ECA Federal Budget Analysis

Early Childhood Australia (ECA) has the pleasure to provide you with a brief analysis of the Federal budget decisions that relate to the delivery of early childhood education and care.

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The 2014 Federal Budget does not contain major reform for early childhood education, but there are a number of significant changes to program parameters which have the potential to impact children, families and services.

Expenditure measures

New expense measures included an extra $12 million for occasional care (subject to State and Territory Governments making co-contributions) and $11.6 million for early language trials that will run in 40 centres. Both of these initiatives were foreshadowed in the Coalition's election statement.

The wage replacement Paid Parental Leave scheme will also go ahead but there is little detail in the Budget beyond this confirmation.

Investment in early childhood education and care continues to be primarily through expenditure on Child Care Benefit and Child Care Rebate at an estimated $28.5 billion to 2017–18—an increase of over 29.4 per cent since the last Budget over the forward estimates. The Budget has forecast that 1.57 million children will be attending approved child care places in 2014–15, a growth of 16.7 per cent in one year compared with the 2013–14 Budget.

Universal Access to Preschool Education

ECA is still seeking clarification on the continuation of Federal Government funding for the National Partnership Agreement on Universal Access to Early Childhood Education. This funding to the States and Territories provided access to 15 hours per week of preschool education to all children in the year before primary school. The current National Partnership agreement is set to expire at the end of this calendar year, and a review is being undertaken with the report due in September this year.

The Federal Budget papers state that 'Provision has been made in the Contingency Reserve for additional funding in 2014-15 and 2015-16, subject to negotiations with the States.'

Community Support Programme

The Government will provide an additional $168.5 million over two years from 2013–14 to the CSP to meet existing commitments. The Government will also achieve savings of $157.1 million over three years from 2015–16 from tightened eligibility criteria.

The CSP is designed to strengthen a service provider's ability to set up and run a child care service in an area where the service might not otherwise be viable. The eligibility criteria for new family day care services applying to the CSP from 1April 2014, and existing providers from 1 July 2015, require applicants to be the only provider of family day care in the surrounding area, with weighting towards services setting up in regional and remote or disadvantaged communities.

Changes to the Community Support Programme (CSP) will affect all family day care services by 2015. ECA understands that all contracts with family day care services will be renegotiated next year according to the same criteria that apply to long day care services, including the remoteness criteria. ECA expects that many

family day care services will lose operational funding entirely from 2015 unless they meet the criteria. Services remaining will have their funding capped at $250 000, resulting in a cut in funding for large providers.

Budget Based Funded Programme

The Government has stated that it is committed to continued support and quality improvements in the Budget Based Funded (BBF) early childhood services but says that longer term arrangements for the BBF programme will be considered in the Productivity Commission Inquiry into Child Care and Early Childhood Learning.

$3.7 million has been removed for professional development of staff in BBF services. The impact of this will be offset by re-targeting subsidised training provided by Professional Support Centres (PSCs) to support BBF services.

Jobs Education Training (JET) Child Care Fee Assistance

JET assistance has been reduced from 50 hours per week to 36 hours, which is equivalent to 3 or3.5 days of long day care depending on the operating hours of the centre. Rather than a fixed contribution (currently $1 per hour) parents will pay the gap between the subsidy and the fee charged. Parents eligible for JET also receive Child Care Benefit so it is difficult to determine the extent of the impact of these amendments.

Child Care Rebate and Child Care Benefit

Eligibility thresholds for non-pension payments will be maintained for three years from 1 July 2014. This includes the Child Care Rebate and the Child Care benefit.

The Child Care Rebate is currently capped at $7,500. The previous government froze indexation on the Child Care Rebate which was due to continue indexation with the CPI from July 2014. This has been extended for the next three years requiring amendments to the Family Assistance Law.

The Child Care Benefit's multiple income thresholds currently rise with CPI on an annual basis but will be frozen for the next three years. This payment is designed to assist low income families including families who are not working. The upper income limit is currently $145,642 family income for one child. The lower income threshold is $41,902.

Indigenous Early Childhood Development

The National Partnership Agreement on Indigenous Early Childhood Development has not been funded beyond June 2014. This appears to indicate that funding for the 38 child and family centres in Aboriginal and Torres Strait Islander communities will end on 30 June this year, but we are yet to confirm this.

Workforce Initiatives

This budget confirmed that $200 million will be invested in the Long Day Care Professional Development Programme to support services with professional development that supports quality service delivery. These funds have been redirected from the Early Years Quality Fund that was to fund wage increases for a proportion of educators. This represents a substantial increase in support to Long Day Care services but other service types such as out-of-school-hours and family day care are not eligible to apply due to restrictions in the legislation.

A number of other programs will have alterations. These include:

- The HECS HELP Benefit for early childhood education teachers will continue to be available until July 2015 and claims can be made until July 2017 for work undertaken in the 2014-15 income year.
- The TAFE Fee Waivers programme will continue until December 2014, at which time the National Partnership Agreement between the Commonwealth Government and the States/Territories comes to an end (no further provisions have been made to extend this fund).
- Funding for Recognition of Priori Learning has been reduced.
- The IPSP programme which funds the Professional Support Centres as well as Indigenous Professional Support Units and Inclusion Support Agencies is to be streamlined post 2015 with savings of $12M per annum.
- Industry Skills Fund (previously the National Workforce Development Fund) has been removed for the early childhood sector. This Fund provided training grants to early childhood providers and other industries with skills shortages.

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CHILD CARE AVAILABILITY, QUALITY AND AFFORDABILITY: ARE LOCAL PROBLEMS RELATED TO MATERNAL LABOUR SUPPLY?

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ABSTRACT

We examine whether subjective responses to survey questions about child care availability, quality, and cost, aggregated at the local geographical level, have any explanatory power in models of workforce participation and labour supply. We find that married women who live in areas with more reports of lack of availability, low quality, or costly childcare work less than women in areas with fewer reported difficulties with child care. We find this effect on both the hours of labour supplied and on the part-time/full-time choice. We find almost no effects for lone parents.

JEL CODES: J22,J30,J64,

KEYWORDS: Labour supply; child care; local area effects

1 Introduction

The availability, quality, and price of child care have often been raised as important issues in Australia. There have been calls (see ABC (2009)) for additional public funding to increase availability and affordability of child care, particularly following the collapse of ABC Learning, a large private child care centre operator. The public debate is often framed around the need for child care policy to be focused on allowing (sometimes even encouraging) women with young children to enter the labour force (see ABC Radio (2006)). Policies such as the Child Care Rebate and Child Care Benefit provide a subsidy for child care usage primarily for work-related purposes. The Australian Human Rights Commission (2009) tells women that "childcare can be expensive and hard to get." Thus, "it is important to think about childcare while you are pregnant to make sure that you can access childcare when you return to work." The Parliament of the Commonwealth of Australia (2006) documented reported problems with quality, accessibility and affordability of child care in Australia and worried about "its impact on women's ability to participate in paid work at an optimum level."

Clearly the availability and quality of child care could affect parental decision-making over child care usage and labour supply in addition to concerns about cost, particularly in the highly subsidised and regulated child care market. On the one hand, child care is a cost of working. However, parents rarely approach the problem of finding child care as a simple cost-minimization exercise. Rather, child care is viewed as an important input to child development. Parents who might want to work will be unwilling to leave their child in a poor child care environment. Furthermore, parents who have decided to work and to place their child in care might be willing to spend more than the minimum in order to place their child in high-quality care. Given the heterogeneity in quality and also in location, both relative to work and relative to home, of child care places, modeling availability is likewise complicated.

But whether availability, quality and affordability of child care is an empirically significant issue in Australia in preventing parents from working is not so obvious and there is a paucity of empirical evidence in Australia which comprehensively investigates these multiple aspects of child care. So one of the purposes of this paper is to make some progress on identifying the role that availability and quality, along with affordability,

might play in labour supply choices of married women and lone parents.

We simultaneously examine multiple aspects of child care using the Household, Income and Labour Dynamics in Australia (HILDA) survey which has asked some respondents subjective questions about child care availability, quality, and cost in their local area.[1] We can expect that in areas where child care supply is lacking that individuals will report more problems with availability than in areas with plentiful supply. Likewise for quality and cost. Our approach will be to take these subjective assessments of child care availability, quality, and affordability and aggregate them at the local level. We then estimate a standard structural, linear labour supply model including local area average responses to these subjective questions. The question we address is whether these average subjective responses are correlated with women's labour supply participation and work hours decisions. We find robust evidence that, for married women, local problems with availability, quality and affordability are associated with women working fewer hours and, in particular, being more likely to work part-time instead of full-time. We do not find much evidence that there are effects on the decision to work or not to work.

After discussing the background literature in 2, the rest of the paper includes a discussion of our data sources in section 3, our estimates of the basic linear labour supply model in section 4, and the results using the subjective measures of child care availability, quality, and cost in section 5. We conclude in the final section.

2 Background

The Australian literature has focused on child care costs, specifically on estimating the child care price elasticity of maternal labour supply, but no Australian study, to our knowledge, has attempted to address non-price factors. Outside of Australia, research shows that the importance of non-price factors varies from country to country but given the important differences across countries in child care institutions, it is difficult to generalise from these studies. A handful of papers, exclusively for European countries where child care markets are characterised by low availability of centre-based child care

[1] We use the term 'local' in this paper as a reference to a geographically disaggregated analysis. This disaggregation is conducted at various levels, some of which would not be considered 'local' in the usual sense of the word. The geographical disaggregation is described in detail in subsection 3.3.

