involved women initiating contact with the *PFL* Programme in order to learn more about the programme and/or directly join the programme, it is unsurprising that the community recruitment rate is higher than the hospital recruitment rate. Table 2.5 illustrates that the majority of *PFL* participants (55%) were recruited through the community. Of the 129 *PFL* participants recruited from the community, 25% indicated they were referred to the programme from a friend or family member already taking part in the *PFL* Programme. Twelve percent of community referrals indicated they heard about the programme through a *PFL* affiliate or informational material, a further 12% were recommended by a medical professional, and an additional 12% were referred by a local service provider. Nine percent heard about the *PFL* Programme from educational professionals in the area and 8% were referred by a friend or family member not taking part in the programme. Finally, 22% of community referrals did not indicate that they were referred to the *PFL* Programme by anyone.

As displayed in Table 2.4, the sample-based recruitment rate for the comparison community was 36%, with a 30% recruitment rate in the community and a 48% recruitment rate in the local maternity hospitals. Additionally, Table 2.5 shows that the majority of comparison community participants (58%) were recruited through the local maternity hospitals.

Table 2.4

Sample-based Recruitment Rates for the PFL Evaluation by Cohort and Place of Recruitment

Category	# Spoke to Recruiter	# Recruited into Programme	% Recruited into Programme
<i>PFL</i> Hospital Sample-based Recruitment Rate	203	104	51%
<i>PFL</i> Community Sample-based Recruitment Rate	147	129	88%
Total <i>PFL</i> Sample-based Recruitment Rate	350	233	67%
Comparison Community Sample-based Hospital Recruitment Rate	190	57	30%
Comparison Community Sample-based Community Recruitment Rate	88	42	48%
Total Comparison Community Sample-based Recruitment Rate	278	99	36%

Note. Hospital figures are based on 28.5 months recruiting *PFL* participants and 25 months recruiting comparison community participants in local maternity hospitals.

Table 2.5

Frequencies Representing Where Participants were Recruited

	Hospital Recruitment <i>n</i> (%)	Community Referral <i>n</i> (%)	Total Number Recruited
<i>PFL</i> Cohort	104 (45)	129 (55)	233
Comparison Community	57 (58)	42 (42)	99
Total	161 (48)	171 (52)	332

2.6 Recruitment and Pregnancy Information

The majority of *PFL* participants (82%) plan to have their baby at the Rotunda Hospital, while 16% are using the National Maternity Hospital. A further 1% of the *PFL* cohort are giving birth in the Coombe Maternity Hospital and less than 1% are planning on having a home birth. Similarly, 92% of the comparison community participants plan to have their baby at the Rotunda Maternity Hospital, while 8% plan to use the National Maternity Hospital.

On average, *PFL* participants were 21.5 ($M_{\text{Low}} = 21.3$, $SD_{\text{Low}} = 7.0$; $M_{\text{High}} = 21.6$, $SD_{\text{High}} = 7.9$) weeks pregnant when completing the baseline interview and comparison community participants were, on average, 25.2 ($SD = 10.4$) weeks pregnant¹. The average week of pregnancy does not differ between the low and high *PFL* treatment groups, but the comparison community is significantly farther along in pregnancy than the aggregate *PFL* cohort ($T = 4.3$, $p < .001$). Finally, the majority of participants were in their second trimester at the time the baseline interview was completed. Details of pregnancy trimester at the time of the baseline interview are presented in Table 2.6. Note that the low and high *PFL* treatment groups do not differ in terms of the distribution of participants across trimesters, but statistical differences were present between the aggregate *PFL* sample and the comparison community ($\chi^2 = 12.5$, $p < .01$, $v = .20$).

¹ Baseline interviews were conducted, on average, 1.4 weeks after recruitment for the *PFL* cohort. The baseline interview was conducted on the same day as recruitment for the comparison community.

Table 2.6

Frequencies Representing Pregnancy Trimester at Time of Baseline Interview

	1 st Trimester (1-12 weeks)	2 nd Trimester (13-24 weeks)	3 rd Trimester (25-40 weeks)
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Low Treatment (<i>n</i> =101)	14 (14)	56 (55)	31 (31)
High Treatment (<i>n</i> =104)	13 (13)	56 (54)	35 (34)
<i>PFL</i> Cohort (<i>n</i> =205)	27 (13)	112 (54)	66 (32)
Comparison Community (<i>n</i> =99)	2 (2)	51 (52)	46 (46)

2.7 Disengagement before Baseline Interview

Twenty one *PFL* participants ($n_{Low} = 14$; $n_{High} = 7$) disengaged post recruitment, prior to completing a baseline interview, two participants ($n_{Low} = 1$; $n_{High} = 1$) had a miscarriage before completing the baseline interview, and four *PFL* participants ($n_{Low} = 2$; $n_{High} = 2$) were unresponsive during the post recruitment period until after their child was born and thus no baseline data are available for these participants. Therefore, baseline data are available for 206 *PFL* participants, 101 in the low treatment group and 105 in the high treatment group. Five of the 21 *PFL* participants who disengaged prior to completing a baseline interview were considered to be no longer active in the *PFL* Programme due to an extended period (i.e., more than one year) of inactivity. Of the remaining 16 participants, 12 participants who dropped out of the programme before completing a baseline interview provided reasons for their decision to disengage with the programme. Specific reasons were that they do not want to discuss their personal life and family, that it would take up too much of their time, that they did not feel that themselves or their child needed the programme, that the duration of the programme was too long, that it would get in the way of their day to day life, that they were uncomfortable with people coming to their house and/or that they did not think the programme would help.

Of the 25 *PFL* participants who were recruited into the *PFL* Programme, but did not complete a baseline interview, excluding those who miscarried, basic socio-demographic information is available for 12 of them. When the socio-demographic profile of these participants was compared to participants who did complete a baseline interview, only one significant difference emerged. Specifically, individuals who completed a baseline assessment indicated they received significantly more support from friends than those who dropped out of the programme before completing this baseline interview. Differences in age, support received by family members, support received from other people in the mother's life, age the mother left full time education, the number of household members working full time, the number of household members working part time, and the ability to make ends meet did not reach significance. Note that the sample size used in this analysis is small as it only pertains to a subset of participants. Details of these tests are presented in Table 2.7.

As recruitment into the community comparison group was completed immediately prior to conducting the baseline interview, there are baseline data available for all 99 comparison community participants.

Table 2.7

Demographic Comparisons for PFL Participants who Did and Did Not Complete a Baseline Assessment

Variable	BL Complete – No BL				<i>p</i>
	<i>N</i> (<i>n</i> _{BL} / <i>n</i> _{No})	<i>M</i> _{BL} (<i>SD</i>)	<i>M</i> _{No} (<i>SD</i>)	<i>M</i> _{BL} – <i>M</i> _{No}	
Age	127 (115/12)	25.45 (6.17)	23.83 (3.81)	1.62	ns
Family Support	125 (113/12)	3.79 (0.65)	3.50 (0.80)	0.29	ns
Friend Support	121 (109/12)	3.67 (0.64)	3.08 (1.24)	0.59	<.01
Other Support	110 (98/12)	3.92 (0.88)	3.83 (0.94)	0.09	ns
Age Left Education	111 (99/12)	16.87 (1.87)	16.25 (1.14)	0.62	ns
Household Members Working Full Time	126 (114/12)	1.72 (0.90)	1.58 (0.90)	0.14	ns
Household Members Working Part Time	108 (97/11)	1.34 (0.52)	1.18 (0.40)	0.16	ns
Ability to Make Ends Meet	126 (114/12)	3.74 (1.02)	3.75 (0.97)	-0.01	ns

2.8 Key Findings

- According to Enumeration Area (EA) level data from the 2006 Census the final *PFL* catchment area, including the two expansion areas, is composed of 15,384 inhabitants, 7% of whom were born outside Ireland, 42% were living in social housing, 12% were unemployed, and 7% had completed a third level education. Of the 233 participants recruited into the *PFL* Programme, 172 (74%) are from the original catchment area, 39 (17%) are from the first expansion area, and 22 (9%) are from the second expansion area.
- The comparison community consists of 13,657 inhabitants, 5% of which were born outside Ireland, 35% of which were living in social housing, 10% were unemployed, and 7% had completed a third level education.

- In total, 233 *PFL* participants were recruited into the programme, with 118 assigned to the low treatment group and 115 assigned to the high treatment group. Additionally, 99 participants were recruited from the comparison community.
- The population-based recruitment rate for the *PFL* cohort, *based on all live births during the recruitment phase*, was 52%.
- Approximately 26% of approached eligible *PFL* participants during the recruitment phase were not interested in participating and a further 22% of eligible participants were not identified throughout the recruitment phase.
- Approximately 55% of *PFL* participants were recruited in the community and 45% through two maternity hospitals.
- Approximately 58% of comparison community participants were recruited through two maternity hospitals and 42% through community sources.
- The sample-based recruitment rate for the *PFL* cohort, *based on all approached eligible participants during the recruitment phase*, was 67%.
- The sample-based recruitment rate for the comparison community was 36%.
- On average *PFL* participants were 21.5 weeks pregnant when completing the baseline interview and comparison community participants were 25.2 weeks pregnant.
- Participants who were recruited into the programme, but did not complete a baseline interview reported receiving significantly less support from friends than those who stayed in the programme. Differences in age, support received by family members, support received from other people in the mother's life, age the mother left full time education, the number of household members working full time, the number of household members working part time, and the ability to make ends meet did not reach significance.

3 Chapter 3: Methodology of Analyses

3.1 Introduction

This chapter describes the methodology used to analyse the baseline data collected in the *PFL* Evaluation. Chapters four through eight follow a similar format. Each chapter focuses on a specific topic and begins by reviewing the relevant literature and discussing the relevance of that theme to the *PFL* Evaluation. The measures and standardised instruments collected during the baseline interview are then described. The summary statistics of these measures follow, accompanied by a discussion of the statistical differences, or lack thereof, found between the low and high *PFL* treatment groups and the overall *PFL* group and the comparison community.

This chapter describes the methods employed to assess these relationships and how the results presented in the report should be interpreted.

3.2 Handling Missing Data

While participants were encouraged to answer all questions during the baseline interview, there were cases in which participants either could not provide a response to a question or did not wish to provide a response. This resulted in missing data on some items. Overall, the extent of missing information in the baseline data is very low as less than three percent of data were missing for each psychometric scale. However, to maximise the sample size, interpolation methods were used to correct for missing data in these scales. Note that such methods were only used for standardised psychometric scales, as it is possible to utilise information within that scale to replace the missing data. In cases where data were missing on single item measures, observations with missing data were excluded from the analysis. On average, all data were present for 97% of single item measures.

For the standardised scales, missing data were imputed using responses that mothers had provided on other items within the standardised scale. The method involves replacing missing items with the group mean for that item and then adjusting for random noise. As responses on the standardised measures are treated as continuous, it is possible to calculate means. Specifically, the average response to a given item is calculated for each of the three groups (low treatment, high treatment, matched comparison community). Missing items were then replaced with the corresponding group mean. As replacement using only the group mean may lead to underestimation of the variance, the missing data for standardised scales were imputed using the mean plus a random residual value. The number of respondents for whom items were imputed ranged from zero (*Consideration of Future Consequences Scale*) to nine (*Vulnerable Attachment Style Questionnaire*) resulting in an overall imputation average of 3.7 observations for the standardised scales.

3.3 Description of Analyses

3.3.1 Standardised Scale Reliability

Cronbach's alpha coefficients (Cronbach, 1951) were calculated for all standardised scales used in this report and are reported in the text along with the description of these scales. *Cronbach's alpha* (α) measures the intercorrelations between items on the various psychometric scales. It provides an indicator of the internal consistency or reliability of the measure (Cronbach, 1951) and provides an indication of how closely items that make up a latent variable or scale are related. In terms of interpretation, a Cronbach's alpha of 0.7 or higher is considered evidence of sufficient dependability (Breakwell, 2006).

3.3.2 Continuous Measures

Both continuous and categorical measures are used in this report, with each type of measure requiring a different method of analysis. While continuous measures, such as age, are treated as continuous in the analysis, categorical measures, such as parental education levels, were dichotomised or recoded to capture all information in as few categories as necessary. Measures that were dichotomised are noted throughout the following chapters.

When examining group differences in continuous measures, it is necessary to determine whether parametric or non-parametric tests should be applied. Measures which are normally distributed, (i.e., the data follow a bell-shaped curve) require parametric tests and measures which are non-normally distributed (i.e., the data are skewed) require non-parametric tests. As the sample will vary depending on whether the low and high *PFL* treatment groups are being compared or whether the overall *PFL* group and matched comparison community group are being compared, the normality of each subset of data was explored. The skewness-kurtosis test was employed to test the null hypothesis of normality. If the hypothesis is accepted (i.e., data are normally distributed), Monte Carlo permutation tests using a regression framework are typically used to compare the groups. However, if the hypothesis is rejected (i.e., data are not normally distributed), the Monte Carlo permutation tests using a Mann-Whitney rank sum test are commonly used. The regression framework calculates the difference between group means, while also accounting for the spread of responses. The Mann-Whitney method does not depend on mean values but rather, it ranks the values in the entire sample and then checks whether similarly ranked values can be found in both groups. If one group has a significantly larger proportion of higher ranked values, that is strong evidence of a group distinction. Both the regression and the Mann-Whitney rank sum test have a *p*-value associated with them which allows us to assess the probability that group differences are due to chance. For all variables of interest, both a regression and a Mann-Whitney test were conducted. In most cases of non-normally distributed data, the results did not differ between the two analyses conducted. Therefore, Monte Carlo permutation tests, based on 20,000 replications, using a regression framework are presented throughout Chapters Four through Eight unless otherwise noted.

3.3.3 Monte Carlo Permutation Tests

Given the relatively small size of the sample in these analyses ($N = 304$), and the non-normality of many outcome measures, traditional techniques which work under the assumption of large samples are not appropriate. Instead, Monte Carlo permutation tests were employed to check for statistical differences among the different groups when examining continuous and binary measures. A permutation test is a method whereby an outcome of interest is tested for significance by comparing the original sample to multiple, random permutations of the data. Permutation tests work as follows: firstly, the relationship between measures is observed and a test statistic is calculated. Then, the data are shuffled multiple times (i.e., 20,000) to examine whether the observed relationship is likely to occur by chance. The p -value for a permutation test is computed by examining the proportion of permutations that have a test statistic greater than or equal to the observed statistic in the original sample. If the proportion is small, we know that the original statistic is an unlikely outcome. This method provides evidence that something other than chance is driving the relationship. These tests are also distribution-free as they do not rely on assumptions about the parametric distribution from which the data have been sampled. As permutation tests give accurate p -values even when the sampling distribution is skewed, they are often used when sample sizes are small and sample statistics are unlikely to be normal (Marozzi, 2002).

3.3.4 Categorical Measures

When the measures that are being examined are categorical in nature, two different tests can be applied: chi-square or Fisher's exact. The appropriate test is determined by examining the group frequencies within each variable category. If a category has a frequency of five or greater, the chi-square test is employed, otherwise, the Fisher's exact test is used. The chi-square statistic is calculated by examining the tally of responses in various categories for two different groups. This provides an indication of whether the two groups are dividing into the various categories in a similar manner. Due to the distributional assumptions of this statistic, it is only suitable for relatively large samples. For this reason, the restriction that the frequency of each response option must be five or greater for every group category is enforced. If this assumption does not hold, Fisher's exact was used as this statistic is calculated using a slightly different formula that approximates a probability distribution even when the sample is small. Like the techniques used for continuous measures, the chi-square and the Fisher's exact tests have a p -value associated with them which indicates the likelihood of observing the resulting statistic by chance. Chi-square tests are used for categorical variables throughout Chapters Four through Eight unless otherwise noted.

3.3.5 Effect Size

Permutation tests, chi-square tests, and Fisher's exact tests provide a statistical method for determining whether a statistically significant relationship exists in the data. In order to understand the magnitude of the relationship, another method is required. To examine effect sizes, Cohen's d was used for continuous and binary measures and Cramer's V was calculated for categorical measures. Cohen's d calculates the difference between the mean values of two groups, while accounting for the distribution of the values. As Cohen's d requires examination of group means, it can only be calculated for continuous or binary variables. Therefore, the

Cramer's V statistic was employed to measure the effect size for categorical variables. Cramer's V is calculated by taking the chi-square or Fisher's exact statistic and adjusting it to account for the number of observations in each category. The effect size statistics can be interpreted as follows: a Cohen's d ranging from 0.0 to 0.2 is deemed a small effect, values ranging from 0.2 to 0.8 represent a medium effect, and values greater than 0.8 illustrate a large effect (Gravetter & Wallnau, 2004). Cramer's V can range from zero to one, with values closer to one representing a stronger effect. For the type of analyses conducted in this report, a Cramer's V ranging from 0.1 to 0.3 represents a small effect, values ranging from 0.3 to 0.5 represent a medium effect, and values greater than 0.5 indicate a large effect (Gravetter & Wallnau, 2006). Although these serve as guidelines for interpretations of effect sizes in this report, future reports evaluating the effectiveness of the *PFL* Programme will use results reported in similar programmes to benchmark effect sizes, and to provide a contextual interpretation of such findings.

3.4 Description of Summary Statistics

The following summary statistics and tests are presented in the descriptive tables within Chapters Four through Eight. This section provides a useful reference when examining these tables.

- N represents the response frequency or the number of respondents who answered the question of interest.
- M illustrates the mean, or average value of responses. This statistic is provided for continuous and binary variables and represents the average response of all participants who answered the question of interest. For binary variables, this value can be interpreted as the proportion of the sample who reported being in the category described.
- SD is the standard deviation. This is calculated by, firstly, summing up the difference between each observed response and the average response. This sum is then divided by the total number of observations to derive the average difference between responses and the mean. It serves as a useful indication of how varied the responses were.
- *Low/High* and *PFL/Comp* subscripts attached to the summary statistics (N , M , and SD) indicate the subgroups for which the summary statistics have been calculated. The mean responses for the low *PFL* treatment group (low), high *PFL* treatment group (high), the overall *PFL* group (*PFL*), and the comparison group (Comp) are compared in multiple ways. The data are first grouped by *PFL* treatment status (low treatment and high treatment) to examine baseline differences within the *PFL* cohort and secondly, the overall *PFL* group is compared to the matched comparison community.
- p -value represents the probability of observing this result, or the likelihood of observing differences between the two groups, by chance. In cases where there are statistically significant differences between the two groups, a p -value is presented which indicates the likelihood that the group difference could have randomly occurred. Consistent with the literature, a p -value of less than .05 is considered to be significant. A p -value of less than 0.05 (5%), 0.01 (1%), or .001 (0.1%) conveys that the probability that the difference

between the two groups is due to chance is less than 5%, 1%, or 0.1%, respectively. Given that this is a baseline comparison, high p -values (i.e., non-significant results) would be a positive result indicating pre-intervention similarity between groups. p -values are presented for significant differences only. Non-significant differences are noted with *ns*.

- *Effect size (d or V)* illustrates the magnitude of the group difference. While the p -value allows the reader to determine whether or not there is a statistically significant difference between groups, it does not indicate the strength of the difference. As the strength of a relationship can provide valuable information, the effect size was calculated using Cohen's d for continuous variables and Cramer's V for categorical variables.

4 Chapter 4: Parental Demographics, Education and Employment Characteristics, and Household SES Indicators

4.1 Introduction

Socioeconomic status (SES) is a widely studied construct in the social sciences. It has been conceptualised and measured in several ways, with most definitions including some quantification of parental education, occupational status, and family income. Research indicates that SES is associated with a variety of health, cognitive, and socioemotional outcomes in children (see Bradley & Corwyn, 2002 for review). However, it is not clear whether it is poverty itself, or factors associated with poverty (e.g., single or teen parenthood), that has a causal impact on child outcomes. Therefore, when conducting research in child development, it is imperative that a comprehensive measurement of SES be used, capturing both traditional SES indicators and the associated demographics. This chapter presents information pertaining to several dimensions of SES including parental characteristics such as education, employment, weekly household income, social housing status, medical card status, and material deprivation.

4.1.1 Parental Age and Primiparous Mother Status

Teenage parenthood is often linked to SES, with low SES standing as the single best predictor of adolescent parenthood (Fahey, 1995). Early parenthood is associated with both short and long-term effects on children's intellectual, behavioural, and social development (Fergusson & Woodward, 1999). In particular, research indicates that children of younger mothers are at an increased risk of experiencing problematic parent-child interactions (Brooks-Gunn & Furstenburg, 1986), lower levels of cognitive and social skills (Terry-Human, Manlove, & Moore, 2005), and educational underachievement (Klein, 2005). Furthermore, teenage mothers are more likely to have premature and low birth weight infants, and their infants experience greater risk of death in the perinatal period (Elfenbein & Felice, 2003; Klein, 2005). Evidence also suggests that fathers of children of teen mothers are less likely to provide both economic and social support to their family (Rangarajan & Gleason, 1998), which may adversely affect child development as paternal involvement, in terms of caregiving, quality of interactions with the child, and provision of financial support, has been linked to reductions of many of the negative outcomes associated with young motherhood (Furstenberg & Harris, 1993). On the other end of this spectrum, advanced maternal age is linked to better behavioural and cognitive scores in children (Fergusson & Lynskey, 1993) and reduced risk of educational underachievement, crime, and mental health difficulties in adolescence (Fergusson & Woodward, 1999). However, negative associations with advanced maternal age also have been identified. For example, advanced maternal age at first birth may have detrimental health implications for both mother and child as women who are over the age of 30 when they give birth have a higher risk of fetal deaths, low birth weight, or very pre-term birth (Cnattingius, Foreman, Berendes, & Isotalo, 1992; Heck, Schoendorf, Ventura, & Kiely, 1997). Additionally, advanced paternal age is associated with a range of neurodevelopmental disorders, such as autism and schizophrenia (Saha, Barnett, Buka, & McGrath, 2009), highlighting that parental age, either young or old, is an important factor to consider when examining child developmental outcomes.

