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The association between playgroup participation, learning competence and social-emotional wellbeing for children aged 4-5 years in Australia.

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Data from Growing Up in Australia: The Longitudinal Study of Australian Children is used to examine the associations between playgroup participation and the outcomes for children aged 4 to 5 years. Controlling for a range of socio-economic and family characteristics, playgroup participation across the ages of 0-3 years was used to predict learning competence and social-emotional functioning outcomes at age 4-5 years. For learning competence, both boys and girls from disadvantaged families scored 3-4% higher if they attended playgroup when aged 0-1 and 2-3 years compared to boys and girls from disadvantaged families who did not attend playgroup. For social and emotional functioning, girls from disadvantaged families who attended playgroup when they were aged 0-1 and 2-3 years scored nearly 5% higher than those who did not attend. Demographic characteristics also showed that disadvantaged families were the families least likely to access these services. Despite data limitations, this study provides evidence that continued participation in playgroups is associated with better outcomes for children from disadvantaged families.

Playgroups and parent-child groups are regular, organised gatherings of parents and young children typically held once a week during school term for a few hours duration. They provide preschool-aged children with opportunities to socialise and to learn about their environment through play with other children and adults in a safe, supportive and fun environment (ARTD Consultants, 2008; Dadich & Spooner, 2008). Unlike child care, crèche or kindergarten arrangements, where children are customarily left in the care of others, parents[1] stay for the duration of the playgroup and interact with their children. Mothers and fathers also socialise with other parents, which may provide an opportunity to establish a valuable parenting support network.

In this paper, and unless otherwise stated, the term "playgroup" is used to represent all types of formalised playgroups and parent-child groups currently operating in Australia. There are two broad playgroup models: community playgroups which are parent led; and professionally supported or facilitated playgroups. In Australia there is no national register of playgroups; however the substantial majority of known participants – approximately 145,000 children from 105,000 families in 8,500 community playgroups – are affiliated with State and Territory Playgroup Associations (Playgroup Australia, 2011). The Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) has contributed annual funding up to $9 million through its Playgroup Program. This program funds a range of playgroup models with a view to achieving several objectives, including improving parenting skills and family functioning, improving the wellbeing of children, and developing stronger communities (FaHCSIA, 2010). The Department also indirectly funds other playgroups through programs such as 'Communities for Children' (FaHCSIA, 2009). Various State and Territory governments, most notably in Victoria and New South Wales also fund a variety of supported playgroup models. One major shortcoming for planning and policy making with respect to playgroups is the lack of national figures on the number, service models and attendance rates outside those playgroups directly funded through FaHCSIA.

Though the definition of play varies widely across disciplines and contexts, play is broadly understood as behaviours that are freely chosen, personally directed, intrinsically motivated, spontaneous and pleasurable (Brockman, Fox & Jago, 2011). Play is a key mechanism through which young children engage and interact with the world around them (Ginsburg, 2007), and has been considered so important for children's development that it

[1] Children may also participate in playgroups with other caregivers, such as grandparents, however for simplicity we refer only to parents in this paper.

was recognised in the 1989 *United Nations Convention on the Rights of the Child* (Flekkøy & Kaufman, 1997). There is a large volume of literature demonstrating that play is associated with the development of language and literacy (Christie & Roskos, 2006; Roskos & Christie, 2004), sociability (Berk, Mann, & Ogan, 2006; Elias & Berk, 2002) and mathematical ability (Ginsburg, 2006). By providing children with an opportunity to play, playgroups could therefore be considered a critical developmental opportunity for young children. Theoretically then, playgroups are a worthy recipient of funding; the early childhood years are a critical developmental period, and playgroups offer a timely opportunity for children to play and socialise with others and develop a range of skills before they start kindergarten or preschool.

In practice, however, there are surprisingly few studies that have evaluated how well playgroups achieve their objectives. The most comprehensive Australian evaluation was conducted for FaHCSIA by ARTD Consultants (2008) and focussed on how FAHCSIA-funded playgroup programs were being delivered and if playgroups were achieving their desired outcomes. Interviews were conducted with playgroup coordinators and parents participating in playgroups to determine how well each of the playgroup formats were achieving their goals. It is perhaps not surprising that parents across all playgroup models agreed that playgroup participation was a positive experience both for themselves and their children. Arguably, those parents who voluntarily continue attending playgroups would agree that attending playgroup is a valuable use of their time, because if they disliked or felt ambivalent towards attending playgroup, they would likely cease attending.