(and high subsidisation), model access restrictions to child care: for example, Gustafsson and Stafford (1992) for Sweden, Kornstad and Thoresen (2007) for Norway; Del Boca and Vuri (2007) for Italy; Wrohlich (2006) for Germany; and Lokshin (2004) for Russia. Most of these papers use a discrete choice model of labour supply originated from Van Soest (1995) and model rationing of formal child care by limiting the choice set of rationed households. A general conclusion from the papers is that lack of availability is a factor hindering labour supply of women with young children and that increased availability of centre-based child care would lead to increases in labour supply of women with young children in these countries.

In Australia, although availability of child care makes headlines, based upon the authors' calculation using data drawn from the most recent three waves of HILDA, about one third of children under three use centre-based care and if children using family day care are included, about half of children under three are in formal child care. Furthermore, given that entry into the child care provision market is free and open as evidenced by the rapid growth of privately provided child care places in the last 10 years, one might not expect an availability problem. Free entry is not the case in all countries, particularly in Europe. For example, Wrohlich (2006) states that in 2002, there were only three slots in child care centres for every 100 children under three in the former West Germany. However, there could exist local problems with the availability of child care in Australia. For example, overall affordability of child care can be affected through transportation costs if a place in a centre is only available in an area far from home.

The other non-price factor which often draws attention is the quality of child care. Early literature, primarily in the US where quality has been of great concern, studied the demand for child care quality by investigating 'choice of mode' (see for examples, Leibowitz et al. (1988); Lehrer (1989); Hofferth and Wissoker (1992); Blau (1991); and Hagy (1998).) In an influential paper, Blau and Hagy (1998) model labour supply, demand for child care modes, hours, and non-price attributes such as quality simultaneously. They find that a decrease in child care price causes a decrease in the demand for quality-related attributes. Findings from the more recent literature indicate that the price elasticity and income elasticity of quality are low in child care (Blau and Mocan (2002) and Blau (2001, Chapter 4). Mocan (2007) shows that although consumers at-

tach high importance to child care quality, they often have difficulty in distinguishing between the quality levels of alternative centres.

Mocan's results might suggest that our measures of child care quality, based on parental perception, may not reflect quality as assessed by education experts. However, as we show below, the measures of child care availability, affordability and quality are highly correlated with each other, suggesting that the measures are informative about the overall severity of an underlying problem with the supply of satisfactory child care.

3 Data

We use data from the in-confidence version of the Household, Income and Labour Dynamics in Australia Survey (HILDA).[2] The HILDA Survey is an annual panel survey of Australian households. There are around 7,500 households and around 13,000 responding individuals in each wave. We use data from the sixth wave from 2006

We use the HILDA data in two ways. Data on wages and hours from wave six of the HILDA survey are used to estimate labour supply models for married women and lone parents. We also use wave six of HILDA to generate local, geographical averages of responses to subjective child care questions on availability, quality and cost. These questions are only asked of a sub-sample of respondents (families with children under age 15 who either used or considered using child care in the previous twelve months) and we use the data from *all* respondents who answer these questions. We first describe the data we use for the labour supply models and then the data we use on subjective child care questions.

3.1 Married females

Of the 7,139 total households and 12,905 total responding persons in wave six, 4,243 households have at least one individual who reports being partnered. From this group, after removing 62 households where unrelated people are living together, 172 multi-family households, 350 households without partner information and 76 same-sex couples, we are left with 7,166 partnered persons living in 3,583 households for whom we have partner information.

[2]See Watson and Wooden (2002) for more details.

Respondents' decisions to study and retire might unduly influence the results in our estimated labour supply models. We thus further restrict the sample by removing households where either partner is less than 25 years of age or greater than 59 years of age; where either partner is retired; where either partner is a full-time student; where either partner is disabled; where either partner is self-employed or works in a family business; or where either partner reports working, but has zero wage[3]. We further made the decision to drop 11 observations where the woman reported working more than 60 hours per week. Wages of these 11 are well below the average wage for married women and are probably the result of positive measurement error in hours. This measurement error induces a negative correlation in observed hours and wages (because the measurement error affects hours positively and wages negatively) and such extreme observations can introduce large bias into our labour supply estimates. The sample used for analysis thus consists of 1,521 married women.

3.2 Lone parents

There are 733 households with un-partnered parents in wave six. Applying the same sample exclusions rules as above, our analysis sample consists of 462 lone parents, of whom 54 are men. While our primary focus in this paper is on *maternal* labour supply, we do include both male and female lone parents in our study as single fathers are likely to face the same difficulties in balancing work and child care as single mothers. Only 12 per cent of lone parent households are headed by a male and dropping them does not fundamentally change the results presented in sections 4 and 5 below.

Table 1 presents the labour force status of our final sample of 1,521 married women and 462 lone parents. Table 2 presents definitions of the variables used in estimating the labour supply models of sections 4 and 5. Table 3 provides descriptive statistics for these variables separately for our sub-samples of married women and lone parents.

[3]Note that only 15 records were excluded on this last basis alone. This represents approx 0.7% of all the married women that were excluded.

Table 1
Sample sizes by labour force status

Labour force status	**Married women**	**Lone parents**
Full-time employed	602	192
Part-time employed	549	137
Unemployed or not in the labour force	370	133
Total	1,521	462 (including 54 males)

Table 2
Definition of variables used in labour supply models

Variable	**Definition**
$hours$	usual weekly hours worked
$ln\,(wage_i^*)$	natural log of shadow price of time
$ln\,(wage_i)$	natural log of hourly wage
age	$age/100$
kidspreschool	=1 if household has preschool age (0-5) child
schoolkids	=1 if household has school age (6-18) child
olderkids	=1 if children over 18 in household
nonreskids	=1 if household has non-resident children (under age 19)
homeowner	=1 if own home or paying off mortgage
$wage\_p$	partner's gross weekly wage earnings divided by 1000
poorenglish	=1 if self-assessed English ability is poor
university	=1 if university graduate
schoolincomp	=1 if did not complete year 12
$exper$	$experience/100$
$exper^2$	$(experience/100)^2$

Table 3
Descriptive statistics

Variable	Married Women	Lone parents
hours	24.1 (17.4)	24.2 (18.7)
hours (workers only)	31.9 (12.4)	34.0 (12.6)
$ln\,(wage_i)$ (workers only)	3.09 (0.42)	3.01 (0.43)
age	0.40 (0.085)	0.43 (0.084)
kidspreschool	0.26	0.15
schoolkids	0.43	0.58
olderkids	0.26	0.48
nonreskids	0.14	0.26
homeowner	0.23	0.16
partner's wage ($wage\_p$)	1.22 (0.74)	n/a
poorenglish	0.0099	0.012
university	0.33	0.21
schoolincomp	0.26 (0.44)	0.31 (0.46)
experience ($exper$)	0.17 (0.091)	0.17 (0.11)
Sample size	1521	462

Notes: Means with standard errors in parentheses. Standard errors suppressed for indicator variables. For wage and partner wage data we use the imputed gross weekly salary and wage income for all jobs. Source variable in HILDA is FWSCEI.

3.3 Child care data

There are three questions on quality, four on availability and one on cost that are asked of all people with children aged 14 and younger who indicate that they have used or thought about using child care in the last 12 months. The questions are asked on the household questionnaire, so we only have a response from the individual who fills out that part of the questionnaire.[4]

In all cases, responses range from 0 ("Not a problem at all") to 10 ("Very much a problem"). Table 4 lists the questions and mean responses for each question. There are 807 households who are in-scope for these questions, but not all households responded to all questions. In calculating the mean values shown in Table 4, we remove any non-

[4]We also considered using data from the Growing Up in Australia: Longitudinal Study of Australian Children (LSAC). However, the subjective questions on child care usage were only asked of those who did *not* use child care and sample sizes, once we remove those who did not consider using child care, are so small as to be useless for our purpose. LSAC is an annual panel survey of two cohorts of children who were aged 0-1 in 2003 and aged 4-5 in 2003. See Sanson et al. (2002) for details.

respondents on an item-by-item basis. Figure 1 provides an example of the distribution of responses for the question about whether households had any difficulty with the cost of child care. Twenty-five per cent of the 765 individuals who answered this question said they had "no difficulty" whereas just over nine per cent said that cost was "very much a problem", a response of 10. "No difficulty" (0) is the most common response for every question. The mean level of reported difficulties with cost is much higher than for quality or availability. For all questions, we observe similar patterns of the middle response (5) being chosen more frequently than its neighbours (4) or (6) and the most extreme response (10) being chosen more than (8) or (9).[5]

In Table 4 we also present the mean for three additional variables which we create using averages across multiple questions. The 'any quality question' is the average across all responses to the three quality questions; the 'any availability question' is the average across all responses to the four availability questions; and the 'any child care difficulty question' is the average across all responses to any of the questions.