It also is important to consider the proportion of primiparous mothers in the *PFL* cohort as typically home visiting programmes primarily work with primiparous mothers. Therefore, an important outcome of the *PFL* Evaluation is to determine whether such a programme can be effective with non-primiparous women. Research indicates that first born children show an advantage over later born children for outcomes such as educational attainment (Black, Devereux, & Salvanes, 2005), cognitive development (Silles, 2010), and participation in high-school extracurricular activities (Rees, Lopez, Averett, & Argys, 2008). These studies find birth order effects even when related variables, such as family size, are rigorously controlled for. Psychologists best explain these effects in terms of the confluence model (Zajonc, 1976), which considers the intellectual environment of the child, and how the absolute intellectual levels of a family fall when a new sibling arrives, resulting in a less stimulating environment. Zajonc also suggests that older children benefit more from the intellectual stimulation of teaching young children, than younger children gain through observational learning. Economic theories, in contrast, underline the restrictions new siblings impose on the availability of parent time and resources (e.g., Becker, 1981).

Such effects must also be considered in the context of a low SES sample. Research examining the relationship between socioeconomic status, birth order, and child outcomes finds mixed results. Some researchers claim that the positive intellectual gains for first born children hold across all socioeconomic levels (e.g., Zajonc, 1976), while others find that birth order effects disappear when SES is controlled for (Steelman & Mercy, 1980). Of particular interest in this experimental study is whether participation in the *PFL* Programme can compensate for some of the less favourable outcomes experienced by later born children.

4.1.2 Lone Parent Status & Siblings

The number of people living in the household and their relationship to the child also has the capacity to influence child development. Research consistently demonstrates that growing up in a single-parent family has negative consequences for children, putting them at greater risk for low educational attainment (Biblarz & Raftery, 1999), externalising behaviours (Mott, Koweleski-Jones, & Meneghan, 1997), and poor well-being (Ribar, 2004). The rate of non-marital childbearing has increased dramatically over the past three decades (Kiernan & Pickett, 2006), with an accompanying research focus on child outcomes. Children of married mothers, compared to those of both single and cohabiting parents, tend to have higher IQs (Bacharach & Baumeister, 1998), to have greater birth weights (Bennett, 1992), exhibit less behaviour problems (Brown, 2004), and engage more in schooling (Amato, 2005). Furthermore, unmarried mothers are more likely to smoke during pregnancy, suffer from depression, and are less likely to engage in breastfeeding (Kiernan & Pickett, 2006). Research also shows that unmarried cohabiting parents have fewer years of education, earn less income, have lower levels of psychological well-being, and report higher levels of parenting stress than married parents, all factors which may contribute to the poor developmental outcomes experienced by these children (Amato, 2005). The number of siblings a child has also can impact developmental outcomes as several studies demonstrate an inverse relationship between the number of siblings a child has and the child's educational attainment (see Steelman, Powell, Werum, & Carter, 2002 for review). The most frequently posed explanation for this effect is resource dilution, whereby

parental resources are distributed equally among all children, and a greater number of children results in less resources per child (e.g., Sun & Li, 2009).

4.1.3 Parental Education

Another SES indicator which shows key relationships with child developmental outcomes is parental education. Numerous studies have demonstrated that low parental education is associated with lower levels of school achievement and IQ later in childhood (see Bradley & Corwyn, 2002 for review). Recent evidence suggests that enrichment of the home environment has a mediating effect on the relationship between maternal education and children's achievement in reading and maths (Zadeh, Farnia, & Ungerleider, 2010). Maternal education, in particular, has a substantial effect on child physical health, as measured by children's height and weight for age (Boyle et al., 2006). This has been demonstrated as a "nurturing effect," where the impact of maternal education on health operates through a better knowledge of health care and nutrition, healthier behaviours, and providing a sanitary, safe environment for children (Chen & Li, 2009). Furthermore, evidence suggests that parental education positively influences the beliefs and behaviours of the parent, leading to better outcomes for their children. For example Halle, Kurtz-Costes, & Mahoney (1997) found, using a sample of low-income parents, that parents with a higher level of education have greater expectations for their children's academic achievement, and that these expectations are related to their child's success in mathematics and reading.

Similarly, parental literacy and numeracy difficulties also can have a negative impact on child development. Specifically, research shows that the children of parents with a history of reading difficulties are at greater risk for reading difficulties themselves (Gilger, Pennington, & DeFries, 1991), which may result from less shared reading experiences, and a lack of access to print materials (Bus, Van Ijzendoorn, & Pellegrini, 1995). Genetic factors also may partially explain both reading and mathematics difficulties in children (Plomin & Kovas 2005). Interestingly, more recent research finds a link between parental difficulties in mathematics and increased efforts to help children learn mathematics, potentially reflecting concerns that their children will have similar difficulties (Silinskas, Leppanen, Aunola, Parrila, & Nurmi, 2010).

4.1.4 Parental Employment and Income

Parental unemployment is another key factor which can have an impact on children's social, cognitive, and health outcomes, although this effect varies according to the social group under observation, the duration of unemployment, and whether it is the mother or father who is unemployed. Research finds that children of mothers who work during their first year of life have more behaviour problems and lower cognitive scores than children of mothers who do not work during this period (Berger, Brooks-Gunn, Paxson, & Waldfogel, 2008). However, this effect is less pronounced for children of parents in low SES communities (Hill, Waldfogel, Brooks-Gunn, & Han, 2005). There also is evidence of adverse effects of maternal unemployment on the general health status of low-income children, particularly boys, an effect that is mediated by the reduction of economic resources which accompanies unemployment (Gennetian, Hill, London, & Lopoo, 2010). The recent focus on maternal employment possibly reflects the shift in traditional gender roles, and developmental concerns brought about by an

increase in working mothers. However, both maternal and paternal employment can affect children's cognitive and behavioural outcomes. Fathers' involuntary employment separation due to layoff, downsizing, being fired, or a medical problem is associated with a greater likelihood of children repeating a grade or being suspended from school, but only in families where mothers were the principal earners, suggesting that the effect is less about income differences and more about family dynamics (Kalil & Ziol-Guest, 2008).

In addition to employment, it is important to examine the nature of parental occupation, and in particular the number of hours spent at work. A recent study reported an association between parental job quality, or characteristics which foster the well-being of the employee, such as high wages, skill, and job security, and emotional and behavioural difficulties in children (Strazdins, Shipley, Clements, O'Brien, & Broom, 2010). Furthermore, examining the number of hours worked per week can provide valuable information about the relationship between employment, income, and child outcomes. For example, Parcel and Menaghan (1990) demonstrate a nonlinear effect of maternal work hours on verbal skills among three to six year old children. Specifically, children of mothers who worked 21 to 35 hours per week performed significantly better than children of mothers who worked 35 to 40 hours per week. However, they did not fare better than children whose mothers worked less than 21 hours per week.

Related to employment is household income which is positively associated with child health (Case, Lubotsky, & Paxon, 2002; Currie & Stabile, 2003), cognitive outcomes (Yeung, Linver, & Brooks-Gunn, 2002), school achievement (Haveman & Wolfe, 1995), and externalising and internalising behaviours (Duncan, Brooks-Gunn, & Klebanov, 1994). Furthermore, research finds a robust positive effect of household income on child health outcomes (Case et al., 2002; Currie & Stabile, 2003) and more recent research suggests that this effect partially operates through maternal child health related behaviours and parental health (Violato, Petrou, & Gray, 2009). Income, as an individual component of SES, also has been positively associated with children's cognitive test scores (Yeung et al., 2002), school achievement (Haveman & Wolfe, 1995), and externalising and internalising behaviours (Duncan et al., 1994). Suggested pathways through which these effects operate are health and nutrition, the home environment, parental-child interactions, parental mental health, and neighbourhood conditions (see Brooks-Gunn & Duncan, 2002 for review). To estimate a true causal effect of income on child outcomes, researchers must control for any exogenous variables, or factors that both affect parental income and are correlated with child outcomes. However, controlling for all exogenous variables is impossible, as many of these variables are unknown (e.g., Mayer, 2002). Studies that use techniques to control for unobserved exogenous variables typically, but not always, find smaller effects than less rigorous analyses. The largest effects are found for cognitive test scores and educational attainment. For example, Mayer (1997) and Blau (1999) use fixed-effects models to control for unobserved heterogeneity, finding a modest association between parental income and children's cognitive test scores. Similarly, Duncan, Yeung, Brooks-Gunn, & Smith (1998) find that an increase of 10% in parental income is associated with an increase of approximately half a year of schooling. In sum, high quality research, which utilises techniques to control for all observed and unobserved family background characteristics, finds a small-to-modest effect of income on child outcomes. The size of the effect depends partly on factors including the outcome under study and the length of time over which parental income is measured (Mayer, 2002).

A further methodological point to consider concerns survey response biases. Research in this field indicates that there is substantial variation in individuals' interpretations of expenditure and income-related survey questions, with many individuals reporting their individual income instead of the household income (e.g., Comerford & Delaney, 2010). Therefore, it is important that proxy indicators for low SES be incorporated, such as medical card status, possession of private health insurance, and social welfare status.

4.1.5 Household Socioeconomic Status Indicators

Although living in social housing is indicative of low SES, several studies have reported that living in social housing is associated with positive developmental outcomes for children compared to similarly poor families not residing in social housing, including grade retention (Currie & Yelowitz, 2000), educational attainment (Newman & Harkness, 2002), and greater parent-reported health (Fertig & Reingold, 2007). These relationships may be due to the increased resources available to parents who receive subsidies for housing (Leventhal & Newman, 2010).

Another indicator of low SES is material deprivation. The inclusion of material, or enforced, deprivation measures can help to underline the extent of a respondent's poverty status. Enforced deprivation is defined as *the inability to afford basic specific goods or services...reported at the household and not the individual level* (EU-SILC, 2008). Deprivation indicators form a complement to monetary measures, which can be unreliable (Comerford & Delaney, 2010), and contribute towards a multi-dimensional conceptualisation of poverty (Guio, 2005). Such indicators largely relate to an enforced lack of items that depict material living conditions, such as the possession of consumer durables and the household's condition (Nolan & Whelan, 2010). As these deprivation indicators are a relatively new addition to the poverty literature, research into their effects is limited and mixed. For example, enforced deprivation is associated with negative outcomes such as poor health (Torsheim et al., 2004), but also with positive outcomes such as increased breastfeeding duration (Brown, Raynor, Benton, & Lee, 2010). It should be noted, however, that a family experiencing enforced deprivation may choose to breastfeed their baby given their lack of resources. Lastly, deprivation indicators are associated with increased psychological distress and depression among the unemployed (Bjarnason & Sigurdardottir, 2003). Such difficulties are important as parental outcomes such as these can affect child developmental outcomes. For example, maternal depression is linked to lower levels of child well-being (Feldman et al., 2009), while breastfeeding is linked to a range of positive health benefits for the child (see Oddy, 2001 for review). Inclusion of enforced deprivation indicators in the *PFL* survey adds a reliable measure of poverty, helps pinpoint those families who are particularly at-risk, and may underline whether the intervention has a protective effect against adverse outcomes of poverty.

This report also uses two additional proxies for low SES: medical card status and social welfare payments. Both of these variables serve as proxies for low income as both medical card status and social welfare payments in Ireland are means tested, such that family income must be below a certain threshold in order to be eligible.

4.1.6 Overview

A large body of research provides support for early childhood interventions as a means of closing the SES gap in children's skills and competencies at school entry (see Ramey & Ramey, 2004 for review). At its core, the *PFL* Programme aims to raise the levels of school readiness in a disadvantaged, low-SES community, and to compensate for the social-class discrepancies in children's skills and abilities. It is therefore imperative that SES variables are comprehensively assessed at baseline so that the potential future benefits of *PFL* are not spurious effects resulting from associations with unobserved family characteristics.

The current chapter presents information pertaining to the following dimensions of SES: teen parent status, single parenthood, parental education, parental employment, ethnicity, household income, as well as information on the SES proxy indicators of social housing, medical card, private health insurance, social welfare, savings, and enforced deprivation. The chapter also includes information on general demographics of parental age, first-time mother status, and number of children. Statistical differences between the two *PFL* treatment groups and overall *PFL* and comparison groups are also examined.

4.2 Instruments

4.2.1 Parental Demographics

Mothers were asked their age and the biological father's age at the time of baseline interview. Parental ages are represented as continuous variables as well as binary variables, dichotomised at age 19 or below, to illustrate the proportion of teenage parents taking part in the *PFL* Evaluation. Mothers also were asked to select their ethnicity from a list of nine categories. This information was used to generate a three category variable indicating whether the mother is of Irish, Irish Traveller or Other origins. Mothers also reported their number of biological children, if applicable. This was used to indicate the proportion of primiparous mothers in the programme using a binary variable. Finally, the mother reported her current relationship status from a list of seven options. This information was used to generate two separate binary indicators indicating 1) whether the mother was currently in a relationship (i.e., married, cohabitating, or boyfriend) or 2) married.

4.2.2 Parental Education and Functioning in Daily Life

Mothers were asked their highest level of education obtained as well as the highest level of education obtained by the baby's biological father. Responses to this question were dichotomised to indicate the number of parents who had completed a Junior Certificate Qualification or below. This information also was used to generate a binary indicator representing the proportion of parents in the *PFL* Evaluation who hold a primary degree. Mothers also were asked the age at which they and the baby's father left full-time education. Finally, mothers were asked three questions pertaining to their literacy and numeracy: 1) *Do problems with reading, writing, or maths make it difficult for you to manage day-to-day activities, like paying bills, writing letters, and so on?* 2) *Can you usually read and fill out forms you might have to deal with in everyday life* and 3) *When you buy things in shops with a €5 or €10 note, can you usually tell if you have*

the right change? The responses to the first question range from one to three and include, *yes, a lot; yes, a little;* and *no, not at all*. Responses to the second and third questions range from one to four and include, *easily; with some difficulty; with a lot of difficulty;* and *no*. A binary variable indicating overall literacy and numeracy difficulties was created such that respondents were divided into two groups based on whether they indicated experiencing any literacy or numeracy difficulties or not.

4.2.3 Parental Employment Characteristics

Several questions assessed the current work status of both the mother and the biological father. Participants were asked to select their current work status from a list of options including *currently in paid work, in work but on leave, unemployed, student, looking after home/family, retired, not able to work due to disability/sickness, paid FÁS training, or unpaid FÁS training*. Responses to this question were dichotomised to represent the proportion of mothers and fathers in paid work versus not in paid work, and the proportion of mothers and fathers currently unemployed. In addition, mothers reported on whether the mother and father worked in full or part time employment and the approximate annual income of both parents.

4.2.4 Household SES Indicators

Several questions assessed the socioeconomic status of the household. Specifically, a series of binary socioeconomic status indicators assessed whether the mother was currently living in social housing, whether she had a medical card, whether she had private health insurance, and whether she was currently in receipt of any social welfare payments. Mothers also stated whether or not they saved money on a regular basis. Mothers' perception of financial difficulty also was assessed by asking her to consider the total income of their household, and to rate on a seven-point scale, ranging from *with great difficulty* to *very easily*, how difficult it was for the household to make ends meet. Responses to this variable were used to generate a categorical variable indicating whether the mothers make ends meet with difficulty, they get by, or easily. Finally, participants also stated the household's weekly income from all sources, selecting from a scale where the lowest range was *less than €50*, and the highest was *€1500 or more*. This 14 item measure was used to generate a categorical variable with five divisions indicating a weekly household income of less than €250 per week, between €250 and €500, between €500 and €750, between €750 and €1000, and over €1000 per week.

4.2.5 Material Deprivation

Material deprivation was assessed using eleven deprivation indicators, taken from the EU Survey on Income and Living Conditions (EU-SILC, 2008). Participants indicated whether family members experienced a lack of any of the following items, and whether this was due to a lack of money or for another reason:

1. Household heating (in the last year)
2. A morning, afternoon, or evening out (in the last fortnight)
3. Two pairs of strong shoes
4. A roast meal (once a week)

5. A meal with meat, chicken or fish (every second day)
6. New (not second-hand) clothes
7. A warm, waterproof coat
8. Keeping the home adequately warm
9. Replacing any worn out furniture
10. Having family or friends for a drink or meal (once a month)
11. Buying presents for family or friends (at least once a year)

Responses to these questions were recoded to represent the proportion of mothers who indicated enforced deprivation on at least one item. Enforced deprivation was defined as experiencing a lack of material goods due to financial reasons. Additionally, these eleven indicators were combined to create a continuous measure indicating the total number of items on which the mother noted deprivation.

4.3 Results

Descriptive statistics and statistical tests examining group comparisons of parental demographics, education, employment, and household socioeconomic status indicators are presented in Tables 4.1, 4.2, 4.3, and 4.4. Specifically, differences in maternal reports for participants in the low and high treatment groups are examined as well as differences between the overall *PFL* group and the comparison community group. In total, 33 measures were assessed in this chapter. The low and high treatment *PFL* groups did not differ on any measure assessed. The aggregate *PFL* cohort and the comparison community, however, differed on six of these indices.

4.3.1 Parental Demographics

Parental demographics are presented in Table 4.1 and Table 4.4. There were no statistical differences between the low and high *PFL* treatment groups on any parental demographics. There were statistical differences between the overall *PFL* group and the comparison group on two of the nine demographics examined.

Table 4.1 shows that mothers in the low and high treatment groups were on average approximately 25 years old at the time of recruitment, while mothers in the comparison sample were significantly older ($p < .05$, $d = .32$) with a mean age of 27 years old. Approximately 20% of the mothers in the low treatment group were teenage mothers, compared with 16% in the high treatment group and 11% in the comparison group. While the mean age of fathers in the low treatment group was 28 years, and 27 years in the high treatment group, the fathers in the comparison group were significantly older ($p < .05$, $d = .27$) with an average age of 29 years. Additionally, 12% of fathers in the low treatment group and 10% of fathers in the high treatment group were teenage fathers compared to 5% in the comparison community. Table 4.1 shows that the *PFL* sample consists of 50% and 54% primiparous mothers in the low and high treatment groups respectively, compared with 41% in the comparison group. For non-primiparous mothers, on average, the low treatment group and comparison group had just under two biological children, while the high treatment group had just over 2 children. The majority of mothers in the

PFL Programme indicated that they were in a relationship. Specifically, 84% in the low treatment group, 78% in the high treatment group, and 87% in the comparison community were in a relationship, while 18% of the low treatment group, 14% of the high treatment group, and 18% of the comparison group were married. The results pertaining to maternal ethnicity presented in Table 4.4 show that the majority of mothers in the *PFL* Evaluation are Irish, with 92% and 95% in the low and high treatment groups and 92% in the comparison community identified as being Irish. A further 8% of the low treatment group, 3% of the high treatment group, and 4% of the comparison group were classified as Irish Travellers, while a very small proportion of the *PFL* sample or the comparison sample are classified as being of a different ethnic group.

4.3.2 Parental Education and Functioning in Daily Life

Descriptive statistics and statistical tests pertaining to maternal and paternal education are presented in Table 4.2. There were no statistical differences between the low and high *PFL* treatment groups on any of the seven maternal or paternal educational and functioning in daily life characteristics assessed. There were, however, statistical differences between the overall *PFL* group and the comparison group on three of the seven indicators examined.

Forty percent of mothers in the low treatment group and 34% of mothers in the high treatment group have obtained a Junior Certificate Qualification or lower, compared to 25% of the comparison group. Additionally, only 3% of mothers in the *PFL* Programme have completed a third level education, compared to 9% in the comparison community which is a significantly higher proportion ($p < .05$, $d = .29$). Although no differences emerged in the proportion of mothers who left school either after sitting the Junior Certificate or earlier, mothers in the comparison community left full-time education, on average, at the age of 18, significantly older than the average school leaving age of 17 in the *PFL* cohort ($p < .05$, $d = .23$). Furthermore, approximately 29% of mothers in the low treatment group and 35% of mothers in the high treatment group indicated they experience problems with literacy and/or numeracy in their daily lives, while only 19% of mothers in the comparison community indicated such problems ($p < .05$, $d = .28$), illustrating that significantly more mothers in the *PFL* cohort indicated problems with literacy and/or numeracy in their daily lives.

In terms of paternal education, 48% of fathers in the low treatment group, 46% of fathers in the high treatment group, and 38% of fathers in the comparison community have achieved a Junior Certificate Qualification or lower. Three percent of fathers in the *PFL* cohort have obtained a primary degree, compared to 5% of the comparison community. The average school leaving age for all fathers in the *PFL* Evaluation was around 17 years of age.

4.3.3 Parental Employment and Income Characteristics

Maternal and paternal employment and income characteristics are presented in Tables 4.2 and 4.4. There were no statistical differences between the low and high *PFL* treatment groups, or between the overall *PFL* group and the comparison group on any of the nine employment and income characteristics assessed.

Forty percent of mothers in the low treatment group, 37% of mothers in the high treatment group, and 43% of mothers in the comparison community were in paid work during pregnancy. Of these working mothers, 63% in the low treatment group, 51% in the high treatment group, and 62% in the comparison community were working full-time. On average, the annual income of mothers in the *PFL* cohort is just under €20,000 per annum compared to approximately €22,600 per annum earned by working mothers in the comparison community. Approximately 41% of mothers in the low treatment group and 43% in the high treatment group were unemployed during pregnancy, compared to 37% of the comparison group. As shown in Table 4.2, 57% of fathers in the low treatment group, 49% of fathers in the high treatment group, and 62% of fathers in the comparison community were in paid work, of these 84%, 87%, and 82% were engaged in full-time employment. On average fathers in the low treatment group earn just over €25,600 per annum, compared to approximately €7,200 earned by fathers in the high treatment group and €27,600 earned by fathers in the comparison community. Approximately 31% and 43% of fathers in the low and high treatment groups respectively were unemployed. Similarly, 31% of fathers in the comparison group were unemployed. Furthermore, Table 4.4 reports the average household weekly income from all sources for participants in all three groups. Less than 5% of the *PFL* cohort and 3% of the comparison cohort receive less than €250 per week, while 35% of the low treatment group and 34% of the high treatment group and comparison group report a weekly household income of over €1000 per week.

4.3.4 Household SES Indicators and Material Deprivation

Descriptive statistics and statistical tests regarding household socioeconomic status and material deprivation are presented in Tables 4.3 and 4.4. There were no statistical differences between the low and high *PFL* treatment groups on any of the SES characteristics. There were statistical differences between the overall *PFL* group and the comparison group on one of the eight indicators examined.

A significantly higher proportion of mothers in the *PFL* cohort indicated that they were living in social housing compared to those in the comparison group ($p < .05$, $d = .25$). Specifically, 55% of the overall *PFL* group and 43% of mothers in the comparison group were living in social housing at the time of the baseline interview. Additionally, 66% of mothers in the low treatment group, 60% of mothers in the high treatment group, and 56% of those in the comparison group hold a medical card. Few mothers in either the *PFL* treatment group or the comparison community indicated that they have private health insurance, with only 7% of mothers in the low treatment group and 9% of mothers in the high treatment and comparison group having private health insurance. Sixty five percent of mothers in the low treatment group and 64% of those in both the high treatment and comparison groups were in receipt of social welfare payments at the time of the baseline interview, while 51% of the low treatment group, 47% of the high treatment group, and 56% of the comparison group indicated that they save money regularly. With regard to material deprivation, 32% of mothers in the low treatment group, 44% in the high treatment group, and 32% in the comparison community experienced enforced deprivation, which is defined as not being able to afford one or more of eleven material items. In regards the average number of items on which participants are deprived, all groups are deprived on less than one item on average.

Table 4.4 reports perceived financial difficulty across the three groups. Approximately 30% of the low treatment group, 28% of the high treatment group and 26% of the comparison group have difficulties in coping financially. While 34%, 36%, and 30% respectively, just get by with their household income, and 37%, 36% and 44% respectively cope with their financial situation with ease.

4.4 Key Findings

- Participants in the low treatment group did not significantly differ from those in the high treatment group on any of the 33 parental education, employment, and household demographics measured, suggesting that families in the low and high treatment groups are relatively homogeneous prior to taking part in the intervention.
- Participants in the comparison group differed statistically from those in the *PFL* group on six of the 33 (18%) demographic measures. Specifically, mothers in the comparison group were older, they left school later, had higher levels of education, experienced fewer literacy and numeracy difficulties, and were less likely to live in social housing. Additionally, fathers in the comparison community were significantly older than fathers in the *PFL* cohort.
- Just over half of the *PFL* cohort are primiparous mothers and almost one-fifth are teenage parents.
- The average school leaving age among the *PFL* cohort is approximately 17 years old among the mothers, and less than 17 years old for the fathers.
- Over one-third of the *PFL* fathers and 40% of the *PFL* mothers are unemployed.
- Over half of the *PFL* cohort live in social housing and possess a medical card.

Table 4.1

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Parental Demographics

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	N ($n_{\text{LOW}}/$ n_{HIGH})	M_{LOW} (SD)	M_{HIGH} (SD)	$M_{\text{LOW}} -$ M_{HIGH}	p	Effect Size (d)	N ($n_{\text{PFL}}/$ n_{COMP})	M_{PFL} (SD)	M_{COMP} (SD)	$M_{\text{PFL}} -$ M_{COMP}	p	Effect Size (d)
Mother's Age	205 (101/104)	25.30 (5.99)	25.46 (5.85)	-0.16	ns	.03	304 (205/99)	25.38 (5.90)	27.28 (6.20)	-1.90	<.05	.32
Teenage Mothers	205 (101/104)	0.20 (0.40)	0.16 (0.37)	0.04	ns	.09	304 (205/99)	0.18 (0.39)	0.11 (0.32)	0.07	ns	.19
Primiparous Mothers	205 (101/104)	0.50 (0.50)	0.54 (0.50)	-0.04	ns	.09	304 (205/99)	0.52 (0.50)	0.41 (0.50)	0.11	ns	.21
Number of Biological Children	99 (51/48)	1.80 (1.00)	2.04 (1.20)	-0.24	ns	.22	157 (99/58)	1.92 (1.10)	1.90 (1.27)	0.02	ns	.02
Mother in a Relationship	205 (101/104)	0.84 (0.37)	0.78 (0.42)	0.06	ns	.16	304 (205/99)	0.81 (0.39)	0.87 (0.34)	-0.06	ns	.16
Mother Married	205 (101/104)	0.18 (0.38)	0.14 (0.35)	0.04	ns	.09	304 (205/99)	0.16 (0.37)	0.18 (0.39)	-0.02	ns	.06
Biological Father's Age	203 (100/103)	27.58 (7.33)	27.47 (6.52)	0.11	ns	.02	299 (203/96)	27.52 (6.91)	29.45 (7.28)	-1.93	<.05	.27
Teenage Fathers	203 (100/103)	0.12 (0.33)	0.10 (0.30)	0.02	ns	.07	299 (203/96)	0.11 (0.31)	0.05 (0.22)	0.06	ns	.20

Note. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted.

Table 4.2

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Parental Education and Employment

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
<i>Parental Education</i>												
Mothers with Junior Certificate Qualification or Lower	205 (101/104)	0.40 (0.49)	0.34 (0.47)	0.06	ns	.12	304 (205/99)	0.37 (0.48)	0.25 (0.44)	0.12	ns	.24
Mothers with Primary Degree	205 (101/104)	0.03 (0.17)	0.03 (0.17)	0.00	ns	.01	304 (205/99)	0.03 (0.17)	0.09 (0.29)	-0.06	<.05	.29
Age Mother Left Full-time Education	187 (91/96)	17.43 (3.08)	17.41 (2.53)	0.02	ns	.01	281 (187/94)	17.42 (2.81)	18.10 (3.11)	-0.68	<.05 ^a	.23
Mothers with Literacy/Numeracy Problems	205 (101/104)	0.29 (0.45)	0.35 (0.48)	-0.06	ns	.13	304 (205/99)	0.32 (0.47)	0.19 (0.40)	0.13	<.05	.28
Fathers with Junior Certificate Qualification or Lower	183 (94/89)	0.48 (0.50)	0.46 (0.50)	0.02	ns	.04	275 (183/92)	0.47 (0.50)	0.38 (0.49)	0.09	ns	.18
Fathers with Primary Degree	183 (94/89)	0.03 (0.18)	0.03 (0.18)	0.00	ns	.01	275 (183/92)	0.03 (0.18)	0.05 (0.23)	-0.02	ns	.11
Age Father Left Full-time Education	149 (73/76)	16.75 (2.14)	16.61 (2.36)	0.14	ns	.07	226 (149/77)	16.68 (2.25)	17.04 (2.86)	-0.36	ns	.15
<i>Parental Employment</i>												
Mothers in Paid Work	205 (101/104)	0.40 (0.49)	0.37 (0.48)	0.03	ns	.06	302 (205/97)	0.38 (0.49)	0.43 (0.50)	-0.05	ns	.11
Mothers in Full-time Work	78 (41/37)	0.63 (0.49)	0.51 (0.51)	0.12	ns	.25	120 (78/42)	0.58 (0.50)	0.62 (0.49)	-0.04	ns	.09
Annual Income of Working Mothers (in Euros)	75 (38/37)	19,602 (8,093)	19,224 (9,851)	378	ns	.04	117 (75/42)	19,415 (8,944)	22,600 (11,060)	-3,185	ns	.33

Table 4.2 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Parental Education and Employment

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	N ($n_{\text{LOW}}/$ n_{HIGH})	M_{LOW} (SD)	M_{HIGH} (SD)	$M_{\text{LOW}} -$ M_{HIGH}	p	Effect Size (d)	N ($n_{\text{PFL}}/$ n_{COMP})	M_{PFL} (SD)	M_{COMP} (SD)	$M_{\text{PFL}} -$ M_{COMP}	p	Effect Size (d)
Mothers Unemployed	205 (101/104)	0.41 (0.49)	0.43 (0.50)	-0.02	ns	.05	302 (205/97)	0.42 (0.49)	0.37 (0.49)	0.05	ns	.10
Fathers in Paid Work	198 (97/101)	0.57 (0.50)	0.49 (0.50)	0.08	ns	.16	291 (198/93)	0.53 (0.50)	0.62 (0.49)	-0.09	ns	.20
Fathers in Full-time Work	102 (56/46)	0.84 (0.37)	0.87 (0.34)	-0.03	ns	.09	157 (102/55)	0.85 (0.36)	0.82 (0.39)	0.03	ns	.10
Annual Income of Working Fathers (in Euros)	76 (40/36)	25,698 (12,059)	27,208 (13,179)	-1510	ns	.12	123 (76/47)	26,413 (12,540)	27,647 (9,332)	-1,234	ns	.11
Fathers Unemployed	198 (97/101)	0.31 (0.46)	0.43 (0.50)	-0.12	ns	.24	291 (198/93)	0.37 (0.48)	0.31 (0.47)	0.06	ns	.12

Note. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted. ^aPermutation tests were conducted using the Wilcoxon Rank-Sum tests for non-normally distributed data.

Table 4.3

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Household Socioeconomic Status Indicators

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	N ($n_{\text{LOW}}/$ n_{HIGH})	M_{LOW} (SD)	M_{HIGH} (SD)	$M_{\text{LOW}} -$ M_{HIGH}	p	Effect Size (d)	N ($n_{\text{PFL}}/$ n_{COMP})	M_{PFL} (SD)	M_{COMP} (SD)	$M_{\text{PFL}} -$ M_{COMP}	p	Effect Size (d)
Residing in Social Housing	204 (101/103)	0.55 (0.50)	0.55 (0.50)	0.00	ns	.00	302 (204/98)	0.55 (0.50)	0.43 (0.50)	0.12	<.05	.25
In Possession of a Medical Card	205 (101/104)	0.66 (0.47)	0.60 (0.49)	0.06	ns	.14	304 (205/99)	0.63 (0.48)	0.56 (0.50)	0.07	ns	.15
In Possession of Private Health Insurance	202 (100/102)	0.07 (0.26)	0.09 (0.29)	-0.02	ns	.07	301 (202/99)	0.08 (0.27)	0.09 (0.29)	-0.01	ns	.04
In Receipt of Social Welfare Payments	203 (99/104)	0.65 (0.48)	0.64 (0.48)	0.01	ns	.00	299 (203/96)	0.65 (0.48)	0.64 (0.48)	0.01	ns	.02
Saves Regularly	205 (101/104)	0.51 (0.50)	0.47 (0.50)	0.05	ns	.09	301 (205/96)	0.49 (0.50)	0.56 (0.50)	-0.07	ns	.14
Materially Deprived (on at least one item)	202 (100/102)	0.32 (0.47)	0.44 (0.50)	-0.12	ns	.25	298 (202/96)	0.38 (0.49)	0.32 (0.47)	0.06	ns	.12
Material Deprivation Index	202 (100/102)	0.64 (1.16)	0.91 (1.47)	-0.27	ns	.21	298 (202/96)	0.78 (1.33)	0.65 (1.21)	0.13	ns	.10

Note. Permutation tests were conducted using regression tests for normally distributed data.

Table 4.4

Descriptive Statistics and Chi Square/Fisher Exact Test Results Comparing Group Differences in Ethnicity and Income

Variable	PFL Low Treatment vs. PFL High Treatment				PFL vs. Comparison Community			
	Low % (n)	High % (n)	<i>p</i>	Effect Size (V)	PFL % (n)	Comp. % (n)	<i>p</i>	Effect Size (V)
Maternal Ethnicity			ns ^a	.15			ns ^a	.11
Irish	92.08 (93)	95.19 (99)			93.66 (192)	91.92 (91)		
Irish Traveller	7.92 (8)	2.88 (3)			5.37 (11)	4.04 (4)		
Other	0.00 (0)	1.92 (2)			0.98 (2)	4.04 (4)		
Household Income			ns	.09			ns ^a	.10
< €250 per week	4.95 (5)	4.81 (5)			4.88 (10)	3.06 (3)		
€250-€500 per week	25.74 (26)	24.04 (25)			24.88 (51)	27.55 (27)		
€500-€750 per week	14.85 (15)	21.15 (22)			18.05 (37)	23.47 (23)		
€750-€1000 per week	19.80 (20)	16.35 (17)			18.05 (37)	12.24 (12)		
> €1000 per week	34.65 (35)	33.65 (35)			34.15 (70)	33.67 (33)		
Ability to Make Ends Meet			ns	.02			ns	.07
With Difficulty	29.70 (30)	28.16 (29)			28.92 (59)	26.04 (25)		
Get by	33.66 (34)	35.92 (37)			34.80 (71)	30.21 (29)		
Easily	36.63 (37)	35.92 (37)			36.27 (74)	43.75 (42)		

Note: Chi-square test used unless otherwise noted. ^a Fisher's exact test used.

5 Chapter 5: Maternal Mental Well-being and Personality

5.1 Introduction

5.1.1 Maternal Mental Well-being

Maternal mental health, both pre and postnatally, is an important determinant of child developmental outcomes as it not only influences a child's development in the early years, but may influence the in utero development of the fetus. For example, maternal depression during pregnancy has been associated with excessive crying and irritability in infants (Zuckerman, Bauchner, Parker, & Cabral, 1990). Studies have also shown that stress during pregnancy can increase the production of hormones such as corticotrophin-releasing hormone (CHR) and cortisol which, in excess, have the capacity to predispose the child to attention deficits and depressive symptoms (Weinstock, 2005). Furthermore, exposure to elevated levels of cortisol and higher levels of pregnancy-specific anxiety early in pregnancy are both associated with a slower rate of development over the child's first year of life and with lower developmental scores at 12 months of age (Davis & Sandman, 2010).

Although poor maternal health during pregnancy may place a child at risk for poor developmental outcomes, parental mental health throughout the child's life also has the capacity to influence child development. Specifically, postnatal depression is associated with a number of negative child outcomes including poor cognitive and emotional development (Beck, 1998), insecure attachment (Murray, 1991; Teti, Gelfand, Messinger, & Isabella, 1995), and behavioural problems (Murray, 1991). Mothers who suffer from postnatal depression also may engage in less responsive parenting, which is commonly associated with negative developmental outcomes in children (Coolahan, 1997; Cunningham & Boyle, 2002; Snyder, Reid, & Patterson, 2003; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). Research also suggests that paternal depression during early childhood can have detrimental effects on child emotional and behavioural outcomes at ages three through five, particularly on the development of conduct disorders in boys (Ramchandani, Stein, Evans, O'Connor, & ALSPAC Study Team, 2005).

5.1.2 Maternal Attachment

Parental attachment style is a key determinant of multiple child outcomes. For example, parental attachment is associated with depression, such that parents who have insecure or avoidant attachment styles are more likely to suffer from antenatal depressive disorder while those with insecure enmeshed styles are more likely to suffer from postnatal depression (Bifulco et al., 2004). Parental attachment style is related to the development of a child's attachment style (Murray, Fiori-Cowley, Hooper, & Cooper, 1996). This is an important developmental component as it is a determinant of the development of the child's representations of self and others (Clarke & Symons, 2009) which may lay the foundation for future interactions with peers. Parents exhibiting avoidant attachment styles are likely to have children who are more distressed and they also are less likely to comfort their children when they are distressed (Edelstein et al., 2004; Rholes, Simpson, & Blakely, 1995). Furthermore, parental attachment insecurity (i.e., attachment styles high in avoidance and/or anxiety) has been associated with ambivalence about

having children and with more negative models of parenthood and parent-child relationships (Rholes, Simpson, Blakely, Lanigan, & Allen, 1997). The relationship between parental attachment style and child outcomes is important in the context of *PFL* as attachment style shows links with SES, such that parents from lower SES backgrounds are more likely to have insecure attachment styles (Bifulco et al., 2004; Murray et al., 1996), placing them at increased risk for poor mental health, and their children at risk for the development of insecure attachment styles and negative developmental outcomes.

5.1.3 Maternal Self Efficacy

In addition to attachment, self efficacy is another aspect of mental health that has been shown to have both direct and indirect effects on child development (Junttila, Vauras, & Laakkonen, 2007; Weaver, Shaw, Dishion, & Wilson, 2008). Self efficacy refers to a person's belief in their ability to influence events which affect their lives (Bandura, 2010), while parental self efficacy refers to a parent's beliefs in his or her ability to influence the development of the child (Ardelt & Eccles, 2001). High self efficacy is characterised by competence in the face of demands, less negative emotional arousal when stressed, and conceptualization of difficult situations as challenges. While low self efficacy is characterised by self doubt, high levels of anxiety in the face of adversity, and avoiding difficult tasks (Jerusalem & Mittag, 1995). Research indicates a strong relationship between parental self efficacy and parenting competence as parenting self efficacy is related to maternal interactive behaviour with infants (Bohlin & Hagekull, 1987), parental warmth and control with toddlers (Izzo, Weiss, Shanahan, & Rodriguez-Brown, 2000), parental limit setting and harsh discipline with preschoolers (MacPhee, Fritz, & Miller-Heyl, 1996), and to positive parenting of kindergarten children (Hill & Bush, 2001), all of which have an effect on child development. Ardel and Eccles (2001) have suggested a model whereby parents with high parental self efficacy are more likely to be engaged in positive parenting strategies which, in turn, increase the likelihood of their children's success in both academic and social-psychological domains. In contrast, parents with low parenting self efficacy are more likely to engage in negative parenting strategies which reduce the likelihood of their children's success in these domains. They also suggest that parenting self efficacy can have a direct impact on child outcomes through the modelling of attitudes and beliefs. Furthermore, Weaver and colleagues (2008) reported that the relationship between parenting self efficacy and child behaviour problems is at least partially mediated by maternal depression which also has negative consequences for child development. Parental self efficacy is useful in the context of *PFL* as it has often been used in intervention and prevention studies where it is studied as an outcome (Tucker, Gross, Fogg, Delaney, & Lapporte, 1998), as a predictor of whether the intervention will have an effect on individuals (Hoza et al., 2000), and as a mechanism through which behaviour can be changed (Evans et al., 2003; Miller-Heyl, MacPhee, & Fritz, 1998).

5.1.4 Maternal Self Esteem

Parental self esteem, or how valuable an individual feels he or she is worth as a person, also is important for child development. Parents who have high self esteem are less likely to perceive stress (Abel, 1996; Kreger, 1995). In this way, negative life experiences, such as living in poverty, are more likely to cause stress in people with low self esteem than in people with higher self esteem (Brown & Dutton, 1995). Parents with high self esteem are more likely to engage in

authoritative parenting (Aunola, Nurmi, Onastu-Arviolommi, & Pulkkinen, 1999; Lutenbacher & Hall, 1998), a style of parenting commonly associated with positive child developmental outcomes (Steinberg, Lamborn, Dornbusch, & Darling, 1992). Furthermore, increases in maternal self esteem have been associated with greater child development at age two and it has been suggested that high maternal self esteem could act as a buffer in a high stress environment which allows the mother to maintain her ability to effectively parent the child (Surkan et al., 2008).

5.1.5 Maternal Personality Traits

In addition to parental mental health, parental personality characteristics have the capacity to influence parenting behaviour and ultimately child developmental outcomes (Belsky, 1984). Specifically, neuroticism, or emotional instability, has been found to be a strong predictor of parenting (Belsky, Crnic, & Woodworth, 1995) with parents who score high on this trait tending to employ maladaptive parenting behaviours including being overprotective (Kendler, Sham, & MacLean, 1997) and tend to experience more feelings such as anxiety, guilt, and depressed mood. Parents who demonstrate agreeable personality traits, on the other hand, tend to be trusting, altruistic, modest, and have more warm, sensitive and responsive interactions with their children, thus engaging in more authoritative parenting (Metsäpelto & Pulkkinen, 2003), a type of parenting commonly associated with positive child developmental outcomes (Baumrind, 1991; Deković & Janssens, 1992; Hetherington, Henderson, & Reiss, 1999; Petito & Cummins, 2000; Taylor, Clayton, & Rowley, 2004). Parents who are highly extraverted are more likely to encourage independence in their children (Losoya, Callor, Rowe, & Goldsmith, 1997). Additionally, display of extraverted personality traits is predictive of positive parenting in fathers, while agreeable personality traits are predictive of positive parenting in mothers and emotional instability is the most significant predictor of negative parenting in both mothers and fathers (Belsky et al., 1995). Kockanska, Clarke, and Goldman (1997) report that mothers who were high in negative emotionality and disagreeableness showed more negative affects as well as less nurturing and more power assertive parenting. Their children were more defiant and angry, had less secure attachments, more behavioural problems, and lower internalisation of rules.