Correlation between individual responses to the questions about difficulties with child care is very high. For example, correlation between responses to "Difficulty finding a place in the child care centre of choice" and "Difficulty finding child care in the right location" is .83. Even across broad categories (quality, availability, cost) correlation is high. The correlation between the response to "Difficulty in finding quality child care" and "Difficulty finding child care in the right location" is .72. The weakest correlations are between the response to the cost question and the responses to the other questions, but even then the correlations remain relatively high. Correlation between the cost question and the availability and quality questions ranges from .42 to .53.[6]

We use the in-confidence version of HILDA which includes data on respondents' postcode. We match this to Australian Bureau of Statistics 9-digit Statistical Local Area (SLA), 5-digit Labour Force Region (LFR), 3-digit Statistical Division (SD) and Major Statistical Region (MSR) and Section of State (SOS) information.[7] The 807 households who respond to the child care questions are distributed across 389 SLAs, 66 LFRs, 53 SDs, and 24 major statistical region/section of state (MSR/SOS) combinations.[8]

[5]See Cassells et al. (2005) for detailed description of the child care data from Wave 2 of HILDA.
[6]See appendix Table A1 which documents the correlations for household responses.
[7]SLA, LFR, SD, MSR and SOS are described in Australian Bureau of Statistics (2005).
[8]The 24 MSR/SOS combinations are created by combining the eight Major Statistical Regions (state

Table 4
Average responses to questions about child care difficulties

Question	Number of Observations	Mean response
Questions relating to quality		
Difficulty in finding quality child care	776	2.54
Difficulty in finding right person to care for my child	795	2.75
Difficulty in finding care that my children are happy with	763	2.35
Any quality question	2334	2.55
Questions relating to availability		
Difficulty in finding care for hours needed	797	2.90
Difficulty juggling multiple child care arrangements	586	2.77
Difficulty finding a place in the child care centre of choice	640	2.56
Difficulty finding child care in the right location	654	2.27
Any availability question	2677	2.64
Question relating to cost		
Difficulty with the costs of child care	765	4.21
Average over all questions		
Any child care difficulty question	5776	2.81

For each of the four geographical groupings that we consider SLA, LFR, SD, MSR/SOS we calculate, for each respondent in HILDA, the average response to the child care questions from Table 4 for all *other* respondents in the same SLA, LFR, SD, or MSR/SOS. Figure 2 provides information about the distribution of the number of respondents per statistical unit for the first question of Table 4. (The distribution for other questions is similar.) It is clear from Figure 2 that SLA may represent too fine a geographical division for the sample size. For over 50 per cent of SLAs we only have one response in that SLA meaning that we can not calculate an average response for *other* respondents. For LFR we have more than five responses per LFR for 80 per cent of the sample and

or territory) with the four non-migratory categories in Section of State (urban with more than 100,000 inhabitants; urban with more than 1000 but less than 100,000 inhabitants; small towns with between 200 and 1,000 inhabitants; rest of state or territory). With eight states and territories, this would normally provide 32 combinations but we combine some categories for the less populous states and territories. The three largest states–Queensland, Victoria, and New South Wales–provide 12 categories, we combine the rural parts of the state with the small towns for South Australia, Western Australia and Tasmania giving 9 categories for those three states. The last three categories are Darwin, the rest of the Northern Territory, and the Australian Capital Territory.

for SD we have more than five responses for almost 70 per cent of the sample. For MSR/SOS, we have seven or more responses for over 85 per cent of the sample.

Our preferred level of aggregation from a theoretical point of view would be the commuting/catchment area for each respondent. This would be unique to each respondent and would depend upon things such as preferences related to commuting, labour market conditions, road quality, and traffic. In the absence of any measure of this hypothetical, personalised unit of aggregation, we are constrained to use some type of approximation. We consider four possible types of aggregation in the paper since none of them are perfect. SLA is clearly too small. People seek and obtain work well outside of the SLA in which they live. SLA also fails to provide sufficient sample size within each geographical unit, as discussed above. MSR/SOS is clearly too large for example Esperance and Broome in Western Australia are combined in this 'local' aggregate! A quick inspection of LFRs in the major cities around Australia show that they make arbitrary divisions between neighbouring suburbs which are clearly in the same region when it comes to commuting for work or choosing a school or a child care centre. There appears to be a misconception that LFR is designed to capture the geographical area in which people look for work. However, LFRs are chosen such that they have equal sample sizes and with little, if any, reference to natural areas in which people live and work (nor in which they seek child care).[9] In the absence of any preferred level of aggregation, we present results for all four levels of geographical aggregation in section 5.

As we found for the individual responses, the correlation between average responses within the geographical aggregates to the different child care questions is also very high. So, for example, the average response to the "any quality question" and the average response to the "any availability question" within SD is .91. The correlation between the question about cost and the "any quality question" is .51. The correlations for average responses with the other geographical aggregates are quite similar.[10] In the models of section 5 where we include these variables simultaneously, we will need to exercise caution in interpreting the results given the high degree of co-movement between these local area averages.

[9]See Australian Bureau of Statistics (2004) which documents how LFRs are chosen.

[10]These correlations are provided in Appendix Tables A2 through A5.

4 Baseline Participation and Labour Supply models

In what follows, we group the unemployed, marginally attached and not in the labour force into one group of non-workers for the purposes of estimating participation and labour supply models. Married women who are defined as "not in the labour force" transition to employment at fairly high rates, but only about half as much as married women who are defined as "unemployed." They also tend to take up employment at higher wages than the unemployed, so there appears to be something fundamentally different about their non-employed status.[11] The main results reported in section 5 below are invariant to exclusion of one or the other group of non-employed.

4.1 Probability of working

We first estimate a simple reduced form probit model for the probability of working excluding any information about child care. Table 5 presents the results of this model for married women and for lone parents. The estimates correspond to typical results from participation models in the Australian literature and the variables have the expected signs and magnitudes.

4.2 Probability of working full-time

When we introduce the child care variables in section 5 below, we also want to consider whether child care might have an effect on the decision to work full- or part-time. If we consider the subset of workers, we can estimate the determinants of working full-time as opposed to working part-time. Table 6 presents these results for married women and lone parents. Again, the coefficients in this baseline model have the expected signs and magnitudes.

We can also model employment status as an ordered variable with not working, working part-time and working full-time in that order. The signs and significance of the coefficients in that model are the same as what is reported in Tables 5 and 6.[12]

[11] See Breunig and Mercante (2008) who document these facts for this data set.
[12] Results available from authors upon request.

Table 5
Probit results: probability of working
Marginal effects (standard errors)

Variable	Married Women	Lone Parents
Age	-1.99^{**} (0.23)	-1.85^{**} (0.42)
Poor English	-0.36^{**} (0.15)	-0.52^{**} (0.21)
University	0.064^{**} (0.025)	0.031 (0.059)
School incomplete	-0.116^{**} (0.031)	-0.071 (0.053)
Experience	3.30^{**} (0.45)	3.25^{**} (0.76)
Experience squared	-1.66 (1.27)	-1.83 (2.19)
Preschool kids	-0.28^{**} (0.033)	-0.26^{**} (0.082)
School age kids	-0.016 (0.023)	-0.11^{**} (0.051)
Older children	0.052^{*} (0.027)	0.052 (0.051)
Non-resident kids	0.097^{**} (0.028)	0.070 (0.050)
Home owner/paying mortgage	-0.021 (0.029)	-0.045 (0.067)
Partner's earnings	-0.025^{*} (0.014)	
Male		-0.032 (0.084)
Sample size	1521	462
Log likelihood value	-616.5	-194.5

Notes: ** *statistically significant at the 5 per cent level (or higher).*
* *statistically significant at the 10 per cent level (or higher).*

Table 6
Probit results: probability of working full-time
Marginal effects (standard errors)

Variable	Married Women	Lone Parents
Age	−2.21** (0.37)	−1.47** (0.65)
Poor English	0.37* (0.13)	n/a
University	0.11** (0.036)	0.18** (0.067)
School incomplete	−0.125** (0.040)	−0.0349 (0.072)
Experience	1.49** (0.75)	−0.90 (1.13)
Experience squared	−0.26 (1.76)	−5.23* (2.93)
Preschool kids	−0.39** (0.035)	−0.27** (0.12)
School age kids	−0.25** (0.033)	−0.33** (0.068)
Older children	0.021 (0.038)	0.072 (0.072)
Non-resident kids	−0.064 (0.049)	−0.079 (0.077)
Home owner/paying mortgage	−0.070* (0.040)	−0.13 (0.085)
Partner's earnings	−0.083* (0.024)	
Male		0.41** (0.048)
Sample size	1151	328
Log likelihood value	-686.7	-175.1

Notes: We drop the one lone parent observation with poor English. See notes to Table 5.

4.3 Labour Supply

To get a baseline model of labour supply, we estimate the model of Heckman (1974). As our main interest is in exploring the question of whether the level of difficulties (both price and non-price) with the supply of child care in the local area have labour supply effects, we chose this model because it is widely applied, well-understood, and tends to give reasonable estimates across a wide range of countries and time periods. As we discuss in section 6, our approach does not provide for the estimation of child care elasticities, so the fact that this labour supply model is not a frontier model is not problematic for the question we are asking. We are confident that this model is useful in determining whether there is any relationship between local reported difficulties with

child care and labour supply. The model is specified as:

$$\begin{aligned} ln\,(wage_i^*) =& \alpha_1 + \alpha_2 hours_i + \alpha_3 kidspreschool_i + \alpha_4 schoolkids_i + \alpha_5 olderkids_i \\ & + \alpha_6 nonreskids_i + \alpha_7 homeowner_i + \alpha_8 wage\_p_i + u_i \qquad (1) \\ ln\,(wage_i) =& \beta_1 + \beta_2 age + \beta_3 poorenglish + \beta_4 university + \beta_5 schoolincomp \\ & + \beta_6 exper + \beta_7 exper^2 + \epsilon_i \qquad (2) \end{aligned}$$

where the variables are as defined in Table 2 and $wage^*$ is the 'shadow' or reservation wage. This model jointly estimates hours and participation by assuming that $wage^* = wage$ for individuals who work and $wage^* > wage$ for individuals who do not work. Variables such as the presence of children in the household and partner's wage would be expected to have a positive impact on the reservation wage and thus a negative impact on hours and participation. For details, see Heckman (1974).

For lone parents, there is no partner so the variable relating to partner's income is excluded from equation (1). We do add a control for whether the lone parent is male or not. For lone parents we thus estimate a system defined by

$$\begin{aligned} ln\,(wage_i^*) =& \alpha_1 + \alpha_2 hours_i + \alpha_3 kidspreschool_i + \alpha_4 schoolkids_i + \alpha_5 olderkids_i \\ & + \alpha_6 nonreskids_i + \alpha_7 homeowner_i + \alpha_9 male_i + u_i \qquad (3) \end{aligned}$$

and equation (2). We estimate the models by full information maximum likelihood. The results for married women and lone parents are presented in Table 7.