5.1.6 Maternal Consideration of Future Consequences

Another aspect of a parental mental functioning that may affect child outcomes is their consideration of future consequences (CFC). This refers to the extent to which individuals consider the future consequences of their behaviour (Strathman, Gleiche, Boninger, & Edwards, 1994). Although this area of research is less developed, it suggests that parents' future orientation has an impact on their children's economic behaviour (Webley & Nyhus, 2006). Furthermore, social learning theory posits that children learn through observing the behaviour of adults in their environment (Bandura, 1977) as Bandura and Mischel (1965) reported that children changed their delay of gratification behaviour based on the behaviour of the model which they had been exposed to. This would suggest that children may have a similar level of CFC as their parents as they will observe their parents behaviour in this regard. Children who are able to delay gratification at age four years have been later described as more successful in school and better able to cope with stress and frustration than those who were not able to delay gratification (Mischel, Shoda, & Rodriguez, 1989), illustrating the importance of such

behaviours in young children. CFC is important in the context of the *PFL* Programme as it has been shown that those from higher income groups are more likely to be able to delay gratification than those from lower income groups (Lawrence, 1991; Schneider & Lysgaard, 1953).

5.1.7 Stressful Life Events

Finally, stressful life events experienced by the parent, such as difficulties in the household with issues such as addiction, separation, domestic violence and abuse, have been shown to have a negative effect on child development. Stressful life events are significantly related to higher concurrent levels of aggression and they predict later levels of aggression in children, an effect that is more pronounced under conditions of high neighbourhood disadvantage (Attar, Guerra, & Tolan, 1994). This is important in the context of *PFL* as families with a high number of stressors may be more likely to have children with poorer developmental outcomes.

5.1.8 Overview

The relationship between parental mental well-being, personality, and child developmental outcomes is particularly important in the context of the *Preparing for Life* evaluation as research indicates that women from lower SES backgrounds, especially those with young children, are more likely to experience psychological difficulties (Kaplan, Roberts, Camacho, & Coyne, 1987; Liaw & Brooks-Gunn, 1994). Furthermore, affluence has been found to protect against the negative influence of depression (Pettersson & Albers, 2001), further elucidating the importance of promoting positive mental health in the *PFL* cohort.

5.2 Instruments

5.2.1 Maternal Mental Well-being

Maternal mental well-being was assessed using the five item ($\alpha = .82$) WHO-5 (World Health Organisation, 1998), a measure of positive mental health. Mothers were presented with five statements related to how they have been feeling over the past two weeks and asked to rate how often they have felt that way on a 6-point Likert scale ranging from zero meaning *at no time* to five meaning *all of the time*. A raw score was obtained by summing all of the responses, giving a range of zero to 25. Raw scores were then transformed into percentages by multiplying the raw score by four, resulting in a range of scores from zero to 100, with lower scores, particularly those below 50, indicative of poor mental well-being. Therefore, scores are presented as both a continuous indicator of mental well-being and as a binary variable representing the proportion of mothers who scored below 50% on this measure, therefore demonstrating poor well-being.

Risk of postnatal depression was assessed using a single *yes/no* question assessing if the mother had been diagnosed with postnatal depression in any previous pregnancies. A mother was considered to be at risk of postnatal depression in the current pregnancy if she indicated she had been diagnosed with postnatal depression in any previous pregnancy.

5.2.2 Maternal Attachment Style

Maternal attachment style was measured using the short version of the Vulnerable Attachment Style Questionnaire (VASQ; Bifulco, Mahon, Kwon, Moran, & Jacobs 2003). This brief self-report measure was developed to assess adult attachment style in relation to depression as it identifies individuals with attachment styles vulnerable for depressive disorder. The VASQ yields three scores: an insecurity score (3 items, $\alpha = .72$), a proximity seeking score (3 items, $\alpha = .54$), and a total vulnerable attachment score (6 items, $\alpha = .65$). Mothers were presented with items related to how they feel about other people (e.g., I miss the company of others when I am alone) and asked to rate how much they agree with each item on a five point Likert-scale ranging from one representing *strongly disagree* to five illustrating *strongly agree*. Responses are presented as an insecure attachment style and proximity seeking attachment style score each ranging from three to 15, and as a total vulnerable attachment score ranging from six to 30. In all cases, higher scores represent more vulnerable attachment styles. In addition to these continuous scores, binary variables were created to represent the proportion of mothers with scores falling above seven on the insecure attachment style and proximity seeking subscales and above 15 on the total scale as scores above this cut-off are considered to be indicative of vulnerable attachment styles as characterised by high insecure attachment behaviours as well as high proximity seeking behaviours.

5.2.3 Maternal Self Efficacy

Maternal self efficacy was measured using the 13 item Pearlin Self Efficacy Scale (Pearlin & Schooler, 1978). Mothers were presented with 13 items related to how they feel about themselves, their life so far, and becoming a parent, and asked to rate how much they agree or disagree with each item on a scale ranging from zero meaning *strongly disagree* to four signifying *strongly agree*. This measure provides scores on *mastery* (7 items, $\alpha = .72$) or the degree to which the mother feels she has control over things that happen to her and *parenting self efficacy* (6 items, $\alpha = .69$) or the mothers' belief that she is able to effectively parent her child/children, as well as a *total self-efficacy* (13 items, $\alpha = .80$) score. All scores represent the average response to all items within that scale or subscale and range from zero to four with higher scores indicating higher self efficacy. In addition to the continuous scores, a binary variable was created to identify mothers who scored in the lowest 10% of the entire sample on the mastery and parenting self efficacy subscales as well as the overall self efficacy scale assessed in this measure. For the purpose of this report, mothers scoring in the lowest 10% of the entire sample are considered to display low levels of self efficacy.

5.2.4 Maternal Self Esteem

Maternal self esteem was assessed using the Rosenberg Self Esteem Scale (RSE; Rosenberg, 1965), a six item ($\alpha = .83$) measure assessing maternal self esteem on a continuous scale. Mothers were presented with statements about how they feel about themselves and are asked to rate how much they agree or disagree with each statement on a four point Likert-scale ranging from zero meaning *strongly agree* to three representing *strongly disagree*. Scores were created by summing responses to all items, providing a range of zero to 18 with higher scores representing higher self esteem. In addition to the continuous scores, a binary variable was created to identify mothers who scored in the lowest 10% of the entire sample on this measure.

For the purpose of this report, mothers scoring in the lowest 10% of the entire sample are considered to display low levels of self esteem.

5.2.5 Maternal Personality

Maternal personality was measured using the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), a short version of the 44 item Big-Five Inventory (BFI; John & Srivastava, 1999). The TIPI assesses individual scores on the big five personality traits of extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences. Mothers were presented with words reflecting how individuals interact with those around them. Mothers were asked to indicate how much they agree or disagree that the words describe them on a seven point Likert-scale ranging from *strongly disagree* to *strongly agree*. Scores for each personality domain are presented as an average of responses to each of the two items measuring extraversion ($\alpha = .53$), agreeableness ($\alpha = .28$), conscientiousness ($\alpha = .35$), emotional stability ($\alpha = .58$), and openness to experience ($\alpha = .34$). Scores on each domain range from one to seven with higher scores indicating higher self-rated agreement that the mother displays that type of personality trait.

5.2.6 Maternal Consideration of Future Consequences

Maternal consideration of future consequences were measured using three items ($\alpha = .77$) from the Consideration of Future Consequences Scale (CFC; Strathman et al., 1994), a measure of the extent to which people consider distant versus immediate consequences of possible behaviours. The three items from the original 12 were chosen for use in the *PFL* Evaluation as they provided the strongest factor loadings in a factor analysis using the DNB household survey containing 2,000 observations suggesting that they adequately capture the concept of an individual's consideration of future consequences. Mothers are presented with items regarding their consideration of future consequences (e.g., In general, I ignore warnings about future problems because I think these problems will be solved before they get critical) and asked to indicate how much the statement describes them on a five point scale ranging from *not at all like me* to *very much like me*. Scores on this measure were calculated by summing responses to all three items on this scale, and reversing the score resulting in a possible range of scores from three to fifteen with higher scores being indicative of higher considerations of future consequences of current behaviours. Individuals who score low on this measure are expected to focus more on immediate, versus distant needs and concerns, thus will act in a way to satisfy immediate needs. While mothers who score high on this measure are expected to consider the future implications of their behaviour, thus distant goals are the influence for their current actions.

5.2.7 Indicators of Household Social and Emotional Risk

Household indicators of social and emotional risk were assessed by asking mothers if they or anyone in their house experienced difficulty due to a series of issues including parenting, domestic violence, addiction, separation, suicidal thoughts, mental health issues, bereavement, abuse, or any other social or emotional risk that was not listed. Mothers could tick as many issues as appropriate. A cumulative social and emotional risk assessment score was calculated by summing the total number of risk items endorsed by the participant, resulting in a range of

responses from zero to nine with higher scores indicating the presence of more social and emotional risks in the household.

5.3 Results

Table 5.1 illustrates the descriptive statistics for maternal responses of measures related to mental health, well-being, and personality. Table 5.1 also presents the statistical tests comparing maternal scores on these measures. Specifically, differences in maternal scores for participants in the low and high treatment groups are examined as well as differences between the total *PFL* group and the comparison community group on 24 measures related to maternal mental well-being and personality. Differences between the low and high *PFL* treatment groups did not reach significance on any of the measures examined. However, six differences were identified between the *PFL* cohort and comparison community.

5.3.1 Maternal Mental Well-being

There were no differences in mental well-being, either based on the mean score or the proportion of mothers who indicated poor well-being, between the low and high treatment groups. Additionally, the *PFL* cohort did not statistically differ from the comparison community in terms of overall well-being or the proportion of mothers who indicated poor well-being. The low treatment group and high treatment group scored a well-being score of 58% and 54% respectively, while the comparison group received a score of 61%. In regards reaching the cut-off for poor mental well-being, 37% of the low treatment group and 42% of the high treatment group experienced poor well-being, compared to 28% of the comparison group. Among the non first time mothers, 22% in the low treatment group and 17% in the high treatment group reporting having previously been diagnosed with postnatal depression, compared to 16% in the comparison group, suggesting that all groups are experiencing the same level of risk for postnatal depression.

5.3.2 Maternal Attachment Style

Differences between the low and high *PFL* treatment groups did not reach significance on any measure of vulnerable attachment, however the comparison group differed from the overall *PFL* group on three of the six measures analysed. Although differences between the *PFL* cohort and the comparison community did not reach significance for either measure related to insecure attachment, 40% of mothers in the low treatment group, 53% of mothers in the high treatment group, and 37% of mothers in the comparison community reported high levels of insecure attachment style. In addition, the *PFL* cohort displayed significantly more proximity seeking attachment behaviours compared to the comparison community ($p < .05$, $d = .26$). Similarly, a higher proportion of mothers in the *PFL* cohort had scores indicative of at risk levels of proximity seeking attachment behaviours compared to the comparison community ($p < .05$, $d = .27$) with 94% of mothers in the *PFL* cohort demonstrating high proximity seeking attachment scores compared to only 87% in the comparison community. Although differences between the aggregate *PFL* cohort and the comparison community did not reach significance for the proportion of mothers indicating highly vulnerable attachment (74% compared to 66%), the total

vulnerable attachment continuous score was significantly different for the two groups ($p < .05$, $d = .30$) with the mothers in the *PFL* cohort scoring 18.03 and the mothers in the comparison community scoring 16.91.

5.3.3 Maternal Self Efficacy

Differences between the low and high treatment *PFL* groups did not reach significance on any of the six measure of self efficacy. However, differences between the aggregate *PFL* cohort and the comparison community reached significance on three of the six measures analysed. In terms of those scoring in the lowest 10% of the mastery scale, 8% of mothers in the low treatment group, 13% of mothers in the high treatment, and 13% of mothers in the comparison community scored in the lowest 10% of the mastery subscale, with mean scores of 2.8 for all three groups. Mothers in the *PFL* cohort scored below participants in the comparison group on the parenting self efficacy subdomain ($p < .05$, $d = .23$) and the total self efficacy score ($p < .05$, $d = .18$) such that mothers in the comparison community display significantly higher levels of self efficacy in these domains. In terms of parenting self efficacy, 7%, 15%, and 8% of the low, high, and comparison groups, had scores falling in the lowest 10% of the entire sample. Finally, in relation to the total self efficacy score, 8% of the low treatment group, 14% of the high treatment group, and 8% of the comparison community scored in the lowest 10% of the entire sample, suggesting they are experiencing low levels of self efficacy relative to the entire sample.

5.3.4 Maternal Self Esteem

Differences between the low and high *PFL* treatment groups and the aggregate *PFL* cohort and comparison community did not reach significance for the total self esteem score nor the proportion of mothers falling in the lowest 10% of the sample. In terms of the proportion of mothers scoring relatively low on this measure of self esteem, 18% from the low treatment group, 13% from the high treatment group, and 17% from the comparison community fall into this category.

5.3.5 Maternal Personality

Differences between the low and high *PFL* treatment groups and the aggregate *PFL* cohort and comparison community did not reach significance on any of the domains of personality. Scores across all domains are relatively similar, with the lowest scores falling on the domain of emotional stability and the highest scores pertaining to the agreeableness personality domain.

5.3.6 Maternal Consideration of Future Consequences

Differences between the low and high treatment *PFL* groups did not reach significance on the CFC scale. The mean score for mothers in the low treatment groups was 10.3 compared to 9.5 in the high treatment group, a difference that did not reach significance. Differences between the aggregate *PFL* cohort and the comparison community were statistically different ($p < .05$, $d = .27$). Specifically, the average score of mothers in the comparison community was 10.8 suggesting that mothers in the comparison community have more consideration of how their behaviours will affect them in the future than mothers in the *PFL* cohort.

5.3.7 Indicators of Household Social and Emotional Risk

Differences between the low and high *PFL* treatment groups and the aggregate *PFL* cohort and comparison community did not reach significance suggesting that all groups are exposed to similar levels of social and emotional risk factors in their households. Scores across all groups are relatively similar with mothers in the low treatment group reporting an average of 0.70 risks, mothers in the high treatment group reporting an average of 0.79 risks, and mothers in the comparison community reporting 0.95 risks, on average. Additionally, it is important to note that 60% of the low treatment group, 51% of the high treatment group, and 57% of the comparison community indicated that they were not exposed to any social and emotional risk factors.

5.4 Key Findings

- Mothers in the low treatment group did not differ statistically from mothers in the high treatment group in regards any of the 24 mental health, well-being, and personality outcomes analysed.
- Mothers in the comparison community group differed statistically from mothers in the overall *PFL* group in six of the 24 outcomes analysed. Specifically, mothers in the comparison group reported lower levels of proximity seeking attachment behaviour, fewer scored in the lowest 10% of proximity seeking attachment behaviour, they reported lower levels of overall vulnerable attachment, higher levels of parenting and total self efficacy, and more consideration of future consequences.
- Almost 40% of the *PFL* cohort are at risk of poor mental well-being and one-fifth reported being diagnosed with postnatal depression in a previous pregnancy.
- Three-quarters of the *PFL* cohort have high levels of vulnerable attachment styles.
- Mothers reported higher levels of parenting self efficacy than mastery. Additionally, few mothers scored in the lowest 10% of the total self efficacy score relative to the entire sample.
- In regards personality traits, the *PFL* cohort scored highest on agreeableness and lowest on emotional stability.
- On average, the *PFL* cohort report being exposed to less than one social and emotional risk factor in their home.

Table 5.1

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Mental Well-being and Personality

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
<i>Well-being</i>												
WHO-5 Percentage Score	205 (101/104)	57.94 (22.96)	54.27 (20.24)	3.67	ns	.17	304 (205/99)	56.08 (21.65)	60.65 (20.16)	-4.57	ns	.22
Low WHO-5 Percentage Score	205 (101/104)	0.37 (0.48)	0.42 (0.50)	-0.05	ns	.12	304 (205/99)	0.40 (0.49)	0.28 (0.45)	0.12	ns	.24
Incidence of Postnatal Depression in Previous Pregnancies	97 (51/46)	0.22 (0.42)	0.17 (0.38)	0.05	ns	.11	154 (97/57)	0.20 (0.40)	0.16 (0.37)	0.04	ns	.10
<i>Vulnerable Attachment Style Questionnaire (VASQ)</i>												
Insecurity Score	205 (101/104)	7.58 (2.79)	7.82 (2.48)	-0.24	ns	.09	304 (205/99)	7.70 (2.64)	7.14 (2.39)	0.56	ns	.22
High Insecurity	205 (101/104)	0.40 (0.49)	0.53 (0.50)	-0.13	ns	.27	304 (205/99)	0.46 (0.50)	0.37 (0.49)	0.09	ns	.18
Proximity Seeking Score	205 (101/104)	10.24 (2.16)	10.42 (2.16)	-0.18	ns	.09	304 (205/99)	10.33 (2.16)	9.77 (2.21)	0.56	<.05	.26
High Proximity Seeking	205 (101/104)	0.93 (0.26)	0.95 (0.21)	-0.02	ns	.09	304 (205/99)	0.94 (0.24)	0.87 (0.34)	0.07	<.05	.27
Total Vulnerable Attachment Score	205 (101/104)	17.82 (3.98)	18.24 (3.77)	-0.42	ns	.11	304 (205/99)	18.03 (3.87)	16.91 (3.59)	1.12	<.05	.30
High Vulnerable Attachment	205 (101/104)	0.70 (0.46)	0.77 (0.42)	-0.07	ns	.15	304 (205/99)	0.74 (0.44)	0.66 (0.48)	0.08	ns	.18
<i>Pearlin Self Efficacy Scale</i>												

Table 5.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Mental Well-being and Personality

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
Mastery	205 (101/104)	2.88 (0.60)	2.77 (0.63)	0.11	ns	.17	304 (205/99)	2.83 (0.62)	2.85 (0.70)	-0.02	ns	.04
Lowest 10% Mastery	205 (101/104)	0.08 (0.27)	0.13 (0.33)	-0.05	ns	.15	304 (205/99)	0.10 (0.30)	0.13 (0.34)	-0.03	ns	.09
Parenting Self Efficacy	205 (101/104)	3.17 (0.53)	3.04 (0.55)	0.13	ns	.25	304 (205/99)	3.10 (0.55)	3.23 (0.61)	-0.13	<.05 ^a	.23
Lowest 10% Parenting Self Efficacy	205 (101/104)	0.07 (0.26)	0.15 (0.36)	-0.08	ns	.27	304 (205/99)	0.11 (0.32)	0.08 (0.27)	0.03	ns	.10
Total Self Efficacy Score	205 (101/104)	3.02 (0.52)	2.90 (0.52)	0.12	ns	.24	304 (205/99)	2.96 (0.52)	3.05 (0.52)	-0.09	<.05 ^a	.18
Lowest 10% Total Self Efficacy Score	205 (101/104)	0.08 (0.27)	0.14 (0.35)	-0.06	ns	.21	304 (205/99)	0.11 (0.32)	0.08 (0.27)	0.03	ns	.10
<i>Rosenberg Self Esteem Scale</i>												
Total Self Esteem Score	205 (101/104)	12.78 (2.86)	12.82 (2.69)	-0.04	ns	.01	304 (205/99)	12.80 (2.77)	13.04 (3.09)	-0.24	ns	.08
Lowest 10% Self Esteem Score	205 (101/104)	0.18 (0.38)	0.13 (0.34)	0.05	ns	.12	304 (205/99)	0.16 (0.36)	0.17 (0.38)	-0.01	ns	.04
<i>Ten Item Personality Inventory (TIPI)</i>												
Extraversion	205 (101/104)	5.17 (1.35)	5.11 (1.34)	0.06	ns	.05	304 (205/99)	5.14 (1.34)	5.11 (1.48)	0.03	ns	.02
Agreeableness	205 (101/104)	5.79 (1.17)	5.65 (1.16)	0.14	ns	.12	304 (205/99)	5.72 (1.16)	5.67 (1.03)	0.05	ns	.05

Table 5.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Mental Well-being and Personality

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	N ($n_{\text{LOW}}/$ n_{HIGH})	M_{LOW} (SD)	M_{HIGH} (SD)	$M_{\text{LOW}} -$ M_{HIGH}	p	Effect Size (d)	N ($n_{\text{PFL}}/$ n_{COMP})	M_{PFL} (SD)	M_{COMP} (SD)	$M_{\text{PFL}} -$ M_{COMP}	p	Effect Size (d)
Conscientiousness	205 (101/104)	5.53 (1.23)	5.38 (1.29)	0.15	ns	.12	304 (205/99)	5.45 (1.26)	5.55 (1.42)	-0.10	ns	.07
Emotional Stability	205 (101/104)	4.04 (1.54)	3.83 (1.60)	0.21	ns	.14	304 (205/99)	3.94 (1.57)	4.05 (1.61)	-0.11	ns	.07
Openness to Experience	205 (101/104)	5.09 (1.25)	4.96 (1.26)	0.13	ns	.11	304 (205/99)	5.02 (1.25)	5.16 (1.31)	-0.14	ns	.11
<i>Consideration of Future Consequences (CFC) Scale</i>	205 (101/104)	10.33 (3.18)	9.50 (3.23)	0.83	ns	.26	304 (205/99)	9.91 (3.22)	10.79 (3.27)	-0.88	<.05	.27
<i>Indicators of Household Social and Emotional Risk</i>	203 (99/104)	0.70 (1.18)	0.79 (1.08)	-0.09	ns	.08	199 (203/96)	0.74 (1.13)	0.95 (1.57)	-0.21	ns	.16

Note. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted. ^aPermutation tests were conducted using the Wilcoxon Rank-Sum tests for non-normally distributed data.

6 Chapter 6: Maternal Health & Pregnancy

6.1 Introduction

Maternal health during pregnancy is influenced by multiple factors including past and current health, dietary and exercise practices, antenatal care, and the use of alcohol, cigarettes and drugs. Furthermore, the fetal environment and maternal behaviour during pregnancy have significant long-term consequences for a child's health and development. Chapter Six presents information relating to maternal health as a child, mothers' current health status including experience of physical and mental health conditions and Body Mass Index (BMI), health behaviours related to eating and exercise, mothers' utilisation of health services, their antenatal care, use of health supplements during pregnancy, and their substance use during pregnancy.

6.1.1 SES Health Inequalities Across the Lifespan

Evidence on the intergenerational transmission of health status across generations (Eriksson, Bratsberg, & Raaum, 2005), in addition to the well established finding that lower income groups experience poorer health (Banks, Marmot, Oldfield, & Smith, 2006; Frank, Cohen, Yen, Balfour, & Smith, 2003), suggests that children born into lower SES families are at an increased risk for ill health. Assessing maternal health before and during pregnancy is necessary when considering infant health and development. Maternal health as a child is a useful starting point as poor health in childhood is often associated with multiple adverse consequences later in life including lower educational attainment, inferior labour market outcomes and worse health in adulthood (Case, Fertig, & Paxson, 2005; Currie, 2004; Currie & Hyson, 1999; Graham & Power, 2004). These factors, in turn, may have an impact on an individual's health status during pregnancy, which will have consequences for the newborn's health and subsequent development.

There is also a socioeconomic gradient in the health of Irish women, with findings from the Lifeways Generational Cohort Study emphasising the significance of socioeconomic status in predicting the health of pregnant Irish women, with the lowest income groups being less healthy (Segonds-Pichon et al., 2007). Self-reported health status tends to include both physical and psychosocial well-being (Miilunpalo, Vuori, Oja, Pasanen, & Urponen, 1997). Accordingly, the presence or experience of health, or mental health, conditions or illnesses that impinge on daily functioning will influence how a mother rates her health. BMI before pregnancy is also a useful indicator of maternal health and may have implications for infant development. It is crucial that pregnant mothers adhere to suitable weight standards, for numerous reasons, including their own health, their child's health, to ease the birthing process, and finally to prepare their body for breastfeeding (Johnson, Rottier, Luellwitz, & Kirby, 2009; Kac, Benicio, Velasquez-Melendez, Valente, & Struchiner, 2004). Research has indicated that low SES populations are simultaneously at risk of being underweight and overweight or obese (Moore, Hall, Harper, & Lynch, 2010; Nikolaou & Nikolaou, 2008; Sobal & Stunkard, 1989). Additionally, obesity presents further complications for pregnant woman as a recent study found that overweight or obese mothers are at higher risk for pregnancy complications, still birth or neonatal death (Johnson et al., 2009; Sebire et al., 2001). Meanwhile, women who become pregnant while

underweight are at higher risk for a premature, or small for gestational age babies (Cnattingius, Bergström, Lipworth, & Kramer, 1998).

An explanation posited for the poorer health status of low SES groups is their engagement in more negative behavioural practices in relation to diet and exercise (Stringhini et al., 2010). Proper nutrition and physical activity are vital for promoting and sustaining health, both for the mother and the child. However in Ireland, research has found that lower education and ownership of a medical card, both characteristics of the *PFL* Evaluation population, increase the risk of non compliance with recommended food intake during pregnancy (Murrin et al., 2007). Additionally, lower income groups are less likely to partake in physical activity or follow appropriate dietary patterns (Lynch, Kaplan & Salonen, 1997; Trost, Owen, Bauman, Sallis, & Brown, 2002). Assessing maternal nutrition is crucial as the literature has identified a relationship between poor antenatal nutrition and cognitive and behavioural outcomes (Korenman, Miller, & Sjaastad, 1995). Furthermore, poor maternal nutritional intake during the prenatal period can have an adverse effect on the child's neurodevelopment and health in later life (Barker, 1998).

6.1.2 Health Service Use

An individual's use of health services is dependent on a number of factors, including his or her health, awareness of symptoms, belief in the advantages of use, a psychological readiness to attend services, and finally, accessibility (Field & Briggs, 2001; Rosenstock, 2005). The complex relationship between health, income, and health service utilisation is difficult to disentangle. Past research found that higher income groups tend to access medical services more frequently than lower income groups (Lerner & Anderson, 1963; Somers & Somers, 1961). Conversely, newer studies report the opposite (Droomers & Westart, 2004; Layte & Nolan, 2004). A recent Irish study found that lower income groups are more likely to access GP services, while higher income groups are more likely to make use of more specialist services like the dentist and the optician (Layte & Nolan, 2004). While this relationship may in part be explained by the poorer health of lower income groups (Mackenbach, Bakker, Kunst, & Diderichsen, 2002), that certain low income groups can access GP services free of charge through the Medical Card Scheme also may be a factor.

6.1.3 Prenatal Care

Adequate prenatal care is an important determinant of birth outcomes. For example, whether a pregnancy is planned has been associated with maternal behaviours during pregnancy which in turn may have an effect on the fetus. Specifically, babies born to mothers who had not intended to conceive have an elevated risk of adverse health outcomes such as low birth weight and premature birth (Kallan, 1993; Kendrick, Gargiullo, Williams, & Bruce 1990; Weller, Eberstein, & Bailey, 1987) and are less likely to be breastfed (Kost, Landry, & Darroch, 1998). Furthermore, unplanned pregnancies are associated with late prenatal care and maternal smoking during pregnancy (Joyce, Kaestner, & Korenman, 2000; Weller et al., 1987). Finally, women with unplanned pregnancies tend to be less educated (Anderson, 1981) and to be at the extremes of age (Bitto et al., 1997). Relatedly, women are less likely to engage in birth control practices if they are depressed (Lehrer, Shrier, Gortmaker, & Buka, 2006), if they do not believe that they

will get pregnant (Klein, 1983), if they have low sexual assertiveness (Rickert, Neal, Wiemann, & Berenson, 2000) or, in adolescents who have already given birth, if they are not receiving financial support from their partner (Jurich & Hughes, 1991).

Gaining antenatal care early in pregnancy is important for the outcomes of the infant. Pregnancy complications, such as placental abruptions, are more common in women avoiding antenatal care and there are significantly more infants born with a low birth weight and more fetal deaths and neonatal deaths in women who attend few or none of their antenatal visits (Raatikainen, Heiskanen, & Heinonen, 2007). Education is strongly correlated with early antenatal care as more educated women are generally more likely to recognise pregnancy and begin prenatal care early (Lee & Grubbs, 1995; Melnikow & Alemagno, 1993). There are a number of significant risk factors associated with entering into antenatal care at a late stage. Age is an important determinant, in that teenagers are less likely than older women to start prenatal care early (Kost et al., 1998). In addition, women who live in poor housing conditions, are unemployed, unmarried, or have other children, and engage in smoking, drinking or drug use are also less likely to engage in early antenatal care (Kiely & Kogan, 1993; Kupek, Petrou, Vause, & Maresh, 2002; Pagnini & Reichman, 2000). Furthermore, similar characteristics are associated with participation in antenatal education classes. Women who attend these classes are likely to be older, to have higher levels of education, and tend to be from a higher socioeconomic status than women who do not attend (Lumley & Brown, 1993; Sturrock & Johnson, 1990). Although there is some evidence that attendance at antenatal classes is not associated with parental attachment, childbirth satisfaction and emotional well-being (Nichols, 1995; Sturrock & Johnson, 1990), women who attend these classes are less likely to smoke or drink during pregnancy, to attend more antenatal appointments, and are more likely to breastfeed once the child is born (Bruce, Kahn, & Olsen, 1991; Lumley & Brown, 1993).

6.1.4 Health Behaviour During Pregnancy

Another aspect of maternal behaviour during pregnancy that affects the inutero development of the fetus is the use of health supplements or prenatal vitamins. Vitamins and minerals are important both to the mother's health during pregnancy and to child outcomes. Low levels of vitamin E intake during pregnancy has been associated with asthma in five year old children (Devereux et al., 2006), while deficiencies in vitamin B12 and in folic acid increase the risk of neural tube defects such as Spina Bifida (Li, Watkins, & Rosenblatt, 2009; MRC Vitamin Study Research Group, 1991). The risk for developing iron deficiency is greatest during pregnancy as maternal iron requirements are substantially higher than average iron intakes (Scholl, 2005). This is particularly true of women from low SES backgrounds as they are often less likely to take dietary supplements during pregnancy (Yu, Keppel, Singh, & Kessel, 1996). Maternal anemia in early pregnancy increases the risk of preterm birth or low birth weight babies (Allen, 2000). Young women and those with low levels of education are less likely than older, more highly educated women to follow advice on taking vitamins and minerals (Kost et al., 1998; Matthews, Yudkin, Smith, & Neil, 2000), thus this is of particular importance in the *PFL* Evaluation sample of pregnant women.

The use of cigarettes, alcohol and drugs are detrimental to health in general, but are particularly damaging during pregnancy. Substance misuse during pregnancy can lead to birth defects and

developmental delays (Okah, Cai, & Hoff, 2005), intrauterine growth restrictions resulting in low birthweight (Ventura, Hamilton, Mathews, & Chandra, 2003), and a higher incidence of behavioural problems, such as increased hyperactivity and chronic aggression (Tremblay et al., 2004). The first trimester is particularly important as infectious diseases, neurotoxins and nutrient deficiencies may have a detrimental effect on future brain development (Shonkoff & Phillips, 2000). Low birthweight subsequently affects a child's cognitive abilities leading to poorer performance on IQ tests (Saigal, Szatmari, Rosenbaum, Campbell, & King, 1991), lower academic performance in the future (McCormick, Workman-Daniels, & Brooks-Gunn, 1996), increased likelihood of need for special education or grade retention (Ross, Lipper, & Auld, 1991), and poorer language and social skills (Hack, Klein, & Taylor, 1995). It also can lead to a higher incidence of behavioural problems such as increased attention deficit (Pharoah, Stevenson, Cooke, & Stevenson, 1994). Therefore, it is vital for pregnant mothers to cease substance use as early as possible in order to decrease the risk of these defects and delays.

6.1.5 Overview

Maternal health and health related behaviours both pre and postnatally show clear associations with future child health and development. Additionally, these domains have the capacity to be influenced by home visiting programmes such as *PFL*. The pregnancy characteristics are of particular importance in the *PFL* Evaluation sample of pregnant women as the catchment area is characterised by low education and young motherhood. Interventions have been shown to be successful in reducing smoking during pregnancy (Hartmann, Thorp, Pahel-Short, & Koch, 1996), to increase the number of antenatal visits (Panaretto et al., 2007), and to increase dietary supplements intake (Robbins, Cleaves, Collins, Andrews, Smith, & Hobbs, 2005). Furthermore, Robbins and colleagues (2005) reported that the women who were most influenced by interventions were those who were from a lower SES background and who had not planned their pregnancies, further illustrating the importance of the *PFL* Programme in these communities. Throughout this chapter, baseline characteristics of maternal health and pregnancy outcomes are reported and baseline comparisons are made between the low and high treatment groups in the *PFL* Programme as well as between all *PFL* participants and the comparison community.

6.2 Instruments

6.2.1 Maternal Health Across the Lifespan

A number of items were used to assess maternal health across the lifespan.

6.2.1.1 Maternal Health as a Child

Two instruments were used to assess maternal health in childhood. First, a self-rated measure of general health in childhood measured on a five point scale ranging from *excellent* to *poor*. This measure was dichotomised to create a binary indicator of ill health in childhood if the mother reported *fair* or *poor* health. The mother was not considered to have experienced ill health in childhood if she reported *good*, *very good*, or *excellent* health to this question. The second measure was a binary variable indicating whether the mother missed more than one month of school during childhood due to a health condition or not.

6.2.1.2 Maternal General Health Status

Several aspects of maternal health were assessed. The mother's current health status was assessed using a self-rated measure of general health measured on a five point scale ranging from *excellent* to *poor*. This measure was dichotomised to create a binary indicator of ill health if the mother reported *fair* or *poor* health. The mother was not considered to have ill health if she indicated her current health was *good*, *very good*, or *excellent*. Secondly, a binary indicator was used to capture whether the mother's daily activities or work were limited by a long-term illness, health problem, or disability or not. The mother also was asked whether she has ever been diagnosed with any of 22 listed physical health conditions, in addition to any other condition not included on the list. This measure was dichotomised to create an indicator of whether the mother has a medical condition or not. Similarly, a binary variable was created indicating whether the mother has ever been diagnosed with any of eight listed mental health conditions or not. Finally, a measure of body mass index (BMI) was calculated using maternal self reported height and pre pregnancy weight. This variable also was used to create a categorical variable indicating whether the mother was underweight, of normal weight, overweight, or obese according to BMI before pregnancy.

6.2.1.3 Maternal Health Behaviours

A number of indicators were used to assess maternal health behaviours. First, to assess maternal eating habits, mothers were asked to rate their eating habits on a five point scale. This variable was used to create a categorical variable indicating whether mothers reported their eating habits to be *healthy*, *average*, or *unhealthy*. They also were asked to indicate how often they eat certain foods such as brown bread, low fat milk, low fat butter, lean meat, fish, fruit and vegetables, sweets and fatty foods. The responses from these seven questions were summed to create an overall health food scale ranging from nine to 35, where higher values are indicative of more healthy eating habits. Finally, mothers were asked to indicate the frequency of their exercise habits prior to pregnancy. This measure was used to generate a binary variable indicating whether the mothers engage in exercise three times or more per week or not.

6.2.1.4 Maternal Health Service Use

Maternal health service use was assessed by asking mothers if they have attended any of the 24 listed health services in the last year. This measure was used to generate a summative scale indicating how many services the mother used in total over the previous year. The mothers also were asked to indicate how many times in the last year they have visited their GP for non-pregnancy related conditions. This was used to generate a summative scale indicating the total number of GP visits in the previous year.

6.2.2 The Pregnancy

6.2.2.1 Past and Current Pregnancy Information

Several questions assessed information on past and current pregnancies. Specifically, non primiparous mothers were asked their age at the birth of their first child. In relation to the current pregnancy, mothers were asked if they were using any type of birth control practices at the time they became pregnant. Responses to this question were dichotomised indicating the use of birth

control practices if they stated using valid forms of birth control such as the contraceptive pill, condoms, patches, injections, or coils. Participants were also asked if the pregnancy was planned or not. A number of questions were asked to gain information about the level of prenatal care that the mother was engaging in. Specifically, two continuous measures were generated including the week in which the pregnancy was confirmed and the week in which the mother attended her first antenatal visit. A binary variable was used to assess whether the mother had attended or planned to attend antenatal classes or not.

6.2.2.2 Prenatal Health Supplement Use

A series of questions assessed the maternal use of health supplements either before or during pregnancy. This resulted in five binary variables indicating whether the mother used multivitamins, folic acid, iron, calcium, or other health supplements either before or during the pregnancy or not.

6.2.3 Maternal Substance Use During Pregnancy

The mothers were asked a number of questions related to their past and current use of cigarettes, alcohol, and drugs.

6.2.3.1 Smoking Behaviour

Mothers were asked if they smoked prior to pregnancy and whether they changed their smoking behaviour during pregnancy. These two variables were used to create a categorical variable indicating whether the mother reduced her smoking intake during pregnancy, increased her smoking intake, stopped smoking during pregnancy, made no changes to her smoking habits, or never smoked. This information also was used to generate a binary indicator of whether the mother smoked during pregnancy or not. Additionally, mothers who were still smoking during pregnancy were asked to indicate how many cigarettes they smoke, on average, per day.

6.2.3.2 Drinking Behaviour

Mothers also were asked about their drinking habits prior to pregnancy. This information was used to generate a categorical variable indicating whether the mother drank alcohol more than three times per week, once or twice a week, once or twice a month, or never drank. A variable indicating how many drinks they typically drank per week prior to becoming pregnant also was recorded. Additionally, mothers were asked whether they changed their drinking habits during pregnancy. This information was used to create a categorical variable indicating whether the mother reduced her alcohol intake during pregnancy, stopped drinking alcohol during pregnancy, made no changes to her drinking habits, or never drank.² This information was used to generate a binary indicator of whether the mother drank alcohol during pregnancy or not. Finally, mothers who were still drinking during pregnancy were asked to indicate how many drinks they had, on average, per week.

6.2.3.3 Drug Use Behaviour

Finally, mothers were asked about their use of illegal drugs before and during pregnancy. They were asked to indicate how often, if ever, they have used a list of 15 illegal drugs in the year

² Mothers also were presented with the option of having increased alcohol consumption during pregnancy. However, no mother indicated this was the case.

prior to becoming pregnant. Responses were recorded on a four category indicator ranging from *never* to *regularly*. This information was used to generate a binary variable representing if the mother consumed any of the listed drugs in the 12 month period before pregnancy or not. They also were asked about changes in their drug usage during pregnancy. This information was used to create a categorical variable indicating whether the mother reduced her drug intake during pregnancy, stopped taking drugs during pregnancy, made no changes to their drug habits, or never took drugs.³ Finally, a binary variable indicating whether the mother was consuming drugs during pregnancy or not was created.

6.3 Results

Tables 6.1 and 6.2 present the descriptive statistics related to maternal health status across the lifespan, the pregnancy, and maternal substance use during pregnancy within the low and high *PFL* treatment groups and the comparison community. Specifically, differences in maternal scores for participants in the low and high treatment groups are examined as well as differences between the overall *PFL* group and the comparison community on 35 measures related to maternal health. Differences between the low and high *PFL* treatment groups did not reach significance on any of the measures. However, nine differences were identified between the *PFL* cohort and comparison community.

6.3.1 Maternal Health Across the Lifespan

Table 6.1 and Table 6.2 indicate that there were no differences between the low treatment and the high treatment *PFL* groups in regards any of the 13 indicators of maternal health analysed, however there were significant differences between the overall *PFL* group and the comparison group on two of the indicators examined.

6.3.1.1 Maternal Health as a Child

There were no statistical differences in maternal health during childhood, as measured by self-rated health, and the proportion of mothers who missed school for one month or more due to illness, between the low and high *PFL* treatment groups and the overall *PFL* and community comparison groups. On average, 7% and 5% of the low and high treatment groups respectively rated their health as fair or poor in childhood, compared to 5% in the comparison community. While approximately 9% of the low treatment group, 15% of the high treatment group, and 7% of the comparison group missed school for more than one month in childhood due to illness.

6.3.1.2 Maternal General Health Status

There were no statistical differences in the current health status of mothers in the low and high *PFL* treatment groups, and only one difference between the overall *PFL* and comparison community groups. Approximately 13% of mothers in the low treatment group and 10% in the high treatment group rated their current health as fair or poor, compared to 6% in the comparison group, while 8% and 11% of the low and high treatment groups respectively reported having a

³ Mothers also were presented with the option of having increased illegal drug usage during pregnancy. However, no mother indicated this was the case.

long term chronic illness that affects their daily activities, compared to 5% in the comparison group. Although few mothers indicated the presence of a health condition that affected daily activities, a high proportion of mothers reported being diagnosed with a physical health condition in the past, with 62% of the low treatment group reporting a past medical condition, 75% of the high treatment group, and 67% of the comparison group reporting a past condition. Migraines, asthma and back pain were the three most commonly listed medical conditions. A relatively smaller proportion of the sample reported being diagnosed with a mental health condition in the past. Approximately 24% and 28% of the low and high *PFL* treatment groups respectively reported having a mental health condition, compared to 37% of the comparison group. While the differences between the low and high treatment groups were not statistically different, differences in mental health were reported between the overall *PFL* sample (26%) and the comparison community (37%), with the comparison community having a significantly higher proportion of mental health conditions than the overall *PFL* sample ($p < 0.5$; $d = .24$). The most common mental health conditions reported were depression and anxiety. Finally, the average pre-pregnancy Body Mass Index (BMI) of the three groups was within the normal weight range, with the low treatment reporting an average BMI of 23.87, compared with 24.19 in the high treatment group and 23.88 in the comparison community. As indicated in Table 6.2, there were no statistical differences between the groups when BMI was broken down by category. Approximately one-quarter of all three groups were classified as being overweight, and 10% were classified as being obese.

6.3.1.3 Maternal Health Behaviours

Tables 6.1 and 6.2 also indicate that there were no statistical differences in regards maternal health behaviours between the low and high *PFL* treatment groups. Additionally, differences between the aggregate *PFL* sample and the comparison community on these measures did not reach significance. Table 6.2 shows that 42% of mothers in the low treatment group reported having healthy eating habits. This compares to 34% of mothers in the high treatment group and 49% in the comparison group. While 13%, 10%, and 8% of the low, high, and comparison groups respectively reported having unhealthy eating habits. The average score on the healthy eating scale was 18.75 for the low treatment group, 18.49 for the high treatment group and 18.86 for the comparison group. This corresponds to reporting *rarely* or *sometimes* to questions related to eating food considered to be healthy. In terms of frequency of exercise before becoming pregnant, 45% and 38% of the low and high treatment groups respectively reported having regular exercise as defined by engaging in exercise more than three times per week. This compares to 30% within the comparison group.