Table 7

Labour supply results: coefficient estimates (standard errors)

Parameter	Variable	Married Women	Lone Parents
β_1	Constant	3.21** (0.05)	3.06** (0.11)
β_2	Age	−1.47** (0.15)	−1.24** (0.29)
β_3	Poor English	−0.249** (0.087)	−0.39 (0.17)
β_4	University	0.21 ** (0.023)	0.15 ** (0.042)
β_5	School incomplete	−0.103** (0.019)	−0.075** (0.034)
β_6	Experience	3.28** (0.35)	2.66** (0.57)
β_7	Experience squared	−4.06** (0.77)	−1.90* (1.15)
α_1	Constant	2.46 ** (0.073)	2.47** (0.10)
α_2	Hours	0.0191** (0.0019)	0.0164** (0.0027)
α_3	Preschool kids	0.35 ** (0.042)	0.21 ** (0.061)
α_4	School age kids	0.108** (0.023)	0.15 ** (0.044)
α_5	Older children	−0.032 (0.023)	−0.0038 (0.036)
α_6	Non-resident kids	−0.034 (0.029)	−0.018 (0.036)
α_7	Home owner/paying mortgage	0.05 ** (0.024)	0.043 (0.042)
α_8	Partner's earnings	0.052** (0.014)	
α_9	Male		0.052** (0.014)
σ_u		.378 ** (0.008)	.402 ** (0.017)
σ_ϵ		.539 ** (0.025)	.464 ** (0.028)
ρ		.776 ** (0.036)	.759 ** (0.073)
Sample size		1521	462
Log likelihood value		-5791.4	-1701.7

Notes: α_j and β_k refer to the coefficients from equations (1) and (2). σ_u and σ_ϵ are the estimated standard deviations of the error terms in these two equations and ρ is the estimate of the correlation between these two error terms. Also, see notes to Table 5.

5 Participation and labour supply models augmented with child care data

For the models of tables 5 to 7, we add information about the subjective responses to questions about child care availability, quality and cost. Difficulty finding child care,

concerns about child care quality, and cost all raise the cost of working. We thus would expect participation to be negatively correlated with responses to the subjective questions regarding quality, availability and cost (see Table 4).

One might consider using a woman's own response to these questions directly in her own labour supply equation. The problem with this approach is that there is likely to be correlation between the unobservables which determine the response to questions about difficulty, quality, and cost and the decision about whether or not to work. Someone for whom child care quality is never good enough for their child, for example, is also very likely to be not working outside the home.

The way that we avoid this endogeneity problem is to use average responses to the child care questions within the region in which the person lives. To avoid the reflection problem, we create the average response variable for each individual separately, leaving out her own response. We drop data for those regional aggregates where there are one or fewer responses as we can not construct the variable of interest for those cases. In the case where there is only one respondent to the child care question in the regional aggregate, that response is coming from the individual whose labour supply we are modeling.[13]

For individuals who have no resident children under the age of 15, we set the child care variable equal to zero since lack of child care availability or poor quality in their geographical area should have no effect on their labour supply decisions.

We re-estimate the participation model and the full-time work model, including the child care questions one-by-one in these models. We then re-estimate the model simultaneously including the 'any availability', 'any quality', and cost questions. For these models, we will be interested in the joint significance of the three variables. The individual coefficients and their $t-$values are not very informative due to the high correlation between the three variables. Finally, we estimate the model including the 'any difficulty' question which combines information from all three quality questions, all four availability questions, and the cost question. Results for SLA-level data are in Appendix Tables

[13]For SLA, this involves dropping half the sample, one of the reasons why we have little confidence in the SLA-level results. For the other regional aggregates, this never results in dropping more than 20 observations, less than .2 per cent of the sample. An alternative approach would be to set the variable of interest to zero in the regional aggregate and then augment the model with a dummy variable for those regions with zero or one response. We estimated all the models with this alternative approach and the results are essentially the same as those we present below.

B1 and B2, results for LFR-level data are in Appendix tables B3 and B4, results for SD-level data are in Appendix Tables B5 and B6, and results for MSR/SOS-level data are in Appendix Tables B7 and B8. In what follows, we only discuss the results for the LFR-level, SD-level and MSR/SOS-level data. As described above, the SLA-level results are based upon small samples and SLA is clearly not the right level of aggregation.

5.1 The probability of working

We find some evidence that reported local difficulties with child care have an effect on the decision to work. For married women, the strongest evidence is at the MSR/SOS level (Table B7). Availability, quality and cost are jointly significant when we include them simultaneously in the participation equation. The 'any difficulty' question is significantly negative at the 10 per cent level in the participation equation. All of the quality questions and three of the five availability questions are significantly negative at the 10 per cent level or lower when they are included one-by-one in the participation model. In all cases, the direction of the effect is negative, as expected. More reported local difficulties with child care are correlated with fewer married women working.

The evidence is weaker as the level of aggregation shrinks. At the SD-level (Table B5), reported cost difficulties are negatively significant at the 10 per cent level as is the 'any quality' question when we simultaneously include cost, quality and availability problems in the model. However, only two of the quality questions and one of the availability questions are significantly negative when they are included one-by-one in the model. In the LFR-level model (Table B3), none of the questions are significant in the participation decision.

For lone parents, the 'any difficulty' question is significantly negative at the 10 per cent level in the LFR-level model (Table B3). One of the quality and one of the availability questions are also significantly negative when included one-by-one, but the quality, difficulty, and cost questions are jointly insignificant when included simultaneously in the model. Results at the SD-level (Table B5) are similar. Several individual questions are statistically significant, but the quality, difficulty, and cost questions are jointly insignificant when included simultaneously in the model. At the MSR/SOS-level (Table B7), none of the variables are significant in the participation equation.

In summary, the effect of local reported difficulties with the quality, availability, and cost of child care appears to have a negative relationship with the probability of working. This effect is stronger for married women than for lone parents. The statistical significance of the results depends upon the level of aggregation considered and the relationship appears to be fairly weak overall.

5.2 Probability of working full-time

The results for working full-time as opposed to working part-time are much clearer than those for the participation model. For married women who work, we find a very strong negative relationship between local reported difficulties with the quality, availability, and cost of child care and the probability of working full-time. This result holds if we include the variables one-by-one or simultaneously in the model and is consistent across all levels of aggregation: LFR (Table B4), SD (Table B6) and MSR/SOS (Table B8).[14]

Conversely, for lone parents who work, we find no relationship between the full-time/part-time decision and local reported difficulties with the quality, availability, and cost of child care at any level of regional aggregation.

5.3 Labour Supply

We augment the model of equation (1) with information about the quality/availability/cost of child care in the same way as we did for the participation models of the previous sub-sections. The model of equation (1) becomes

$$ln\left(wage_i^*\right) = \alpha_1 + \alpha_2 hours_i + \alpha_3 kidspreschool_i + \alpha_4 schoolkids_i + \alpha_5 olderkids_i + \alpha_6 nonreskids_i + \alpha_7 homeowner_i + \alpha_8 wage\_p_i + \alpha_{10} AVG_{reg,(-i)} + u_i \quad (4)$$

where $AVG_{reg,(-i)}$ is the average response level (leaving out the ith person's response) in the region (SLA, LFR, SD or MSR/SOS) for those cases where there are at least two responses to the question. The wage equation (2) remains unchanged. For lone parents, the shadow wage equation is transformed in similar fashion.

Tables C1 through C4 present the results for married women and lone parents at the four levels of geographical aggregation that are considered. Again, we include the child

[14] If we model not working, part-time, full-time as an ordered variable the results, in terms of the sign and significance of coefficients, are very similar to what is reported in these tables. These results are available from the authors upon request.

care variables one-by-one in the labour supply model and also consider a model where cost, availability, and quality difficulties are controlled for simultaneously. Tables C1-C4 present only the marginal effects from the child care variables, as the other coefficients from the baseline model of Table 7 don't change in value much. In particular, the labour supply elasticity estimate is stable across all of these equations.

If problems with availability, affordability and quality affect female labour supply, we expect the coefficients on these variables to be positive. A positive coefficient reflects a higher cost of working or benefit of not working, which leads to a higher reservation wage. This in turn leads to lower labour supply.

For married women, this is indeed what we find. In the models where we jointly include cost, availability, and quality, the coefficients are always jointly significant and positive as a group. The statistical significance becomes stronger as the level of aggregation increases, as we found for participation. At the SD-level and MSR/SOS-level, all of the child care variables are significant and positive when included in the equation one-by-one. For the LFR-level model, only the cost question and the 'difficultly in finding care for hours needed' question are significantly positive when we include the variables one-by-one.

For lone parents, almost nothing is significant. At the SD-level, two questions are statistically positive at fairly weak levels. None of the models have statistically significant coefficients for the 'any difficulty' question or for the joint inclusion of cost, quality and difficulty problems. We can conclude that there is little or no relationship between local reported difficulties with the quality, availability, and cost of child care and labour supply. This is consistent with what we found above for the results relating to the choice of part-time or full-time work.

5.4 Robustness of results

We estimated the participation and labour supply models with a wider set of explanatory variables including household wealth variables, additional educational categories, and public tenancy. These were all insignificant in the baseline models of section 4 and were not included in subsequent models. We also estimated the baseline model with dummy variables for the different states/territories and capital city. None of these were

significant. We did not include them in subsequent models. This latter result does provide some assurance that results from the local averages of responses to child care questions are not being driven simply by state or capital city differences.