6.3.1.4 Maternal Health Service Use

Table 6.1 indicates that there were no statistical differences in regards to maternal health service use between the low and high *PFL* treatment groups. However, there was one significant difference between the overall *PFL* and community comparison group. Table 6.1 reports that the low and high treatment groups used about 2.39 and 2.44 health services in the last 12 months, while the comparison group used 2.62. This difference is statistically significant such that the comparison group used significantly more health services than the overall *PFL* group ($p < 0.5$; $d = 0.16$). Approximately 4% of the *PFL* group and 1% of the comparison group did not use any service in the last 12 months, while 16% and 6% reported using at least one service. Attending a GP and a hospital as an outpatient were the two most common health services used. Specifically,

the average number of GP visits was approximately three among the low treatment group, 3.37 among the high treatment group, and 3.08 among the comparison group. There were no statistical differences between the number of GP visits among the overall *PFL* group and the comparison group.

6.3.2 The Pregnancy

Table 6.1 illustrates the descriptive statistics for maternal responses to questions on past and current pregnancy information, prenatal information, and prenatal health supplement use. Table 6.1 also presents the statistical tests comparing maternal scores for participants in the low and high *PFL* treatment groups and the overall *PFL* group and the comparison community group. There were no differences between the low treatment group and the high treatment *PFL* group in regards any of the 11 indicators analysed, however there were significant differences between the overall *PFL* group and the comparison group on three of the indicators examined.

6.3.2.1 Past and Current Pregnancy Information

On average non-primiparous mothers in the low and high treatment groups and the comparison group had their first child at 21 years of age. In terms of birth control practices, 33% of mothers in the low treatment group and in the high treatment group were engaging in some form of effective birth control, while the average use of valid forms of birth control was lower in the comparison group with an average of 23% mothers using birth control at the time of their pregnancy. Of the mothers in the low treatment group, 30% stated that the pregnancy was planned, compared to 29% of mothers in the high treatment group. However, at 48%, a significantly higher proportion of mothers in the comparison community stated that their pregnancy was planned ($p < .01$, $d = .40$). On average, the pregnancy was confirmed in week seven for the low treatment group and week six for the high treatment group and the comparison group. In terms of attending the first antenatal visit at the hospital, mothers in the low treatment group attended during week 17 on average, while mothers in the high treatment group and the comparison group first attended the hospital during week 16 on average. In regards mothers' past, or intended, attendance at antenatal classes, 33% of those in the low treatment group and 40% of those in the high treatment group indicated that they either have attended or they intend to attend these classes. However, there was a significant difference between the overall *PFL* sample and the comparison group in regards the use of antenatal classes ($p < .05$, $d = .31$) with 52% of respondents in the comparison group indicating that they either have attended or intend to take part in antenatal classes compared to 37% in the *PFL* sample.

6.3.2.2 Prenatal Health Supplement Use

On average 34%, 42%, and 44% of the low and high treatment groups and the comparison group respectively indicated they took multivitamins either since or before becoming pregnant. The vast majority of participants in all groups indicated that they have taken folic acid: 92% of the low treatment group, 93% of the high treatment group, and 90% of the comparison group. Very few participants across any of the groups took either calcium supplements or any other supplement during pregnancy. Just 3% of the low treatment group took calcium and 2% indicated that they took some other supplement, while 6% of the high treatment group took calcium and 4% took some other supplement, finally 6% of the comparison group took calcium and 3% took some other supplement. The only significant difference across the groups in regards

the use of health supplement usage was in the use of iron. While there was no difference in iron usage between the low and high treatment groups with 66% and 68% respectively reporting that they have taken iron since or before becoming pregnant, there was a significant difference between the overall *PFL* cohort and the comparison group ($p < .05$, $d = .25$), with 79% of the comparison community taking iron compared to only 67% of the *PFL* cohort.

6.3.3 Maternal Substance Use During Pregnancy

Tables 6.1 and 6.2 indicate that there were no statistical differences between the substance use behaviour of the low and high treatment groups. However, there were differences between the overall *PFL* group and comparison group for four of the eleven outcomes analysed.

6.3.3.1 Smoking Behaviour

Approximately 40% of the low treatment group and 38% of the high treatment group never smoked before pregnancy, compared with 47% of the comparison group. A further 13% of the low treatment group, 11% of the high treatment group, and 18% of the comparison group stopped smoking when they found out they were pregnant and 37% of the low and high treatment groups and 30% of the comparison group reduced their smoke intake upon confirmation of the pregnancy. Additionally, 3% of the low and high treatment groups and none of the comparison group increased their smoking habit whereas no mother in the comparison community indicated an increase in smoking behaviour since becoming pregnant. Finally, 8% of the low treatment group, 12% of the high treatment group, and 4% of the comparison group did not change their smoking behaviour when they found out they were pregnant. In total, 48% of mothers in the low treatment group and 51% of mothers in the high treatment group smoked during pregnancy, compared to 34% of mothers in the comparison group. This difference between the overall *PFL* group and comparison group is statistically significant, such that more mothers in the *PFL* group smoked during pregnancy ($p < 0.5$; $d = 0.30$). For mothers who did smoke during pregnancy, the average amount of cigarettes smoked was 9.71 for the low treatment group, 10.64 for the high treatment group and 7.91 for the comparison group. The differences in the number of cigarettes smoked was significantly greater for the overall *PFL* sample compared to the comparison group ($p < 0.5$; $d = 0.38$).

6.3.3.2 Drinking Behaviour

Approximately 11% of the low treatment group and 17% of the high treatment group never drank alcohol prior to becoming pregnant, compared to 8% of the comparison group. A further 9% of the low treatment group, 5% of the high treatment group, and 7% of the comparison group drank more than three times per week. The majority of the groups drank between one and two times per week (low 37%; high 42%; comparison 40%) or between one and two times per month (low 44%; high 36%; comparison 44%). Among the mothers who did drink before pregnancy, the average number of drinks consumed per week was 7.30 within the low treatment group, 7.12 in the high treatment group, and 6.93 within the comparison group. On learning of their pregnancy a number of mothers changed their drinking habits. Among all mothers, 60% in the low treatment group and 55% in the high treatment group stopped drinking alcohol, while 58% in the comparison group stopped drinking alcohol. A further 27% of the low treatment group and 25% of the high treatment group reduced their alcohol intake, compared to 30% in the comparison group. A relatively small proportion did not change their drinking habits during

pregnancy (low 2%; high 3%; comparison 4%). Finally, no mother indicated she had increased her alcohol consumption since becoming pregnant. In total, 27% of mothers in the low treatment group and 25% of mothers in the high treatment group drank during pregnancy, compared to 30% of mothers in the comparison group. Among those who continued drinking during pregnancy, the average number of drinks consumed per week was 2.93 in the low treatment group, 3.15 in the high treatment group and 3.13 in the comparison group. The differences in the number of drinks consumed per week was significantly lower for the overall *PFL* sample than the comparison group ($p < 0.5$; $d = 0.03$).

6.3.3.3 Drug Use Behaviour

In total, 15% of the low treatment group, 13% of the high treatment group, and 15% in the comparison group reported taking illegal drugs in the 12 month period prior to becoming pregnant. During pregnancy, 12% of the low treatment group and 13% of the high treatment group and the comparison group stopped taking drugs on finding out about their pregnancy. Approximately 2% of the low treatment group, 1% of the high treatment group, and 2% of the comparison group reduced their use of drugs and 1% in the low treatment group, and no one in the high treatment group or comparison group did not change their drug habits during pregnancy. Furthermore, no mother indicated increasing drug usage during pregnancy. Thus, only 3% of the low treatment group, 1% of the high treatment group, and 2% of the comparison group consumed illegal drugs during pregnancy.

6.4 Key Findings

- Mothers in the low treatment group did not differ statistically from mothers in the high treatment group in regards any of the 35 health and pregnancy outcomes analysed.
- Mothers in the comparison community differed statistically from mothers in the overall *PFL* group in nine of the 35 health and pregnancy outcomes analysed. Specifically, mothers in the comparison community reported more mental health conditions, used more health services in the previous year, and drank more alcohol during pregnancy. In addition, more mothers in the comparison group reported their pregnancy was planned, more participate in antenatal classes, and more reported taking iron supplements either before or during pregnancy. However, fewer mothers in this group reported smoking during pregnancy and, of those who did smoke, they smoked fewer cigarettes, compared to the overall *PFL* group. Finally, the chi square analysis assessing changes in smoking status during pregnancy revealed different distributions of change for the *PFL* cohort and the comparison community.
- Approximately 9% of the *PFL* group and 5% of the comparison group have a long-term chronic illness.
- Just over one-quarter of the *PFL* group have been diagnosed with mental health conditions in the past.

- Approximately one-third of the *PFL* group were classified as overweight or obese.
- Almost two-thirds of the *PFL* cohort did not plan their pregnancy.
- Approximately two-thirds of the *PFL* sample were not using birth control around the time they became pregnant.
- Folic acid and iron supplements were the most commonly used health supplements during pregnancy within the *PFL* Evaluation.
- Almost half of the *PFL* sample smoked during pregnancy, one-quarter drank alcohol, and 2% took illegal drugs during pregnancy.

Table 6.1

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Health & Pregnancy Characteristics

Variable	<i>PFL Low Treatment – PFL High Treatment</i>						<i>PFL – Comparison Community</i>					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
<i>Maternal Health Across the Lifespan</i>												
<i>Health in Childhood</i>												
Self Rated Ill Health as a Child	205 (101/104)	0.07 (0.26)	0.05 (0.21)	0.02	ns	.09	304 (205/99)	0.06 (0.24)	0.05 (0.22)	0.01	ns	.03
Missed School for One Month Due to Ill Health	204 (101/103)	0.09 (0.29)	0.15 (0.35)	-0.06	ns	.18	303 (204/99)	0.12 (0.32)	0.07 (0.26)	0.05	ns	.16
<i>General Health Status</i>												
Self Rated Ill Health	205 (101/104)	0.13 (0.34)	0.10 (0.30)	0.03	ns	.10	304 (205/99)	0.11 (0.32)	0.06 (0.24)	0.05	ns	.18
Long Term Chronic Illness	205 (101/104)	0.08 (0.27)	0.11 (0.31)	-0.03	ns	.09	304 (205/99)	0.09 (0.29)	0.05 (0.22)	0.04	ns	.16
Physical Health Condition	205 (101/104)	0.62 (0.49)	0.75 (0.44)	-0.13	ns	.27	304 (205/99)	0.69 (0.46)	0.67 (0.47)	0.02	ns	.05
Mental Health Condition	205 (101/104)	0.24 (0.43)	0.28 (0.45)	-0.04	ns	.09	303 (98/205)	0.26 (0.44)	0.37 (0.48)	-0.11	<0.5	.24
Pre Pregnancy BMI	169 (81/88)	23.87 (4.69)	24.19 (4.75)	-0.32	ns	.07	251 (169/82)	24.04 (4.71)	23.88 (5.15)	0.16	ns	.03
<i>Maternal Health Behaviours</i>												
Healthy Eating Scale	202 (100/102)	18.75 (4.16)	18.49 (4.53)	0.26	ns	.06	301 (202/99)	18.62 (4.34)	18.86 (4.57)	-0.24	ns	.05

Table 6.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Health & Pregnancy Characteristics

Variable	<i>PFL Low Treatment – PFL High Treatment</i>						<i>PFL – Comparison Community</i>					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
Regular Exercise	205 (101/104)	0.45 (0.50)	0.38 (0.49)	0.06	ns	.12	304 (205/99)	0.42 (0.49)	0.30 (0.46)	0.12	ns	.23
<i>Health Service Use</i>												
# Health Services Used in Previous Year	205 (101/104)	2.39 (1.25)	2.44 (1.53)	-0.05	ns	.04	304 (205/99)	2.41 (1.39)	2.62 (1.06)	-0.21	<0.5 ^a	.16
# of Non-pregnancy Related GP Visits in Previous Year	200 (100/100)	2.95 (3.56)	3.37 (6.41)	-0.42	ns	.08	295 (200/95)	3.16 (5.18)	3.08 (6.30)	0.08	ns	.01
<i>The Pregnancy</i>												
Age at First Pregnancy	98 (51/47)	21.39 (4.51)	21.11 (3.75)	0.28	ns	.07	155 (98/57)	21.26 (4.15)	20.79 (3.75)	0.47	ns	.12
Birth Control Practices	203 (99/104)	0.33 (0.47)	0.33 (0.47)	0.00	ns	.01	301 (203/98)	0.33 (0.47)	0.23 (0.43)	0.10	ns	.21
Planned Pregnancy	203 (100/103)	0.30 (0.46)	0.29 (0.46)	0.01	ns	.02	302 (203/99)	0.30 (0.46)	0.48 (0.50)	-0.18	<.01	.40
Week Pregnancy Confirmed	204 (100/104)	6.56 (3.86)	6.32 (3.56)	0.24	ns	.07	302 (204/98)	6.44 (3.70)	6.12 (3.39)	0.32	ns	.09
Week of First Antenatal Visit	158 (78/80)	16.77 (5.43)	15.83 (5.77)	0.94	ns	.17	256 (158/98)	16.29 (5.61)	15.77 (5.74)	0.52	ns	.09
Participation in Antenatal Classes	190 (93/97)	0.33 (0.47)	0.40 (0.49)	-0.07	ns	.14	288 (190/98)	0.37 (0.48)	0.52 (0.50)	-0.15	<.05	.31
<i>Health Supplement Use</i>												

Table 6.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Health & Pregnancy Characteristics

Variable	<i>PFL Low Treatment – PFL High Treatment</i>						<i>PFL – Comparison Community</i>					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
Multivitamins	205 (101/104)	0.34 (0.47)	0.42 (0.50)	-0.08	ns	.18	304 (205/99)	0.38 (0.49)	0.44 (0.50)	-0.06	ns	.13
Folic Acid	205 (101/104)	0.92 (0.27)	0.93 (0.25)	-0.01	ns	.05	304 (205/99)	0.93 (0.26)	0.90 (0.30)	0.03	ns	.10
Iron	205 (101/104)	0.66 (0.47)	0.68 (0.47)	-0.02	ns	.04	304 (205/99)	0.67 (0.47)	0.79 (0.41)	-0.12	<.05	.25
Calcium	205 (101/104)	0.03 (0.17)	0.06 (0.23)	-0.03	ns	.14	304 (205/99)	0.04 (0.21)	0.06 (0.24)	-0.02	ns	.08
Other Health Supplement	205 (101/104)	0.02 (0.14)	0.04 (0.19)	-0.02	ns	.11	304 (205/99)	0.03 (0.17)	0.03 (0.17)	0.00	ns	.01
<i>Maternal Substance Use</i>												
<i>Smoking Behaviour During Pregnancy</i>												
Smoking	205 (101/104)	0.48 (0.50)	0.51 (0.50)	-0.03	ns	.07	304 (205/99)	0.49 (0.50)	0.34 (0.48)	0.15	<0.5	.30
# Cigarettes Smoked per Day	101 (48/53)	9.71 (6.23)	10.64 (5.93)	-0.93	ns	.16	135 (101/34)	10.20 (6.06)	7.91 (5.98)	2.29	<0.5 ^a	.38
<i>Drinking Behaviour</i>												
# Drinks per Week (before pregnancy)	174 (90/74)	7.30 (5.30)	7.12 (4.78)	0.18	ns	.04	263 (174/89)	7.21 (5.04)	6.93 (5.86)	0.28	ns	.05
Drinking During Pregnancy	205 (101/104)	0.27 (0.45)	0.25 (0.44)	0.02	ns	.04	304 (205/99)	0.26 (0.44)	0.30 (0.46)	-0.04	ns	.10

Table 6.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Maternal Health & Pregnancy Characteristics

Variable	<i>PFL Low Treatment – PFL High Treatment</i>						<i>PFL – Comparison Community</i>					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
# Drinks per Week (during pregnancy)	53 (27/26)	2.93 (1.38)	3.15 (1.71)	-0.22	ns	.15	83 (53/30)	3.04 (1.54)	3.13 (4.73)	-0.09	<0.5 ^a	.03
<i>Drug Behaviour</i>												
Ever Used Drugs Before Pregnancy	205 (101/104)	0.15 (0.36)	0.13 (0.34)	0.02	ns	.04	304 (205/99)	0.14 (0.35)	0.15 (0.36)	-0.01	ns	.03
Ever Used Drugs During Pregnancy	205 (101/104)	0.03 (0.17)	0.01 (0.10)	0.02	ns	.15	304 (205/99)	0.02 (0.14)	0.02 (0.14)	0.00	ns	.00

Note. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted. ^aPermutation tests were conducted using the Wilcoxon Rank-Sum tests for non-normally distributed data.

Table 6.2

Descriptive Statistics and Chi Square Test Results Comparing Group Differences in Maternal Health

Variable	<i>PFL</i> Low Treatment vs. <i>PFL</i> High Treatment				<i>PFL</i> vs. Comparison Community			
	Low <i>n</i> (%)	High <i>n</i> (%)	<i>p</i>	Effect Size (<i>V</i>)	<i>PFL</i> <i>n</i> (%)	Comp. <i>n</i> (%)	<i>p</i>	Effect Size (<i>V</i>)
<i>Maternal Health Across the Lifespan</i>								
BMI Scale			ns	.06			ns	.08
Underweight	6.17 (5)	4.55 (4)			5.33 (9)	9.76 (8)		
Normal weight	60.49 (49)	56.82 (50)			58.58 (99)	56.10 (46)		
Overweight	23.46 (19)	27.27 (24)			25.44 (43)	23.17 (19)		
Obese	9.88 (8)	11.36 (10)			10.65 (18)	10.98 (9)		
Self Rated Healthy Eating Habits			ns	.11			ns	.10
Healthy	41.58 (42)	33.98 (35)			37.75 (77)	48.48 (48)		
Average	45.54 (46)	56.31 (58)			50.98 (104)	43.43 (43)		
Unhealthy	12.87 (13)	9.71 (10)			11.27 (23)	8.08 (8)		
<i>Maternal Substance Use</i>								
Smoking Status During Pregnancy			ns	.07			<0.5	.18
Reduced smoking	36.63 (37)	36.54 (38)			36.59 (75)	30.30 (30)		
Increased smoking	2.97 (3)	2.88 (3)			2.93 (6)	0.00 (0)		
Stopped smoking	12.87 (13)	10.58 (11)			11.71 (24)	18.18 (18)		
No change in smoking habits	7.92 (8)	11.54 (12)			9.76 (20)	4.04 (4)		
Never smoked	39.60 (40)	38.46 (40)			39.02 (80)	47.47 (47)		

Table 6.2 continued

Descriptive Statistics and Chi Square Test Results Comparing Group Differences in Maternal Health

Variable	<i>PFL</i> Low Treatment vs. <i>PFL</i> High Treatment				<i>PFL</i> vs. Comparison Community			
	Low <i>n</i> (%)	High <i>n</i> (%)	<i>p</i>	Effect Size (<i>V</i>)	<i>PFL</i> <i>n</i> (%)	Comp. <i>n</i> (%)	<i>p</i>	Effect Size (<i>V</i>)
Frequency of Drinking Before Pregnancy			ns	.14			ns	.09
More than 3 times per week	8.91 (9)	4.81 (5)			6.83 (14)	7.07 (7)		
1-2 times per week	36.63 (37)	42.31 (44)			39.51 (81)	40.40 (40)		
1-2 times per month	43.56 (44)	35.58 (37)			39.51 (81)	44.44 (44)		
Never drank	10.89 (11)	17.31 (18)			14.15 (29)	8.08 (8)		
Drinking Alcohol Status During Pregnancy			ns	.10			ns	.10
Reduced drinking	26.73 (27)	25.00 (26)			25.85 (53)	30.30 (30)		
Stopped drinking	60.40 (61)	54.81 (57)			57.56 (118)	57.58 (57)		
No change in drinking habits	1.98 (2)	2.88 (3)			2.44 (5)	4.04 (4)		
Never drank	10.89 (11)	17.31 (18)			14.15 (29)	8.08 (8)		
Drug Status During Pregnancy			ns	.08			ns	.05
Reduced drug intake	1.98 (2)	0.96 (1)			1.46 (3)	2.02 (2)		
Stopped taking drugs	11.88 (12)	12.50 (13)			12.20 (25)	13.13 (13)		
No change in drug habits	0.99 (1)	0.00 (0)			0.49 (1)	0.00 (0)		
Never took drugs	85.15 (86)	86.54 (90)			85.85 (176)	84.85 (84)		

Note: Chi-square test used unless otherwise noted.

7 Chapter 7: Cognition, Thoughts about Parenting, and Intentions for Newborn Baby

7.1 Introduction

With few exceptions, (e.g., Harris, 1998; Rowe, 1994; Scarr, 1992) there is a consensus that parents play a central role in the development of their children. Parental knowledge of how children develop, parenting behaviours, and planning for a newborn baby have the capacity to modify a child's experiences, ultimately influencing the development of that child. Chapter seven presents information related to maternal cognitions of infant development, assessment of maternal parenting risks, and maternal intentions for the newborn baby as they relate to breastfeeding and childcare.

7.1.1 Parental Cognition

Parental cognitions have the ability to influence child development both directly through vertical parent-child interactions and indirectly through mediating parenting behaviours directed at children. While cognition encompasses multiple domains of knowledge, this report considers cognition specifically as it relates to maternal understanding of developmental norms and milestones for young children. Some researchers assert that parental understanding of child behaviour affects the way child behaviour is interpreted by the parent (Mills & Rubin, 1990) and it has been argued that knowledge of typical child behaviour has the ability to influence parent-child interactions (see Goodnow, 1988 for review). Furthermore, parental knowledge of child development is consistently found to be lower among parents living in low socioeconomic environments (McLoyd, 1998), parents experiencing depressive symptoms (Cunningham & Boyle, 2002, and primiparous parents (Pleck, 1997). Therefore, increasing maternal knowledge of infant development has the potential to positively influence child development, especially for children living in the *PFL* catchment area.