6 Discussion and conclusion

In this paper we show a significant statistical relationship between reports of difficulties, aggregated at the local level, with child care–affordability, quality, and availability–and married women's labour supply. Women in areas which have higher average reports of problems with quality, availability and affordability, work fewer hours and are more likely to work part-time relative to women in areas with lower average reports of child care difficulties. In a structural labour supply model, these reports are also statistically significant and have a negative effect on participation and hours. By using average reports on subjective measures of difficulties with obtaining child care and excluding the own individual's response, we avoid the problem of correlation between an individual's work choices and her reported problems with child care.

Interestingly, reports of problems with availability, quality and cost are highly correlated and all of the questions appear to have a very strong common element to them. We take this as evidence that people respond to these questions on the basis of overall difficulty with obtaining child care and do not cleanly separate out quality from affordability from availability. This makes sense. Imagine a case where a person must choose from a low-quality centre near home and a similarly-priced but high-quality centre far from home. The problem could be expressed as one of quality, one of availability (the unavailability of a high-quality centre near home), or one of affordability (the additional expense of commuting to the high-quality centre).

This paper was motivated by two concerns. The first concern is scepticism about the widely-held view in the Australian literature that women's labour supply is not very responsive to the child care environment, particularly with respect to the price of child care. The second concern is the lack of research on non-price factors of child care such as quality and availability and the relationship of these non-price factors to labour supply decisions. Our results, while exploratory in nature, lead us to question whether women's labour supply is in fact not responsive to child care price and non-price factors. Our

results indicate that further research on non-price factors is likely to be rewarding. In a separate paper, Gong et al. (2010), we construct prices using child-level data with the same in-confidence data set as we use in this paper and find a significant, negative impact of child care price on women's labour supply.

There are several caveats to the results in this paper. The first important caveat is that, since the measures we use appear to indicate the overall difficulty in finding satisfactory child care in a convenient location with a reasonable price, the measures do not allow us to clearly separate the issues of child care availability, affordability and quality. Another caveat is that responses to the question about cost, in particular, are likely to be highly correlated with income. For those with large incomes, even objectively expensive child care may not cause any 'difficulty with the cost of child care.'

Thirdly, we are unable to translate these results into economically meaningful quantities such as elasticities. The subjective nature of the questions, and the zero to ten scale on which they are measured, prevent us from being able to quantify our results in the way that would be most useful to policy-makers.

A fourth important caveat is the nature of the subjective responses to these questions. In an unpublished paper, Yamauchi (2009) notes that increased reports of problems with availability seem *positively* correlated with an increase in the number of centre-based child care places per 100 children age 0-4. It could be that supply growth is lagging behind demand growth. It could likewise be that expectations about availability differ from community to community and that communities with more availability might have even higher expectations as to how much availability would be desirable. In this respect, variation across localities may reflect variations in expectations rather than real differences in quality, availability or cost.

Finally, none of the measures of geographical aggregation which we consider perfectly capture the theoretical concept which we are trying to measure. On this point, we are reassured that the results are very similar across different geographical aggregates, primarily varying in terms of the precision of estimates in line with the different within-geographical region sample sizes.

Despite these caveats, our results serve an important purpose in advancing the literature on child care in Australia. This study shows that subjective evaluations of

quality, availability and affordability are correlated with maternal labour supply. These descriptive results indicate that future research based on accurate, objective measures of quality, availability, and affordability is likely to be fruitful in understanding the relationship between child care and labour supply. Such research would be possible with existing administrative data. Data about staff qualifications, length of waiting lists, physical location and number of places would all provide more objective measures of quality and availability. Making use of the potential of this kind of detailed, administrative data is in the interest of both academics and policy-makers as it would advance the social inclusion agenda of the Australian government and significantly help improve our understanding of the relationship between child care and labour supply.

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Appendix

Table A1: Correlation between individual-level responses to child care difficulty questions: HILDA respondents with children under age 15 who used or considered using child care

	qual1	qual2	qual3	avail1	avail2	avail3	avail4	cost1	anyqual	anyavail
qual2	0.80									
qual3	0.67	0.67								
avail1	0.69	0.71	0.60							
avail2	0.56	0.55	0.51	0.58						
avail3	0.70	0.62	0.65	0.59	0.53					
avail4	0.72	0.61	0.66	0.62	0.56	0.83				
cost1	0.44	0.44	0.42	0.46	0.53	0.43	0.42			
anyqual	0.92	0.92	0.87	0.74	0.59	0.72	0.73	0.49		
anyavail	0.77	0.72	0.69	0.84	0.79	0.89	0.90	0.53	0.81	
anydiff	0.87	0.85	0.81	0.82	0.74	0.84	0.85	0.66	0.93	0.94

Table A2: Correlation between SLA-level average responses to child care difficulty questions: HILDA respondents with children under age 15 who used or considered using child care

	qual1	qual2	qual3	avail1	avail2	avail3	avail4	cost1	anyqual	anyavail
qual2	0.81									
qual3	0.65	0.63								
avail1	0.70	0.73	0.62							
avail2	0.43	0.47	0.43	0.48						
avail3	0.71	0.61	0.62	0.55	0.36					
avail4	0.70	0.57	0.59	0.57	0.40	0.84				
cost1	0.37	0.37	0.40	0.41	0.34	0.36	0.35			
anyqual	0.92	0.92	0.82	0.77	0.49	0.71	0.69	0.43		
anyavail	0.79	0.76	0.70	0.84	0.57	0.80	0.82	0.43	0.85	
anydiff	0.87	0.85	0.78	0.84	0.57	0.78	0.78	0.57	0.95	0.95

Table A3: Correlation between LFR-level average responses to child care difficulty questions: HILDA respondents with children under age 15 who used or considered using child care

	qual1	qual2	qual3	avail1	avail2	avail3	avail4	cost1	anyqual	anyavail
qual2	0.86									
qual3	0.77	0.81								
avail1	0.75	0.83	0.81							
avail2	0.65	0.77	0.69	0.78						
avail3	0.75	0.76	0.80	0.76	0.54					
avail4	0.74	0.76	0.77	0.76	0.60	0.93				
cost1	0.44	0.32	0.40	0.40	0.33	0.32	0.30			
anyqual	0.94	0.95	0.91	0.85	0.75	0.82	0.81	0.41		
anyavail	0.82	0.87	0.86	0.92	0.79	0.91	0.93	0.39	0.91	
anydiff	0.90	0.91	0.90	0.91	0.79	0.87	0.88	0.53	0.96	0.97

Table A4: Correlation between SD-level average responses to child care difficulty questions: HILDA respondents with children under age 15 who used or considered using child care

	qual1	qual2	qual3	avail1	avail2	avail3	avail4	cost1	anyqual	anyavail
qual2	0.88									
qual3	0.66	0.58								
avail1	0.77	0.77	0.82							
avail2	0.74	0.82	0.61	0.75						
avail3	0.76	0.61	0.56	0.58	0.51					
avail4	0.83	0.65	0.61	0.69	0.54	0.90				
cost1	0.38	0.47	0.54	0.52	0.51	0.09	0.12			
anyqual	0.95	0.93	0.81	0.86	0.82	0.72	0.78	0.51		
anyavail	0.90	0.82	0.75	0.87	0.76	0.87	0.93	0.34	0.91	
anydiff	0.93	0.89	0.81	0.90	0.82	0.78	0.84	0.54	0.98	0.96

Table A5: Correlation between MSR/SOS-level average responses to child care difficulty questions: HILDA respondents with children under age 15 who used or considered using child care

	qual1	qual2	qual3	avail1	avail2	avail3	avail4	cost1	anyqual	anyavail
qual2	0.96									
qual3	0.55	0.55								
avail1	0.74	0.75	0.89							
avail2	0.86	0.92	0.63	0.81						
avail3	0.97	0.95	0.49	0.68	0.87					
avail4	0.94	0.94	0.45	0.65	0.89	0.97				
cost1	0.20	0.25	0.72	0.66	0.35	0.11	0.08			
anyqual	0.94	0.94	0.79	0.89	0.90	0.90	0.88	0.44		
anyavail	0.96	0.96	0.62	0.81	0.95	0.97	0.97	0.26	0.95	
anydiff	0.93	0.95	0.76	0.90	0.94	0.91	0.89	0.48	0.99	0.97

Key to abbreviations used in appendix tables A1 through A5

Abbreviation	Question
Questions relating to quality	
qual1	Difficulty in finding quality child care
qual2	Difficulty in finding right person to care for my child
qual3	Difficulty in finding care that my children are happy with
anyqual	Any quality question
Questions relating to availability	
avail1	Difficulty in finding care for hours needed
avail2	Difficulty juggling multiple child care arrangements
avail3	Difficulty finding a place in the child care centre of choice
avail4	Difficulty finding child care in the right location
anyavail	Any availability question
Question relating to cost	
cost1	Difficulty with the costs of child care
Average over all questions	
anydiff	Any child care difficulty question

Notes to appendix tables B1 through B8

Table B1 through B8 present the results of including local average responses to the child care quality, availability and cost questions into the baseline probability of working and probability of working full-time models presented in section 4 above for four different levels of aggregation–local statistical area (LSA), labour force region (LFR), statistical division (SD), and major statistical region/section of state (MSR/SOS). These levels of aggregation are described in more detail in section 3.3 above.

For each region, we drop any data in a local area (SLA, LFR, SD or MSR/SOS, depending upon the model) for which we have zero or one response to the child care question. An alternative approach would be to keep these observations, set the child care difficulty variable to zero, and add a dummy equal to one for those local areas with zero or one response to the child care question. Doing that provides results that are nearly identical to those shown here.

Since our prior belief is that difficulties with child care would have a negative effect on working and a negative effect on working full-time (relative to part-time), we present the tables with one-sided tests of whether the coefficient is significantly negative. We use the following notation in the tables:

***Significantly negative at the 1 per cent level in a one-sided test.
**Significantly negative at the 2.5 per cent level in a one-sided test.
*Significantly negative at the 5 per cent level in a one-sided test.
+Significantly negative at the 10 per cent level in a one-sided test.

Table B1: Married women and lone parents
Effect of SLA average responses to questions about child care on decision to work

Question	Average response within SLA: Married women	Average response within SLA: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0018 (.0092)	−.0123 (.0163)
Difficulty in finding right person to care for my child	−.0057 (.0086)	−.0118 (.0147)
Difficulty in finding care that my children are happy with	−.0052 (.0086)	−.0153 (.0154)
Any quality question	−.0019 (.0075)	−.0148 (.0139)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0035 (.0081)	−.0271* (.0143)
Difficulty juggling multiple child care arrangements	−.0050 (.0096)	−.0254+ (.0172)
Difficulty finding a place in the child care centre of choice	.0020 (.0086)	−.0092 (.0137)
Difficulty finding child care in the right location	.0081 (.0090)	−.0171 (.0149)
Any availability question	−.0007 (.0072)	−.0239* (.0135)
Question relating to cost		
Difficulty with the costs of child care	−.0114+ (.0076)	−.0117 (.0153)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0039 (.013)	.0218 (.0285)
Any availability question	−.0008 (.012)	−.0438+ (.0276)
Difficulty with the costs of child care	.0061 (.0064)	.0041 (.0125)
p-value for test of joint significance	0.81	0.28
Results with one summary measure of any difficulty		
Any difficulty question	−.0038 (.0078)	−.0242* (.0148)
Sample sizes	747 to 1152	239 to 362

Table B2: Married women and lone parents
Effect of SLA average responses on decision to work full-time
Model excludes those who are not working (full-time work=1; part-time work=0)

Question	Average response within SLA: Married women	Average response within SLA: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	−.0136 (.0139)	.0032 (.0226)
Difficulty in finding right person to care for my child	−.0248* (.0127)	−.0177 (.0203)
Difficulty in finding care that my children are happy with	−.0415** (.0140)	−.0078 (.0208)
Any quality question	−.0078 (.0114)	−.0193 (.0194)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0247** (.0121)	.0053 (.0200)
Difficulty juggling multiple child care arrangements	.0089 (.0139)	−.0183 (.0244)
Difficulty finding a place in the child care centre of choice	−.0076 (.0134)	.0061 (.0209)
Difficulty finding child care in the right location	−.0043 (.0133)	−.0039 (.0221)
Any availability question	−.0049 (.0111)	−.0099 (.0191)
Question relating to cost		
Difficulty with the costs of child care	−.0106** (.0116)	−.0022 (.0215)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0138 (.0208)	−.0365 (.0376)
Any availability question	.0082 (.0202)	.0179 (.0371)
Difficulty with the costs of child care	−.0078 (.0103)	.0073 (.0197)
p-value for test of joint significance	0.72	0.75
Results with one summary measure of any difficulty		
Any difficulty question	−.0058 (.0119)	−.0182 (.0208)
Sample sizes	551 to 859	165 to 258

Table B3: Married women and lone parents

Effect of LFR average responses to questions about child care on decision to work

Question	Average response within LFR: Married women	Average response within LFR: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0005 (.0096)	−.0322^{+} (.0197)
Difficulty in finding right person to care for my child	.0049 (.0098)	−.0226 (.0205)
Difficulty in finding care that my children are happy with	.0041 (.0114)	−.0169 (.0237)
Any quality question	.0033 (.0108)	−.0285 (.0225)
Questions relating to availability		
Difficulty in finding care for hours needed	.0012 (.0095)	−.0321^{+} (.0208)
Difficulty juggling multiple child care arrangements	.0051 (.0094)	−.0218 (.0198)
Difficulty finding a place in the child care centre of choice	−.0016 (.0078)	−.0092 (.0151)
Difficulty finding child care in the right location	.0022 (.0087)	−.0134 (.0174)
Any availability question	.0023 (.0098)	−.0240 (.0204)
Question relating to cost		
Difficulty with the costs of child care	−.0043 (.0084)	−.0210 (.0197)
Results with simultaneous controls for availability, quality and cost		
Any quality question	.0087 (.0260)	−.0148 (.0527)
Any availability question	.0000 (.0230)	−.0050 (.0451)
Difficulty with the costs of child care	−.0060 (.0119)	−.0122 (.0243)
p-value for test of joint significance	0.95	0.60
Results with one summary measure of any difficulty		
Any difficulty question	.0026 (.0106)	−.0295† (.0228)
Sample sizes	1495 to 1519	456 to 462

Table B4: Married women and lone parents
Effect of LFR average responses on decision to work full-time
Model excludes those who are not working (full-time work=1; part-time work=0)

Question	Average response within LFR: Married women	Average response within LFR: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	−.0134 (.0171)	−.0028 (.0302)
Difficulty in finding right person to care for my child	−.0230^{+} (.0174)	−.0034 (.0302)
Difficulty in finding care that my children are happy with	−.0378* (.0202)	−.0047 (.0378)
Any quality question	−.0260^{+} (.0192)	−.0026 (.0345)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0421*** (.0172)	−.0052 (.0316)
Difficulty juggling multiple child care arrangements	.0213 (.0167)	−.0195 (.0295)
Difficulty finding a place in the child care centre of choice	−.0250* (.0137)	.0230 (.0219)
Difficulty finding child care in the right location	−.0309** (.0153)	.0355^{+} (.0266)
Any availability question	−.0349** (.0177)	.0136 (.0305)
Question relating to cost		
Difficulty with the costs of child care	−.0524*** (.0150)	−.0375 (.0311)
Results with simultaneous controls for availability, quality and cost		
Any quality question	.0780* (.0452)	−.0504 (.0794)
Any availability question	−.0460 (.0405)	.0718 (.0670)
Difficulty with the costs of child care	−.0676*** (.0208)	−.0399 (.0338)
p-value for test of joint significance	0.002***	0.44
Results with one summary measure of any difficulty		
Any difficulty question	−.0401** (.0191)	.0016 (.0353)
Sample sizes	1135 to 1150	323 to 329

Table B5: Married women and lone parents

Effect of SD average responses to questions about child care on decision to work

Question	Average response within SD: Married women	Average response within SD: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	−.0203* (.0111)	−.0357* (.0208)
Difficulty in finding right person to care for my child	−.0109 (.0111)	−.0224 (.0224)
Difficulty in finding care that my children are happy with	−.0146 (.0133)	−.0219 (.0225)
Any quality question	−.0179+ (.0120)	−.0322+ (.0228)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0068 (.0104)	−.0315+ (.0199)
Difficulty juggling multiple child care arrangements	−.0018 (.0097)	−.0318+ (.0196)
Difficulty finding a place in the child care centre of choice	−.0137+ (.0098)	−.0192 (.0189)
Difficulty finding child care in the right location	−.0107 (.0104)	−.0291+ (.0200)
Any availability question	−.0106 (.0107)	−.0375* (.0219)
Question relating to cost		
Difficulty with the costs of child care	−.0125+ (.0090)	−.0095 (.0182)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0515+ (.0348)	.0064 (.0553)
Any availability question	.0298 (.0288)	−.0443 (.0476)
Difficulty with the costs of child care	.0026 (.0113)	.0024 (.0232)
p-value for test of joint significance	0.35	0.40
Results with one summary measure of any difficulty		
Any difficulty question	−.0140 (.0117)	−.0363+ (.0239)
Sample sizes	1478 to 1513	454 to 460

Table B6: Married women and lone parents
Effect of SD average responses on decision to work full-time
Model excludes those who are not working (full-time work=1; part-time work=0)

Question	Average response within SD: Married women	Average response within SD: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	−.0452*** (.0203)	−.0071 (.0327)
Difficulty in finding right person to care for my child	−.0386* (.0196)	−.0099 (.0348)
Difficulty in finding care that my children are happy with	−.0849*** (.0241)	−.0072 (.0360)
Any quality question	−.0597*** (.0224)	−.0013 (.0360)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0400** (.0188)	.0236 (.0307)
Difficulty juggling multiple child care arrangements	.0285* (.0170)	−.0374 (.0293)
Difficulty finding a place in the child care centre of choice	−.0521*** (.0182)	.0279 (.0286)
Difficulty finding child care in the right location	−.0468*** (.0187)	.0232 (.0315)
Any availability question	−.0449*** (.0202)	.0209 (.0346)
Question relating to cost		
Difficulty with the costs of child care	−.0497*** (.0155)	−.0115 (.0268)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0555 (.0572)	−.0732 (.0910)
Any availability question	.0266 (.0491)	.0827 (.0760)
Difficulty with the costs of child care	−.0340 † (.0197)	−.0029 (.0342)
p-value for test of joint significance	0.016***	0.73
Results with one summary measure of any difficulty		
Any difficulty question	−.0594*** (.0119)	.0088 (.0373)
Sample sizes	1125 to 1144	324 to 328

Table B7: Married women and lone parents

Effect of MSR/SOS average responses to questions about child care on decision to work