7.1.2 Parenting Behaviours

Parenting behaviours are uniquely intertwined with parental cognitions and these cognitions have the ability to inform and modify parenting behaviours. Key dimensions of parenting include constructs reflecting parental acceptance or responsiveness, emotional warmth, and demandingness or control (Cummings, Davies, & Campbell, 2000; Maccoby & Martin, 1983). Traditionally, research in the field of parenting has focused on the conceptualization of parenting patterns and has identified parenting styles based on parents' relative use of each of these dimensions to parent their children. Parenting styles characterised by a combination of high responsiveness and high control are most often associated with positive child outcomes (e.g., Baumrind, 1991; Hetherington et al., 1999; Taylor et al., 2004), while those associated with low responsiveness and high control are commonly associated with negative developmental outcomes (Petito & Cummins, 2000). Promoting sensitive and responsive parenting to high risk families may promote positive development for children who are at increased risk for poor developmental outcomes, as well as prevent parental abuse and neglect. To this effect, research has demonstrated that at risk mothers who participated in home visiting programmes during

pregnancy displayed lower risk of potential child abuse compared to comparison mothers not receiving a home visiting intervention (Guthrie, Gaziano, & Gaziano, 2009).

7.1.3 Parental Intentions for the Newborn Baby

Similarly, cognitions about infant development may influence parental intentions for the newborn baby. Decisions regarding breastfeeding (e.g., whether to engage) and childcare usage (e.g., whether to use childcare and at what age to start) may be difficult for some families. Certainly, knowledge of child development and the benefits of such activities may influence these decisions. Although the benefits of breastfeeding are well-documented for both mother and child (Ferguson & Woodward, 1999), it is not widely practiced in Ireland as breastfeeding initiation rates in Ireland range from 38% to 55% (UCD School of Public Health and Population Science, 2010). Additionally, low socioeconomic status populations (Economic and Social Research Institute, 2006), younger mothers (Fitzpatrick, Fitzpatrick, & Darling, 1994), and mothers with lower education (Ward, Sheridan, Howell, Hegarty, & O'Farrell, 2004), are less likely to breastfeed, making this a particularly important area of research and development in the *PFL* catchment area.

Finally, maternal cognitions may influence the mother's desire to use childcare. Recent studies show that non-parental care may compensate for a low resource home environment among low SES children (Scaramella, Neppl, Ontai, & Conger, 2008). While most children receive some form of non-parental care in their early years, children from low SES backgrounds are less likely to experience extensive care outside the home as low-educated mothers are less likely to be working (Mistry, Vandewater, Huston, & McLoyd, 2002; Pleck, 1997). Children from low SES families have higher rates of exposure to domestic risk, in terms of poor parenting practices, single parent households, lower levels of stimulation, and fewer resources for child development materials. Consequently low SES children are at greater risk of low cognitive skills and greater socio-emotional difficulties as they spend more time in high risk home environments, making this decision especially important for the *PFL* catchment area.

7.1.4 Overview

As noted above, maternal characteristics such as knowledge regarding infant and child development, parenting behaviours, and planning for a newborn baby show clear links with child development. Additionally, these domains have the capacity to be influenced by home visiting programmes such as *PFL*. Throughout this chapter, baseline characteristics of knowledge of infant development, parenting behaviours, and planning for a newborn baby are reported and baseline comparisons are made between the low and high treatment groups in the *PFL* Programme as well as between all *PFL* participants and the comparison community.

7.2 Instruments

7.2.1 Maternal Knowledge of Infant Development

Maternal knowledge of infant development was assessed using the 14-item Knowledge of Infant Development – Short Form (KIDI-SF; MacPhee, 1981), a measure designed to assess knowledge of developmental processes and infant developmental norms. Mothers were presented with 14 items ($\alpha = .47$) related to child developmental milestones and norms and were asked how much they agree or disagree with each statement. Response options range from one representing *strongly agree* to five signifying *strongly disagree*. Responses are summed, providing a range of scores from 14 to 70. An indicator of knowledge of infant development was obtained from these raw scores and is represented as the proportion of accurate responses about infant development or the raw score divided by the total possible number of points (i.e., 70). This figure ranges from zero to 100 and can be interpreted as an indicator of maternal knowledge of infant development with higher scores representing greater knowledge. In addition to this continuous score, a binary variable was created to represent the proportion of mothers who score in the lowest 10% of the entire *PFL* Evaluation cohort on the KIDI-SF.

7.2.2 Assessment of Parenting Risk

Parenting risk of abuse and neglect was assessed using the *Adult Adolescent Parenting Inventory 2* (AAPI-2; Bavolek & Keene, 1999). This 40-item measure is designed to assess the parenting and child-rearing attitudes of adult and adolescent parent and non-parent populations. At baseline, mothers in the *PFL* Evaluation rated how much they agree or disagree with a series of questions regarding parenting on a five point Likert scale ranging from one meaning *strongly agree* to five representing *strongly disagree*. Based on the known behaviours of abusive parents, responses to the AAPI-2 provide an index of risk for practicing parenting behaviours known to contribute to the maltreatment of children. The AAPI-2 yields scores on five subdomains including *parental expectations of children* (7 items; $\alpha = .66$), *parental empathy towards children's needs* (10 items; $\alpha = .71$), *use of corporal punishment* (11 items; $\alpha = .70$), *parent-child family roles* (7 items; $\alpha = .68$), and *children's power and independence* (5 items; $\alpha = .20$). Raw scores for the AAPI-2 subdomains are calculated by adding the numerical values for each of the item responses associated with that subdomain. The raw scores for the five subdomains are then converted to standard scores, ranging from one to ten. In addition to these five subdomains, the AAPI-2 provides an overall score of parenting risk (40 items; $\alpha = .86$) that is presented as an average of the standard scores for each subdomain. Higher scores on the AAPI-2 are indicative of lower risk for abusive parenting, such that higher scores are representative of positive, nurturing, parenting attitudes and a low risk of abuse.

As this is a US normed measure, standard scores can be used to describe parenting behaviours in terms of how they compare to the larger US population. Specifically, standard scores ranging from one to three are considered to be low and they represent behaviours endorsed by 16% of the population. Low scores are indicative of high risk for abusive parenting and neglect. Standard scores ranging from four to seven represent the normal range of parenting behaviours and illustrate moderate risk for parenting abuse and neglect. Sixty-eight percent of the US population fall within this normal range of scores. Standard scores ranging from eight to ten are considered high and illustrate positive, nurturing parenting attitudes and represent a low risk for abuse and

neglect. Approximately, 16% of the US population have scores falling in this range. As this measure provides a cutoff indicating high risk parenting, an additional continuous variable was calculated to represent the total number of scales on which participants score in the at risk range (i.e., one to three).

7.2.3 Intentions for Newborn Baby

Several questions assessed maternal intentions for the newborn baby as they relate to breastfeeding and childcare usage. Questions regarding maternal breastfeeding in previous pregnancies were also asked. Specifically, the 52% of the sample who indicated they had a previous child were asked if they breastfed their previous child and all mothers were asked if they intended to breastfeed the child they were pregnant with. Similarly, mothers were asked if they intended to use any type of childcare for the child they were pregnant with and at what age they anticipated starting to use such childcare.

7.3 Results

Table 7.1 illustrates the descriptive statistics for maternal responses to the KIDI-SF, AAPI-2, and intentions for the newborn baby. Additionally, Table 7.1 presents the statistical tests comparing maternal scores for participants in the low and high treatment groups as well as differences between the *PFL* group and the comparison community. Of the 13 measures analysed, the low and high treatment groups differed on three of them. Significant differences between the aggregate *PFL* group and the comparison community emerged on seven of the 13 measures analysed in this chapter.

7.3.1 Maternal Knowledge of Infant Development

Mothers in the high treatment group indicated they have significantly more knowledge about infant development than mothers in the low treatment group ($p < .05$, $d = .31$). Specifically, mothers in the low treatment group scored, on average, 69.82 on the KIDI-SF compared to mothers in the high treatment group who scored 72.25. No significant differences emerged between the aggregate *PFL* sample and the comparison community score of 72.91 on the KIDI-SF. Although differences in the percentage score were present between the low and high treatment groups, differences in the proportion of women scoring in the lowest 10% of the entire evaluation cohort did not reach significance. Specifically, 20% of the low treatment group and 11% of the high treatment group were performing low, relative to their peers, on this measure of knowledge of infant development and 10% of the comparison community were performing low on this measure, a difference that did not reach significance. Therefore, although there are mean differences in group scores, the proportion of women who indicate relatively low levels of knowledge of infant development does not differ across groups.

7.3.2 Assessment of Parenting Risk

Mothers in all three groups scored in the average range on all subdomains of the AAPI-2 suggesting that this population has a moderate risk for child abuse and neglect. Of these

subdomains, all groups scored lowest on the *parental empathy towards children's needs* subdomain with scores of 4.04, 4.21, and 4.81 for the low, high, and comparison group respectively. Although these scores fall within the normal range of scores, it is important to note that they are on the low end of this spectrum, suggesting moderate to high risk of abuse and neglect. The next subdomain in which mothers scored in the typical range was the *parent-child family roles* and *children's power and independence* subdomains. The low treatment group scored 4.73 and 5.16, respectively in these domains, while the high treatment group scored 5.17 and 4.93, and the comparison community scored 5.75 and 5.67, respectively illustrating that children are at a moderate risk in these subdomains. The subdomains in which mothers scored highest on were the *parental expectations of children* and *use of corporal punishment* subdomains, which the low treatment group scored 5.48 and 6.19, respectively, the high treatment group scored 5.91 and 6.02, and the comparison community scored 6.18 and 6.17, respectively. Scores on these subdomains represent low to moderate risk of abuse. In terms of the overall AAPI-2 score, mothers in the low treatment group had an average score of 5.12 compared to an average overall score of 5.25 reported by mothers in the high treatment group and 5.71 reported by mothers in the comparison community. Although differences between the low and high treatment groups did not reach significance for any of the AAPI-2 subdomains or overall AAPI-2 score, several differences emerged between the aggregate *PFL* cohort and the comparison community. Specifically, the mean ratings for the comparison community were significantly higher than the aggregate *PFL* sample on the parental expectations of children ($p < .05$, $d = .29$), parental empathy towards children ($p < .01$, $d = .32$), parent-child family roles ($p < .05$, $d = .39$), children's power and independence ($p < .01$, $d = .31$), and the overall AAPI-2 score ($p < .01$, $d = .38$). Furthermore, differences between the total number of scales on which mothers in the low and high treatment groups scored in the at risk category did not reach significance, with mothers in the low treatment group indicating high risk, 1.31 scales, and mothers in the high treatment group indicating high risk on 1.08 scales of the AAPI-2. However, mothers in the comparison community were at risk in, on average, .79, domains, a figure that is significantly lower than identified in the *PFL* cohort ($p < .01$, $d = .30$).

Finally, descriptive statistics were calculated to represent the proportion of mothers who received scores ranging from one to three in each category as scores in this range are representative of 16% of the US population and provide an index of higher risk of abusive or neglectful parenting. Few mothers fell into the at risk range for the parental expectations of children, use of corporal punishment, and total AAPI-2 score with 11%, 6%, and 11% of women in the low treatment group, 6%, 4%, and 8% of women in the high treatment group, and 4%, 7%, and 6% of women in the comparison community providing scores that were indicative of high risk in these domains. Although few mothers were at risk in these domains, more mothers were at risk in the parent-child family roles, children's power and independence, and parental empathy towards children's needs subdomains with 29%, 24%, and 50% of the low treatment group and 19%, 30%, and 41% of the high treatment group, and 14%, 23%, and 24% of mothers in the comparison community endorsing scores indicative of high risk of parenting abuse and neglect in these domains.

7.3.3 Intentions for Newborn Baby

Of the mothers who indicated they had a previous child, approximately 20% in the low treatment group and 15% in the high treatment group, and 16% in the comparison community indicated they had breastfed this child. Furthermore, 30% of the low treatment group, 33% of the high treatment group, and 49% of mothers in the comparison community indicated that they intended to breastfeed the child they were pregnant with. Although differences between the low and high treatment group in terms of breastfeeding did not reach significance, more mothers in the comparison community indicated intentions to breastfeed the ($p < .01$; $d = .37$).

In terms of intentions for childcare use, 60% of the low treatment group stated they intended to use some form of childcare for the child they were pregnant with, compared to only 45% of the high treatment group, a difference suggesting that significantly more women on the low treatment *PFL* group intend to use childcare for their newborn child ($p < .01$; $d = .31$). Differences between the aggregate *PFL* cohort and the comparison community did not reach significance, with 47% of mothers in the comparison community reporting intentions to use childcare for their child. Mothers in the low treatment group indicated they would utilise childcare for their child at a significantly younger age ($M_{\text{low}} = 6.31$ months; $M_{\text{high}} = 8.66$ months) than mothers in the high treatment group ($p < .05$; $d = .41$). Furthermore, differences between the aggregate *PFL* cohort and the comparison community did not reach significance for the age at which they intended to start their child in childcare.

7.4 Key Findings

- Mothers in the low treatment group differed statistically from mothers in the high treatment group on three of the 13 measures related to maternal cognitions, thoughts about parenting, and intentions for their newborn baby. Specifically, mothers in the high treatment group display more knowledge about developmental processes and infant developmental norms than mothers in the low treatment group and more mothers in the low treatment group intend to use some form of childcare and they intend to use childcare at a younger age than do mothers in the high treatment group.
- Mothers in the *PFL* cohort differed significantly from mothers in the comparison community on seven of the 13 measures related to maternal cognitions, thoughts about parenting, and intentions for their newborn baby. Specifically, mothers in the aggregate *PFL* sample demonstrate a higher risk of abuse and neglect than do mothers in the comparison community in regards parental expectations of children, parental empathy towards the child's needs, parent-child family roles, children's power and independence, the overall AAPI-2 score the average number of scales mothers indicate being at risk, and fewer mothers in the *PFL* cohort intent to breastfeed their new child.
- Mother's in the *PFL* cohort score 71 out of 100 in terms of knowledge of infant development.

- Maternal ratings on the AAPI-2 fell between four and seven, which is within the normal range of responses, representing 68% of the average US population. Scores in this range represent moderate risk for abuse and neglect.
- Fifty percent of mothers in the low treatment group and 41% of mothers in the high treatment group are considered to display a high risk of showing a lack of empathy for their child's needs.
- Almost one-third of the *PFL* cohort intend to breastfeed their child.

Table 7.1

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in AAPI-2, KIDI, and Maternal Intentions for Newborn Baby

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
Knowledge of Infant Development Short Form (KIDI-SF) Score	205 (101/104)	69.82 (8.18)	72.25 (7.60)	-2.43	<.05	.31	304 (205/99)	71.05 (7.97)	72.91 (8.70)	-1.86	ns	.23
Lowest 10% KIDI-SF Score	205 (101/104)	0.20 (0.40)	0.11 (0.31)	0.09	ns	.26	304 (205/99)	0.15 (0.36)	0.10 (0.30)	0.05	ns	.15
<i>Adult Adolescent Parenting Inventory (AAPI-2)</i>												
Parental Expectations of Children	205 (101/104)	5.48 (1.68)	5.91 (1.61)	-0.43	ns	.27	304 (205/99)	5.70 (1.66)	6.18 (1.68)	-0.48	<.05	.29
Parental Empathy Towards Children's Needs	205 (101/104)	4.04 (2.23)	4.21 (1.98)	-0.17	ns	.08	304 (205/99)	4.13 (2.11)	4.81 (2.14)	0.68	<.01	.32
Use of Corporal Punishment	205 (101/104)	6.19 (1.68)	6.02 (1.58)	0.17	ns	.10	304 (205/99)	6.10 (1.63)	6.17 (1.53)	-0.07	ns	.04
Parent-child Family Roles	205 (101/104)	4.73 (2.14)	5.17 (1.91)	-0.44	ns	.22	304 (205/99)	4.96 (2.03)	5.74 (2.03)	-0.78	<.05	.39
Children's Power and Independence	205 (101/104)	5.16 (1.84)	4.93 (2.07)	0.23	ns	.12	304 (205/99)	5.04 (1.96)	5.67 (2.08)	-0.63	<.01	.31
Total AAPI-2 Score	205 (101/104)	5.12 (1.42)	5.25 (1.38)	-0.13	ns	.09	304 (205/99)	5.19 (1.40)	5.71 (1.40)	-0.52	<.01	.38
Total Number of Scales At Risk	205 (101/104)	1.31 (1.43)	1.08 (1.38)	0.23	ns	.16	304 (205/99)	1.19 (1.41)	0.79 (1.26)	0.40	<.01 ^a	.30
<i>Breastfeeding Intentions</i>												
Breastfed Previous Child	97 (51/46)	0.20 (0.40)	0.15 (0.36)	0.05	ns	.12	154 (97/57)	0.18 (0.38)	0.16 (0.37)	0.02	ns	.05

Table 7.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in AAPI-2, KIDI, and Maternal Intentions for Newborn Baby

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
Intention to Breastfeed Current Child	186 (92/94)	0.30 (0.46)	0.33 (0.47)	-0.03	ns	.05	275 (186/89)	0.32 (0.47)	0.49 (0.50)	-0.17	<.01	.37
<i>Childcare Questions</i>												
Intention to Use Childcare	194 (98/96)	0.60 (0.49)	0.45 (0.50)	0.15	<.05	.31	292 (194/98)	0.53 (0.50)	0.47 (0.50)	0.06	ns	.11
Age Intend to Start Childcare (in months)	96 (55/41)	6.31 (5.46)	8.66 (6.33)	-2.35	<.05 ^a	.41	140 (96/44)	7.31 (5.93)	6.11 (3.22)	1.20	ns	.23

Note. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted. ^aPermutation tests were conducted using the Wilcoxon Rank-Sum tests for non-normally distributed data.

8 Chapter 8: Social Support

8.1 Introduction

8.1.1 Social Support

Although social support, or the support offered through social connections (Lin, Simeone, Ensel, & Kuo, 1979), has been conceptualised in several different ways throughout the research literature, recurring features include structural aspects, such as the size of a person's social network; enacted support, or the provision of specific supportive behaviours such as reassurance or advice; and subjective perceptions of support as experienced by the recipient (Hogan, Linden, & Najarian, 2002). However, in the face of such varying definitions, research consistently demonstrates a strong association between an individual's level of social support and his or her physical and mental well-being (e.g., Cobb, 1976). Social support may operate as a buffering mechanism, whereby it protects an individual against the development of mental health disorders when an individual is exposed to stressors or shocks (Cohen & Wills, 1985; Dalgard, Bjork, & Tambs, 1995). Parental social support, in particular, support for mothers, is linked to various positive outcomes for children, including higher intelligence (Slykerman et al., 2005), better socioemotional skills (Izzo et al., 2000), and a more stimulating home environment (Adamakos et al., 1986) which may promote cognitive gains in young children. While earlier research has a tendency to focus more on the structural aspects of social support, such as the number of friends and contacts an individual has (e.g., Berkman & Syme, 1979), more recent research shows that such structural aspects do not necessarily translate into supportive relationships (Berkman & Glass, 2000). Therefore, it is imperative that more subjective aspects, such as perceived social support, be assessed, to gain a comprehensive measurement of this construct.

Social support is an important protective factor for individuals residing in disadvantaged communities where the risk of experiencing poor mental and physical health is greater (e.g., Bradley & Corwyn, 2002). Additionally, social support is related to favourable outcomes for women during pregnancy. For example, Harley and Eskenazi (2006) found that maternal social support was associated with a healthy diet, vitamin intake, and less smoking during pregnancy – all factors that have the capacity to affect the inutero development of the fetus. Mothers with low education and low income are particularly at risk for low social support, making this a salient issue in the *PFL* cohort. Other studies have associated maternal support with earlier initiation of prenatal care (Zambrana, Scrimshaw, Collins, & Dunkel-Schetter, 1997), reduced drug and alcohol usage (Stephens, 1985), and reduced pregnancy complications (Norbeck & Anderson, 1989). Naturally, such favourable outcomes for mothers translate into positive outcomes for their infants and children as social support during pregnancy is associated with increased birth weight (Feldman, Dunkel-Schetter, Sandman, & Wadhwa, 2000), reduced child accident and injury rates (Leininger, Ryan, & Kalil, 2009; Ramsey et al., 2003), and improved general child health status (Kana'iaupuni, Donato, Thompson-Colon, & Steinback, 2005). Furthermore, social support is associated with a reduced likelihood of postnatal depression (Xie, He, Koszycki, Walker, & Wen, 2009), which is a primary risk factor for multiple negative child outcomes, including behaviour problems (Fihrer, McMahon, & Taylor, 2009), impaired cognitive and motor development (Cornish, McMahon, Ungerer, Barnett, Kowalenko, & Tennent, 2005), and

psychiatric disorders such as attention deficit hyperactivity disorder (Phillips, Charles, Sharpe, & Mathey, 2009).

Social support may be considered as a single aspect of social capital, a recent construct to emerge from the social science literature. The construct of social capital has received criticism in light of the ambiguities surrounding its definition, and the tendency for researchers in different fields to define social capital in different ways. For example, Putnam (1995) defines social capital as the *features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit*. There is a general consensus that both social support and participation in community organisations forms a central component of social capital (e.g., Shortt, 2004). Research indicates that social capital may have a positive effect on many factors at the individual and community level, including crime levels (Halpern, 2001), individual life satisfaction (Narayan & Cassidy, 2001) interpersonal trust (Bankston & Zhou, 2002), and educational attainment (Aldridge, Halpern, & Fitzpatrick, 2002). Importantly, parental social capital is linked to positive developmental outcomes for children and a number of researchers suggest that socioeconomic inequalities in child development can be explained by differences in social capital among families from different social backgrounds (e.g., Crosnoe, 2004; Kao, 2004; Sampson, Morenoff, & Earls, 1999). However, much of this research is correlational and therefore inconclusive, due to problems associated with endogeneity and unobserved heterogeneity (Mouw, 2006). In a recent experimental study, an intervention which aimed to promote parental social capital led to improvements in children's behaviour as reported by teachers (Gameron, Lopez-Turley, Turner, & Fish, 2010).