Question	Average response within MSR/SOS: Married women	Average response within MSR/SOS: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	$-.0305^{**}$ (.0146)	$-.0401$ (.0348)
Difficulty in finding right person to care for my child	$-.0231^{+}$ (.0146)	$-.0332$ (.0363)
Difficulty in finding care that my children are happy with	$-.0298^{*}$ (.0162)	$-.0298$ (.0369)
Any quality question	$-.0293^{**}$ (.0145)	$-.0327$ (.0367)
Questions relating to availability		
Difficulty in finding care for hours needed	$-.0212^{+}$ (.0133)	$-.0423$ (.0331)
Difficulty juggling multiple child care arrangements	$-.0107$ (.0122)	$-.0311$ (.0285)
Difficulty finding a place in the child care centre of choice	$-.0138$ (.0144)	$-.0106$ (.0329)
Difficulty finding child care in the right location	$-.0211^{+}$ (.0164)	$-.0265$ (.0361)
Any availability question	$-.0188^{+}$ (.0125)	$-.0254$ (.0329)
Question relating to cost		
Difficulty with the costs of child care	$-.0083$ (.0093)	$-.0180$ (.0223)
Results with simultaneous controls for availability, quality and cost		
Any quality question	$-.0913^{**}$ (.0438)	$-.0235$ (.0906)
Any availability question	.0409 (.0331)	.0023 (.0752)
Difficulty with the costs of child care	$.0170^{+}$ (.0130)	$-.0107$ (.0288)
p-value for test of joint significance	0.08^{**}	0.82
Results with one summary measure of any difficulty		
Any difficulty question	$-.0222^{+}$ (.0135)	$-.0324$ (.0352)
Sample sizes	1506 to 1520	459 to 461

Table B8: Married women and lone parents
Effect of MSR/SOS average responses on decision to work full-time
Model excludes those who are not working (full-time work=1; part-time work=0)

Question	Average response within MSR/SOS: Married women	Average response within MSR/SOS: Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	−.0719*** (.0262)	−.0424 (.0559)
Difficulty in finding right person to care for my child	−.0783*** (.0260)	−.0427 (.0558)
Difficulty in finding care that my children are happy with	−.0910*** (.0293)	.0180 (.0601)
Any quality question	−.0936*** (.0271)	−.0437 (.0569)
Questions relating to availability		
Difficulty in finding care for hours needed	−.0736*** (.0239)	−.0404 (.0526)
Difficulty juggling multiple child care arrangements	.0462** (.0210)	−.0318 (.0409)
Difficulty finding a place in the child care centre of choice	−.0836*** (.0256)	−.0026 (.0502)
Difficulty finding child care in the right location	−.0894*** (.0283)	−.0180 (.0560)
Any availability question	−.0898*** (.0250)	.0467 (.0490)
Question relating to cost		
Difficulty with the costs of child care	−.0481*** (.0167)	−.0062 (.0366)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0157 (.0731)	−.0001 (.1415)
Any availability question	−.0744 (.0596)	−.0580 (.1116)
Difficulty with the costs of child care	−.0025 (.0244)	.0213 (.0451)
p-value for test of joint significance	0.004***	0.78
Results with one summary measure of any difficulty		
Any difficulty question	−.0916*** (.0255)	−.0427 (.0546)
Sample sizes	1142 to 1150	327 to 329

Table C1: Married women and lone parents
Effect of SLA average responses to questions
about child care on shadow price of women's time

Question	Married women	Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0071 (.0079)	.0041 (.0122)
Difficulty in finding right person to care for my child	.0125* (.0073)	.0096 (.0108)
Difficulty in finding care that my children are happy with	.0145* (.0079)	.0113 (.0113)
Any ability question	.0072 (.0062)	.0116 (.0100)
Questions relating to availability		
Difficulty in finding care for hours needed	.0104+ (.0069)	.0147+ (.0111)
Difficulty juggling multiple child care arrangements	.0040 (.0076)	.0196+ (.0126)
Difficulty finding a place in the child care centre of choice	.0021 (.0064)	.0107 (.0115)
Difficulty finding child care in the right location	−.0037 (.0065)	.0172+ (.0127)
Any difficulty question	.0049 (.0060)	.0179* (.0102)
Question relating to cost		
Difficulty with the costs of child care	.0147** (.0069)	.0072 (.0108)
Results with simultaneous controls for availability, quality and cost		
Any quality question	.0088 (.0109)	−.0176 (.0206)
Any availability question	−.0008 (.0104	.0367* (.0212)
Difficulty with the costs of child care	−.0016 (.0053)	−.0077 (.0093)
p-value of likelihood ratio test of joint significance	0.65	0.16+
Results with one summary measure of any difficulty		
Any difficulty question	.0081 (.0065)	.0187* (.0111)
Sample sizes	738 to 1152	239 to 362

Table C2: Married women and lone parents
Effect of LFR average responses to questions
about child care on shadow price of women's time

Question	Married women	Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0048 (.0092)	.0161 (.0153)
Difficulty in finding right person to care for my child	.0031 (.0092)	.0079 (.0156)
Difficulty in finding care that my children are happy with	.0070 (.0108)	−.0013 (.0187)
Any ability question	.0054 (.0103)	.0102 (.0174)
Questions relating to availability		
Difficulty in finding care for hours needed	.0122^{+} (.0091)	.0095 (.0159)
Difficulty juggling multiple child care arrangements	.0047 (.0089)	.0117 (.0153)
Difficulty finding a place in the child care centre of choice	.0075 (.0074)	−.0064 (.0113)
Difficulty finding child care in the right location	.0070 (.0082)	−.0083 (.0134)
Any difficulty question	.0090 (.0094)	.0006 (.0154)
Question relating to cost		
Difficulty with the costs of child care	.0185** (.0083)	.0185 (.0153)
Results with simultaneous controls for availability, quality and cost		
Any quality question	−.0314 (.0246)	.0328 (.0406)
Any availability question	.0168 (.0218	−.0348 (.0345)
Difficulty with the costs of child care	.0223* (.0114)	.0175 (.0180)
p-value of likelihood ratio test of joint significance	0.14^{+}	0.49
Results with one summary measure of any difficulty		
Any difficulty question	.0099 (.0101)	.0081 (.0176)
Sample sizes	1495 to 1519	456 to 462

Table C3: Married women and lone parents
Effect of SD average responses to questions
about child care on shadow price of women's time

Question	Married women	Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0301*** (.0111)	.0213+ (.0159)
Difficulty in finding right person to care for my child	.0207* (.0108)	.0142 (.0169)
Difficulty in finding care that my children are happy with	.0315*** (.0130)	.0071 (.0173)
Any quality question	.0312*** (.0119)	.0161 (.0175)
Questions relating to availability		
Difficulty in finding care for hours needed	.0159+ (.0101)	.0157 (.0153)
Difficulty juggling multiple child care arrangements	.0087 (.0092)	.0293* (.0155)
Difficulty finding a place in the child care centre of choice	.0243*** (.0098)	−.0004 (.0140)
Difficulty finding child care in the right location	.0205** (.0102)	.0096 (.0150)
Any difficulty question	.0207** (.0105)	.0159 (.0167)
Question relating to cost		
Difficulty with the costs of child care	.0227*** (.0087)	.0115 (.0139)
Results with simultaneous controls for availability, quality and cost		
Any quality question	.0599* (.0324)	−.0033 (.0420)
Any availability question	−.0323 (.0269	.0144 (.0345)
Difficulty with the costs of child care	.0053 (.0105)	.0077 (.0178)
p-value of likelihood ratio test of joint significance	0.03**	0.77
Results with one summary measure of any difficulty		
Any difficulty question	.0273*** (.0115)	.0188 (.0183)
Sample sizes	1478 to 1513	454 to 460

Table C4: Married women and lone parents
Effect of MSR/SOS average responses to questions
about child care on shadow price of women's time

Question	Married women	Lone parents
Results with variables introduced one-by-one into model		
Questions relating to quality		
Difficulty in finding quality child care	.0449*** (.0146)	.0337 (.0273)
Difficulty in finding right person to care for my child	.0390*** (.0143)	.0326 (.0282)
Difficulty in finding care that my children are happy with	.0453*** (.0160)	.0122 (.0281)
Any quality question	.0502*** (.0146)	.0288 (.0280)
Questions relating to availability		
Difficulty in finding care for hours needed	.0382*** (.0131)	.0337 (.0264)
Difficulty juggling multiple child care arrangements	.0224* (.0116)	.0201 (.0210)
Difficulty finding a place in the child care centre of choice	.0360*** (.0141)	.0021 (.0247)
Difficulty finding child care in the right location	.0463*** (.0159)	.0098 (.0273)
Any difficulty question	.0434** (.0129)	.0194 (.0246)
Question relating to cost		
Difficulty with the costs of child care	.0190** (.0091)	.0154 (.0175)
Results with simultaneous controls for availability, quality and cost		
Any quality question	.0561 + (.0324)	.0373 (.0681)
Any availability question	.0107 (.0315	−.0133 (.0547)
Difficulty with the costs of child care	−.0151 (.0123)	.0051 (.0211)
p-value of likelihood ratio test of joint significance	0.002***	0.75
Results with one summary measure of any difficulty		
Any difficulty question	.0448*** (.0136)	.0266 (.0271)
Sample sizes	1506 to 1520	459 to 461

Early Childhood Australia
A voice for young children

Evidence Brief on Staff to Child Ratios and Educator Qualification Requirements of the *National Quality Framework*

January 2013

About us

Early Childhood Australia (ECA) is the national peak early childhood advocacy organisation, acting in the interests of young children, their families and those in the early childhood field. ECA advocates for quality in education and care as well as social justice and equity for children from birth to eight years. We have a federated structure with Branches in each State and Territory. There are more than 2,350 members of ECA encompassing individuals, early childhood services and organisations (including not-for-profit, public and private entities). This year, ECA marks 75 years of continuous service to the Australian community from 1938 to 2013.

Background

This summary has been prepared to support the staff to child ratios and educator qualification requirements contained in the Early Childhood Education and Care *National Quality Framework* (NQF) currently being implemented in Australia. ECA believes there is a solid research base that suggests that these two components are critical to achieving quality education outcomes for young children. This summary is a brief review of the evidence rather than a comprehensive review because its purpose is to provide a timely response to questions being raised by a minority of service providers who have not yet embraced the NQF.

Determinants of quality

For more than a decade there has been consensus on the structural components or features of early childhood education and care services that have a significant bearing on quality:

- the qualifications required of staff
- numbers of qualified staff
- staff to child ratios, and
- requirements regarding group size, health, safety and physical space.