8.1.2 Overview

Considering the *PFL* Programme, where parents receive added social support in the form of an information officer and/or mentor, and where links are established with a range of community services, it is important that social support is measured in both the experimental and comparative groups. This will allow us to detect differences between the two groups in terms of the amount of social support perceived by participants, and to investigate if support plays a mediating role for parental and child outcomes. Furthermore, differences in local service use between high and low *PFL* treatment groups may be investigated. This chapter describes aspects of social capital in the *PFL* and comparison communities. Measures of social capital included in the *PFL* baseline survey are maternal perception of social support from various individuals, the number of neighbours known, the frequency of visits to friends and relatives, and the utilization of neighbourhood services (*PFL* cohort only).

8.2 Instruments

8.2.1 Social Support

Mothers rated the amount of support they felt they received from their partner, parents, other close relatives, friends, neighbours, and people at work (if applicable). Support was rated on a four point scale ranging from *no support* to *a lot of support*. Mothers also were asked questions about structural aspects of social support including how often they meet with friends or relatives

not living in their household on a three point scale corresponding to *regularly*, *sometimes*, or *rarely/never*. Additionally, mothers reported how many neighbours they know personally. Responses were categorised to three categories representing *none*, *few (1-6)*, or *many (7+)*. Finally, mothers were asked to rate how satisfied they were with their own neighbourhood or area. Responses to this question were categorised to represent *dissatisfied*, *neither satisfied or dissatisfied*, or *satisfied*.

8.2.2 Service Use

Participants in the *PFL* cohort were asked if they had ever used any of the 63 services listed. Services were grouped into the following domains: emergency services, health services, child/family services, employment services, community services, residents associations, adult education services, and other useful services. Scores for each domain represent the number of services ever used by participants in each domain. In addition, a variable representing the total number of services mothers indicated using was created. Note that these questions were not asked of the comparison community.

8.3 Results

Tables 8.1 and 8.2 report the descriptive statistics on social support and service use within the low and high *PFL* treatment groups and the comparison community. The tables also present the test results examining statistical differences in social support in the low and high treatment group as well as the *PFL* cohort and the comparison community and service use in the low and high treatment groups. One significant difference emerged between the low and high treatment groups on the 18 measures analysed in this chapter. No differences emerged between the *PFL* cohort and the comparison community on the nine social support measures analysed.

8.3.1 Social Support

Differences in perceived social support between the low and high *PFL* treatment groups or the overall *PFL* and comparison group did not reach significance on any of the nine variables analysed. Overall, the low and high treatment groups state the highest level of support from their partner, followed by their parents, relations, friends, and work colleagues, while they perceive the lowest level of support from neighbours. The pattern of support for the comparison group differs slightly with mothers stating that they receive the highest level of support from their partner, followed by parents, work colleagues, relations, friends, and neighbours. Overall, the level of perceived support within the *PFL* group and the comparison group is high, with a mean score of between four and five representing *some support* to *a lot of support*.

In regards the frequency of meeting friends and relatives who do not live in the household, Table 8.2 shows that the majority of participants in the low, high, and comparison groups meet with their friends/relatives regularly. Approximately 60% of the low treatment group meet friends/relatives regularly, compared to 67% of the high treatment group, and 59% in the comparison group. Just 3% of the low treatment group, 6% of the high treatment group, and 2% of the comparison group, rarely or never meet their friends/relatives. Similarly, the majority of

participants state that they know more than seven of their neighbours personally, with only 12% of the low treatment group, 9% of the high treatment group, and 18% of the comparison group indicating that they do not know any of their neighbours. Furthermore, the majority of participants also are satisfied with their neighbourhood, with only 10% of the low treatment group indicating that they are dissatisfied with their neighbourhood, 13% of the high treatment group, and 16% of the comparison group.

8.3.2 Service Use

Differences in service use was assessed for the low and high treatment *PFL* groups only. Table 8.1 indicates one statistical difference in service use between the low and high *PFL* treatment groups out of the nine variables analysed. Specifically, mothers in the high treatment group report using more community services (e.g., Darndale/Belcamp Resource Centre) than do mothers in the low treatment group ($p < .05$, $d = .31$). Health services are the most commonly used services in both the low and high treatment groups, with the low treatment group using 1.14 health services on average and the high treatment group using 1.20 health services. Health services include services such as the local health centre and the well woman clinic. The second most commonly used type of services are child/family services which include childcare and parent resource services. Note that this group of services includes the use of *Preparing for Life*, with 58% of the sample indicating that they used *PFL* (54% among low treatment group participants and 63% among high treatment group participants). Such services were used approximately once by the low treatment group and 1.15 times by the high treatment group. The third most commonly used services were emergency services among the low treatment group and community services among the high treatment group. The low treatment group used emergency services, such as an out of hours doctor service and the Dublin City Council emergency service, 0.63 times compared to 0.61 times among the high treatment group. While the high treatment group used community services, such as the community resource centre and the citizens information service, 0.90 times compared to only 0.57 among the low treatment group. For the remaining services, usage was higher among employment services, followed by other services, adult education services, and residents associations respectively, with usage rates across the low and high treatment groups averaging less than 0.4 times. On average, the total number of services used by the low and high treatment groups was 4.13 and 4.83 services respectively.

8.4 Key Findings

- Mothers in the low treatment group did not differ statistically from mothers in the high treatment group in regards any of the nine social support outcomes analysed.
- Mothers in the overall *PFL* group did not differ statistically from mothers in the community comparison group in regards any of the nine social support outcomes analysed.
- Mothers in the low treatment group differed statistically from mothers in the high treatment group in regards one of the nine service usage outcomes analysed.

Specifically, mothers in the high treatment group used more community services than mothers in the low treatment group.

- The *PFL* participants perceived the most social support from their partners and parents, and the least social support from their neighbours and work colleagues.
- Health services and child/family services are the most commonly used services among the *PFL* cohort, while residents associations and adult education services are the least used services.
- Over two-thirds of the *PFL* sample were satisfied with their neighbourhood, while about one-fifth were neither satisfied or dissatisfied and just over one-tenth were dissatisfied.

Table 8.1

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Social Support

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	<i>N</i> (<i>n</i> _{LOW} / <i>n</i> _{HIGH})	<i>M</i> _{LOW} (<i>SD</i>)	<i>M</i> _{HIGH} (<i>SD</i>)	<i>M</i> _{LOW} – <i>M</i> _{HIGH}	<i>p</i>	Effect Size (<i>d</i>)	<i>N</i> (<i>n</i> _{PFL} / <i>n</i> _{COMP})	<i>M</i> _{PFL} (<i>SD</i>)	<i>M</i> _{COMP} (<i>SD</i>)	<i>M</i> _{PFL} – <i>M</i> _{COMP}	<i>p</i>	Effect Size (<i>d</i>)
<i>Social Support</i>												
From Partner	166 (85/81)	4.87 (0.53)	4.96 (0.25)	-0.09	ns	.22	252 (166/86)	4.92 (0.42)	4.91 (0.33)	0.01	ns	.02
From Parents	197 (98/99)	4.57 (0.86)	4.68 (0.75)	-0.11	ns	.13	291 (197/94)	4.62 (0.81)	4.56 (0.80)	0.06	ns	.08
From Relations	204 (100/104)	4.46 (0.76)	4.43 (0.89)	0.03	ns	.03	302 (204/98)	4.45 (0.83)	4.32 (0.88)	0.08	ns	.15
From Friends	205 (101/104)	4.39 (0.77)	4.36 (0.81)	0.03	ns	.04	302 (205/97)	4.37 (0.79)	4.30 (0.87)	0.07	ns	.09
From Neighbours	191 (94/97)	3.15 (1.10)	3.04 (1.12)	0.11	ns	.10	280 (191/89)	3.09 (1.11)	3.26 (1.15)	-0.17	ns	.15
From People in Workplace	78 (41/37)	4.27 (0.87)	4.19 (0.94)	0.08	ns	.09	121 (78/43)	4.23 (0.90)	4.37 (0.85)	-0.14	ns	.16
<i>Service Use</i>												
Emergency Services	204 (101/103)	0.63 (0.70)	0.61 (0.85)	0.02	ns	.03	-	-	-	-	-	-
Health Services	204 (101/103)	1.14 (1.04)	1.20 (1.03)	-0.06	ns	.06	-	-	-	-	-	-
Child/Family Services	204 (101/103)	0.97 (0.92)	1.15 (1.02)	-0.18	ns	.18	-	-	-	-	-	-
Employment Services	204 (101/103)	0.39 (0.77)	0.41 (0.77)	-0.02	ns	.03	-	-	-	-	-	-

Table 8.1 continued

Descriptive Statistics and Monte Carlo Permutation Results Comparing Group Differences in Social Support

Variable	Low Treatment – High Treatment						PFL – Comparison Community					
	N ($n_{LOW}/$ n_{HIGH})	M_{LOW} (SD)	M_{HIGH} (SD)	$M_{LOW} -$ M_{HIGH}	p	Effect Size (d)	N ($n_{PFL}/$ n_{COMP})	M_{PFL} (SD)	M_{COMP} (SD)	$M_{PFL} -$ M_{COMP}	p	Effect Size (d)
Community Services	204 (101/103)	0.57 (0.97)	0.90 (1.12)	-0.33	<.05	.31	-	-	-	-	-	-
Residents Associations	204 (101/103)	0.03 (0.22)	0.07 (0.29)	-0.04	ns	.15	-	-	-	-	-	-
Adult Education Services	204 (101/103)	0.08 (0.34)	0.11 (0.34)	-0.03	ns	.08	-	-	-	-	-	-
Other Useful Services	204 (101/103)	0.32 (0.47)	0.38 (0.49)	-0.06	ns	.13	-	-	-	-	-	-
Total Service Use	204 (101/103)	4.13 (3.13)	4.83 (3.24)	-0.70	ns	.22	-	-	-	-	-	-

Note. Service use only was assessed in the PFL communities. Permutation tests were conducted using regression tests for normally distributed data unless otherwise noted.

Table 8.2

Descriptive Statistics and Chi Square/Fisher Exact Test Results Comparing Group Differences in Social Support

Variable	<i>PFL Low Treatment vs. PFL High Treatment</i>				<i>PFL vs. Comparison Community</i>			
	Low % (<i>n</i>)	High % (%)	<i>p</i>	Effect Size (<i>V</i>)	<i>PFL</i> % (<i>n</i>)	Comp. % (<i>n</i>)	<i>p</i>	Effect Size (<i>V</i>)
<i>Frequency of Meeting Friends/Relatives</i>			ns ^a	.12			ns ^a	.09
Regularly	60.40 (61)	67.31 (70)			63.90 (131)	59.18 (58)		
Sometimes	36.63 (37)	26.92 (28)			31.71 (65)	38.78 (38)		
Rarely/Never	2.97 (3)	5.77 (6)			4.39 (9)	2.04 (2)		
<i>Number of Neighbours Known Personally</i>			ns	.05			ns	.12
None	11.88 (12)	8.65 (9)			10.24 (21)	17.53 (17)		
Few: 1-6	35.64 (36)	37.50 (39)			36.59 (75)	40.21 (39)		
Many: 7+	52.48 (53)	53.85 (56)			53.17 (109)	42.27 (41)		
<i>Satisfaction with Neighbourhood</i>			ns	.12			ns	.07
Dissatisfied	9.90 (10)	12.50 (13)			11.22 (23)	16.33 (16)		
Neither Satisfied or Dissatisfied	24.75 (25)	15.38 (16)			20.00 (41)	17.35 (17)		
Satisfied	65.35 (66)	72.12 (75)			68.78 (141)	66.33 (65)		

Note: Chi-square test used unless otherwise noted. ^a Fisher's exact test used.

9 Chapter 9: Summary

The *Preparing for Life* Programme is a community-led initiative operated by the Northside Partnership (NSP) in Dublin, Ireland. It aims to improve levels of school readiness of young children living in several designated disadvantaged areas of North Dublin, by intervening during pregnancy and working with families until the children start school. This report summarised the recruitment process and provided a description of the *PFL* Evaluation cohort based on information obtained from mothers during the baseline interview. The report also compared the baseline characteristics of the low and high *PFL* treatment groups as well as the aggregate *PFL* cohort and the comparison community to assess the effectiveness of the randomisation procedure and to measure any group differences that may have been present before the programme began. Specifically, statistical differences on 123 measures of parental demographics, education, employment, maternal personality and well-being, health, pregnancy, parental cognition, thoughts about parenting, intentions for the newborn baby, and social support were examined. As the present report serves as a description of baseline characteristics, the information presented here will be linked to future outcomes throughout the six remaining waves of data collection. As more data are collected, longitudinal effects aimed at testing the effectiveness of the *PFL* Programme will be analysed, in addition to changes over time in the *PFL* Evaluation cohort.

9.1 *PFL* Recruitment

Based on public health nurses' records, the population-based recruitment rate for the *PFL* cohort, based on all live births during the recruitment phase, was 52%. The sample-based recruitment rate for the *PFL* cohort, based on all approached eligible participants during the recruitment phase, was 67%. Original estimations, provided in the *PFL* tender, on the length of time the recruitment process would take to achieve the sample of 233 mothers under alternative acceptance rate scenarios, assuming 140 pregnancies a year (12 per month) are displayed in Table 9.1. As demonstrated in this table, it was estimated that a recruitment rate of 67% would take approximately 29 months to complete, given the birth rate in the area. Recruitment into the *PFL* Programme began in January, 2008 and finished in August, 2010, lasting a total of 32 months which is in line with original estimations based on the annual birth rate in the *PFL* catchment area.

The sample-based recruitment rate for the comparison community was 36% which is in line with original expectations that fewer women would be interested in participating as part of a comparison group.

Table 9.1

<i>Original Estimations of Length of Recruitment Process Based on Different Acceptance Rates</i>					
Acceptance Rate	100%	80%	67%	60%	40%
# Eligible Women to Approach	233	290	350	390	580
Duration of Recruitment (in months)	19	24	29	33	48
Final Sample	233	233	233	233	233

9.2 The Effectiveness of Randomisation

The effectiveness of the *PFL* Programme is being evaluated using a longitudinal randomised controlled trial design. Randomised controlled trials are the gold standard methodology for evaluating the effectiveness of policies or interventions (Solomon et al., 2009) as they provide each participant with an equal opportunity of receiving either the low or high treatment intervention. Therefore, on average, the observed and unobserved characteristics of the participants should be evenly distributed across treatment groups before the intervention begins. The aim of this report was to assess differences between the low and high treatment groups pre-treatment, thus it provides an indication of the effectiveness of the randomisation procedure utilised in the *PFL* Evaluation. As demonstrated, the low and high treatment *PFL* groups were statistically different on only 3% of the measures analysed, thus indicating the effectiveness of the computerised randomisation procedure used. As this provides quantitative evidence that the low and high treatment groups were similar before engaging in the *PFL* Programme, treatment effects can more accurately be assessed and any differences in observed outcomes throughout the duration of the evaluation to be causally linked to the *PFL* Programme.

It is important to note that the low and high *PFL* treatment groups did not differ on any measure related to family, household, education, employment, maternal well-being and personality, maternal health across the lifespan, assessment of parenting risks, and social support at pre-treatment. Differences, however, did reach significance for 4 of the 123 measures in terms of maternal knowledge regarding infant development, intentions to use childcare, intended age to begin childcare, and maternal use of community services. In regards to these differences, the high treatment group demonstrated greater knowledge of infant development and reported using more community based services than the low treatment group. More mothers in the low treatment group reported intentions to use childcare for their child and also reported intending to start their child in childcare at a significantly younger age than mothers in the high treatment group.

As maternal knowledge of infant development may be affected by one's experience of young children, the finding that mothers in the high treatment group demonstrate more knowledge than mothers in the low treatment group was further explored. First, differences in knowledge of infant development between primiparous mothers and non-primiparous mothers were examined. Significant differences between the two groups emerged such that first time mothers in the *PFL* cohort displayed significantly less knowledge about infant development than did mothers who had children ($p < .01$, $d = .40$). This result was further explored by breaking down the sample into a subset of first time mothers only. In this way, the high treatment group still outperformed the low treatment group on this measure ($p < .05$, $d = .40$). Finally, when these relationships were examined in a subset including only non first time mothers, the differences no longer reached significance suggesting that the observed difference between the high and low treatment groups is largely due to variations in knowledge in primiparous mothers. Overall this indicates that differences in knowledge of infant development among the low and high treatment groups are largely confined to primiparous *PFL* mothers.

9.3 How Comparable is the Community Comparison Group?

The report also examined differences between the *PFL* cohort and the comparison community at baseline to test how comparable this group is to the *PFL* participants. It is important to note that participants in the comparison community were not randomised into this group. Rather, they were invited to participate in the study as they were pregnant women living in a socio-demographically similar area not receiving an intervention. Although the selected comparison community areas were similar to the *PFL* catchment areas, they were not the closest ranking communities. Several communities were more closely ranked to the *PFL* catchment area, yet these communities were already experiencing some form of early childhood intervention and therefore were deemed not suitable to serve as a services as usual cohort. Additionally, the mothers in the comparison community are residing in a different area of North Dublin, approximately ten kilometres from the *PFL* communities, therefore, some differences at baseline may be expected. Given these caveats, the *PFL* cohort and the comparison community differ only on 25% of the measures analysed suggesting a degree of similarity between the two groups. However, it is important to note that measures where differences emerged suggest that the comparison community is a relatively higher socioeconomic status cohort.

In regards the 25% of measures on which there were significant differences between the *PFL* cohort and the comparison community, mothers and fathers in the comparison community were significantly older than *PFL* parents, they had less literacy and numeracy problems, and fewer were living in social housing. Mothers in the *PFL* community displayed more vulnerable attachment styles, specifically in terms of proximity seeking behaviours, while the comparison community reported higher rates of self efficacy, including parenting self efficacy, suggesting that mothers in the comparison community have stronger beliefs in their ability to effectively parent her child/children. Furthermore, the comparison community reported greater consideration of future consequences. In terms of health, mothers in the comparison community reported experiencing more mental health conditions as well as using more health services in the past year. Although more mothers in the *PFL* community reported smoking during pregnancy, mothers in the comparison community reported consuming more alcoholic beverages per week during pregnancy. Additionally, mothers in the comparison community were more likely to report that their pregnancy was planned, that they were participating in antenatal classes, and they were taking more iron supplements. Several differences also emerged between the *PFL* group and the comparison group in terms of parenting risk of abuse and neglect. Specifically, mothers in the comparison community displayed lower levels of risk of abuse and neglect across six of the seven measures related to parenting. Finally, more mothers in the comparison community intended to breastfeed their new child. In sum, these results show that the mothers in the comparison community are, for the most part, faring better than mothers in the *PFL* community on domains which have been shown to have clear relationships with child developmental outcomes. One exception, however, is that mothers in the comparison community reported more incidences of mental health conditions as well as greater usage of health services in the last year. These two exceptions may go hand in hand as greater use of health services may facilitate a greater awareness of any condition that a mother is experiencing.

9.4 Scale Reliability and Effect Size

The baseline data included eight standardised scales. The reliability indicators (*Cronbach's alphas*) presented alongside the description of each instrument reported large variations in reliability across scales. The reliability of five of the eight scales were above the acceptable level of .70 (WHO-5, Pearlin Self Efficacy Scale, Rosenberg Self Esteem Scale, Consideration of Future Consequences Scale, and the Adult Adolescent Parenting Inventory). While the reliability of the Vulnerable Attachment Style Questionnaire almost reached the acceptability level at .65. However, the reliability of the Knowledge of Infant Development Inventory (KIDI) and the five Ten Item Personality Inventory (TIPI) scales were between .28 and .58, thus indicating low reliability. This should be taken into account when interpreting these results. For example, as a permutation test revealed a significant difference between the low and high *PFL* treatment groups on the KIDI scale, this may be a result of measurement error given the low reliability reported on this scale.

In addition to examining whether statistically significant group differences exist at baseline using Monte Carlo permutation tests, Chi Square analyses, and Fisher's exact tests, effect sizes representing the strength of the relationship, also were calculated. The range of effect sizes for comparisons between the low and high *PFL* treatment groups was .00 to .41. Additionally, the range of effect sizes related to the comparisons of the *PFL* cohort and the comparison community was from .00 to .40. Effect sizes in the current report represent standardised differences between the two groups being compared. Future analyses examining the effectiveness of the *PFL* Programme will use effect sizes found in similar interventions as a benchmark for comparison and interpretation of findings.

9.5 Longitudinal Evaluation

Although the current report provides a description of maternal responses to the baseline interview, several measures assessed at baseline will be reassessed throughout the data collection phase. For example, the *Adult Adolescent Parenting Inventory* and the *Knowledge of Infant Development* are among a few measures that are asked again when the child is 12 months of age, allowing researchers to gauge changes over time. Furthermore, as this is a longitudinal study, future reports will be able to evaluate links across multiple time points and provide quantitative information regarding the effectiveness of the *PFL* Programme.

10 Chapter 10: References

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