The literature makes the distinction between ***structural quality***, which looks at 'quantitative' aspects of early childhood education and care settings such as facilities, staff levels and qualifications; and ***process quality***—what actually happens in an early childhood education and care setting, especially child–adult and child–child interactions and children's education programs.

Galinsky (2006) summarises much of the research related to quality in early childhood programs in a comprehensive report for the Center for Economic Development in the USA. Galinsky's report examines the research on three programs (The Perry Preschool/Highscope project, The Abecedarian project and the Chicago Child—Parent Centres) which provide strong evidence of the economic benefits of early childhood education as an economic investment with a view to answering the question: '*What can and should early childhood programs do to make a lasting difference in the lives of children, families and society and how can standards in early childhood education reflect these findings?*'

The drivers for this approach were a concern to counter the belief that **any** early childhood program regardless of its quality would make a difference and to more precisely examine the meaning of **high-quality** in early childhood programs. The evidence from these three programs and other international research studies indicate that staff to child ratios and the qualifications of the staff are critical structural matters underpinning high-quality early childhood programs with consequent improved learning, developmental and health outcomes for children. The following sections of this Policy Brief will present an overview of the research evidence that underpins the staff to child ratios and staff qualification requirements of the NQF.

Staff: child ratios

There is sound evidence from research that the ratio of staff to children makes a positive difference in early childhood programs and particularly for children from birth to three years of age. Infants and toddlers do not thrive in environments where their need for individualised, responsive attention and attachment with caring, consistent educators is compromised because there are insufficient skilled adults to meet these critical needs. Research also indicates that the level of sensitive, responsive care for infants and toddlers decreases when the ratio of staff to children is decreased (NICHD, 2000).

The American Academy of Paediatrics' Policy Statement on *Quality Early Education and Child Care from Birth to Kindergarten* (2005, p. 187), states that:

*'Early brain and child development research unequivocally demonstrates that human development is powerfully affected by **contextual** surroundings and experiences. A child's day-to-day experiences affect the structural and functional development of his or her brain, including intelligence and personality'* (our emphasis).

The American Academy of Paediatrics identifies staff to child ratios as a significant *contextual* matter which can affect young children's brain development and overall development and learning. Consequently their Policy Statement recommends staff to child ratios which are lower than Australia's *National Quality Framework* as the following table indicates.

Figure 1: Comparison of American Academy of Paediatrics Recommended Ratios to Australian NQF

Age group	American Academy of Paediatrics recommended staff-to-child ratios	Australian NQF min. staff-to-child ratios
Birth to 12 months	1:3	1:4
13 to 24 months	1:4	
24 to 30 months	1:4	1:5
31 to 35 months	1:5	
3 years	1:7	1:11
and 5 years	1:8	

Research shows that higher numbers of staff to children aged three to five years is associated with important learning outcomes including:

- more extensive language skills through increased opportunities for conversations with adults
- increased literacy skills
- improved general knowledge
- more cooperative and positive behaviour with peers and adults
- better concentration and attention skills.

(Howes, 1997; National Center for Early Development and Learning, 2000; Phillips, Mekos, Scarr, McCartney & Abbott-Shim, 2000; Vandell & Wolfe, 2000).

Research also indicates that the meaningful inclusion of children with special or additional needs into universal early childhood education and care settings is supported when there is a higher level of staff to child ratios (Forster, 2007; Phillips, 1988; McQuail et al; 2003). Statistics indicate that 15 to 20 per cent of children have special needs which suggest that a significant number of early childhood education and care services would be or could be working with special needs children and their families. Current NQF staff ratios to children requirements are designed to support inclusive practice for children with special needs and their families. The new ratio requirements assist educators in providing individualised assistance and differentiated learning experiences for children with special needs. In addition to children with special needs, research has identified that vulnerable children from disadvantaged family backgrounds generally require more intense support because many of them have developmental and learning difficulties or delays. Educators can provide more effective interventions and support for children and families when there are higher rather than lower levels of staff to child ratios (Munton et al., 2002).

In addition to improved outcomes for children, higher staff to child ratios encourage educators to want to work with young children because there is less stress for them and they appreciate the increased opportunities for more sensitive, responsive care and education for every child (Munton et al., 2002).

The *Australia Institute Discussion Paper No. 84* (2006), based on a survey of 578 responses from early childhood education and care staff working in a diverse range of centres, found that one of the reasons why many early childhood educators would not send their own child to early childhood education and care was because of inadequate staff to child ratios operating at that time. Educators working with very young children often complain that poor ratios create a stressful environment in which to work (OECD, 2000). This finding is particularly relevant for Australia, given the ongoing difficulty of staff retention and recruitment in early childhood education and care centres.

The vocal but limited opposition to the NQF staff to child ratio requirements ignores the fact that the changes to the ratios under the NQF are not that different from some previous state or territory regulations as well as the actual practice of many early childhood education and care centres who operated above the legal minimum requirements for staff to child ratios (Rush, 2006). *ECA evidence brief on NQF ratios and qualifications* **4** *January 2013*

Staff qualifications

Research is unequivocal on the link between staff qualifications and training and improved outcomes for children in early childhood education and care programs. A comprehensive review of the literature on *Determinants of quality in child care* (Huntsman, 2008 p. iii) concluded that across age groups and service settings '*the most significant factor affecting quality appears to be caregiver education, qualifications, and training*'.

The UK *Effective Provision of Pre-School Education* project (EPPE), one of the most comprehensive and widely regarded longitudinal studies, found that settings which have staff with higher qualifications have higher quality scores on quality rating systems and children make more progress as learners. The EPPE findings show that having trained teachers working with preschool children (aged 3–5 years) for a substantial amount of time had the greatest impact on quality and was linked specifically with improved outcomes for children's literacy and social learning at age five (Sylva et al, 2004). The NQF requirement for an early childhood teacher to be employed for 25 preschool children or more is in direct response to the EPPE findings.

NQF requirements

By January 2014:

- half of all staff at every long day care centre or preschool must have (or be working towards) a diploma level early childhood qualification.
- the remaining staff will all be required to have (or be working towards) a Certificate III level early childhood education and care qualification.
- an early childhood teacher will be required in long day care and preschool services for 25 children or more. Additional early childhood teachers will be required for larger services by 2020.
- family day care coordinators will need to have a diploma level early childhood education and care qualification and family day carers must have (or be working towards) a Certificate III.

Research in the United States also confirms that children in early childhood education and care settings led by an educator with a bachelor's degree in early childhood show greater progress and achievement in language, literacy and numeracy learning and are better prepared for school compared with children in programs led by less qualified educators. In addition, there are less reportable child accidents or serious incidents when educators with higher qualifications are employed (Vandell & Wolfe, 2000). While experience as an educator is helpful for ongoing professional development, research shows that experience is no substitute for formal qualifications and early childhood education training (Kontos & Feine, 1987).

Why do higher and relevant early childhood qualifications and ongoing training make such a significant positive difference to child outcomes? As the *Strategies for Children Coalition Research* report (2000) states, 'better prepared teachers teach better' because they:

- have deeper knowledge of child development and how children learn
- are more responsive to children's interests, strengths and needs
- have more advanced skills in guiding children's behaviour and planning for individual differences and learning including using effective early intervention strategies
- understand the significance of relationships for learning and have the skills to develop the type of relationships which foster learning dispositions in children which in turn promotes children's thinking skills, attentiveness, language skills and sociability
- have the knowledge and skills to form partnerships with families in supporting every child's learning and development
- are paid more and therefore are more likely to be retained and stay in the sector which helps programs to maintain quality overtime and reduces disparities in outcomes between services.

(American Academy of Paediatrics, 2005; Burchinal et al; 2002; NCEDL, 2000; Sylva et al; 2004). *ECA evidence brief on NQF ratios and qualifications* **5** *January 2013*

The Australian Institute of Family Studies (AIFS) has identified ongoing challenges for early childhood educators working with complex families and children who need multi-faceted support. Research undertaken by AIFS and the Centre for Community Child Health shows the need for improving the qualifications, training and skill base of early childhood educators to ensure they have the capacity to provide sensitive and culturally responsive programs to meet the complex needs of an increasing number of families and children (McDonald, 2010; CCCH, 2006; Moore, 2005).
Educators with low qualifications and limited training, as Shonkoff (2011) and Hamre & Pianta (2004) and others have identified, are at high risk of burning out, suffering from depression and poor emotional health which compromises their ability to develop the type of relationships that support young children's learning and development. These findings provide compelling evidence on the importance of staff qualifications and training requirements in the NQF and the need to hold firm on these comparatively basic commitments if we are to raise the overall quality of early education and care provision in Australia.

Conclusion

'However, under conditions where most provision depends on parental ability to pay and when financial survival and profit for many providers is precarious, external regulation to ensure adequate ratios and other staffing features is essential. It is an important protection for children and parents against understandable but potentially damaging pressures to cut staffing as the major expenditure' (McGurk et al., 1995 p. 25).

While McGurk et al were writing about early childhood education and care in the UK context, their key message remains relevant for the current Australian context where there is 'potentially damaging pressures to cut staffing' requirements (ratios and qualifications) despite strong and consistent research evidence that this would lower quality overall and impact negatively on outcomes for children, families and educators.
The requirements contained in the NQF have been thoroughly considered by Federal and State Governments, with recognition that the changes would require both public and private investment in the early childhood sector ahead of full implementation. ECA strongly believes that the majority of services are supportive of the NQF and on track to meet the *National Quality Standards.* The release of NQS ratings later this year will provide objective data on this. There is no doubt that modest investment in workforce development and ECEC fee subsidies would certainly ease the transition, but above everything else there is a need for leadership and a firm commitment to the long-term benefits for children that the NQF reform agenda will deliver.

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