Further afield, research in Great Britain has found that exposure to a preschool experience such as a nursery or playgroup, had a significantly positive effect on national curriculum assessments for seven year olds, across the subjects of reading, writing, maths and science (Daniels, 1995). In the United States, a meta-analysis of research into the effectiveness of community services delivered to families with young children, such as playgroups, found small but positive effects on children's cognitive, social and emotional development along with improved parenting attitudes and knowledge, parenting behaviour and family functioning (Layzer, Goodson, Bernstein, & Price, 2001).

Evaluating the benefits of playgroups is methodologically challenging (Dadich & Spooner, 2008). For example, playgroups may not benefit all children in the same way. Low socio-economic status (SES) is associated with a range of poorer outcomes for children, including cognitive and academic achievement (Duncan, Yeung, Brooks-Gunn, & Smith, 1998), social and emotional wellbeing (Davis, Sawyer, Lo, Priest, & Wake, 2010) and

physical health (Currie, 2009). Children from higher SES families may be provided with a range of material resources, opportunities and expectations that differ in quantity and quality from those provided to children of families that are less well educated and less financially able. Because of these early advantages, wealthier children tend to be more developmentally advanced when they start school (Bradley & Corwyn, 2002). However, with the variety of resources potentially available to children from wealthy families, it may be that playgroups can offer few experiences to these children that they do not already receive. Therefore it might be expected that among children from well-resourced families there would be little difference in developmental outcomes for children who attend playgroups compared to those who do not. With fewer resources at their disposal, children from poorer families may stand to gain more from attending playgroups. If there are any differences in developmental outcomes between children who attend playgroup and those who don't, these differences are likely to be more evident for children from low SES families.

Further methodological complexity arises through the voluntary nature of playgroup participation and access to such opportunities. As families choose whether or not to participate in playgroups, there is no certainty that any association between playgroup participation and improved child outcomes is a result of playgroup participation per se, or rather a result of the characteristics of the families who choose to participate compared to those who do not participate. Additionally, these choices are not equal for all parents; as community facilities for playgroups are not equally distributed across socio-economic areas, some families may find playgroups more difficult to access than other families. A well-designed study dedicated to researching the associated benefits of playgroup participation would need to include a large number of families from a variety of backgrounds with detailed questions on the patterns of playgroup participation, where data is collected over a long period of time to evaluate outcomes. Such a study would be very costly and time-consuming.

In this context, Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC) offers particular strength in addressing some of these methodological challenges. By following a representative sample of a large number of children over time, including children from a range of socio-economic backgrounds with varying degrees of playgroup participation, the study provides an opportunity to track both short-term and longer-term developmental outcomes on a range of objective measures and to address the following questions: What proportion of Australian children attend playgroup across the early years? How do the demographic profiles of families who participate in playgroups compare to families who do not participate in playgroup? Is playgroup attendance associated with

better learning and social-emotional outcomes in 4-5 year olds? And finally, are the associations between playgroup participation and these outcomes stronger for children from disadvantaged backgrounds compared to children from non-disadvantaged backgrounds?

We hypothesised that there would be positive, if modest, associations between playgroup attendance and children's cognitive, social and emotional outcomes, and that these associations would be more evident for disadvantaged children.

Method

This study used data from LSAC, a nationally representative study of Australian children and their families over time. Two cohorts of children were recruited into the study at the first wave of data collection in 2004: 5107 infants aged 3-19 months (B cohort) and 4983 children aged 4 years 3 months to 5 years 7 months (K cohort). The same children were followed up again in 2006 (Wave 2) and 2008 (Wave 3), with further waves of data due to be collected every 2 years until at least 2018. The B cohort from Wave 1 to 3 is used here. The LSAC design and sampling methodology are extensively documented elsewhere (Soloff, Lawrence, & Johnstone, 2005; Soloff, Lawrence, Misson & Johnstone, 2006). In short, the LSAC employed a two-stage clustered sample design, with Australian postcode areas as the primary sampling unit. Approximately one in ten Australian postcodes areas were randomly selected and children were then randomly selected within postcodes using the Medicare enrolment database as the sampling frame, ensuring that only one child per household was selected. The Medicare database had good coverage, with more than 90% of infants estimated to be enrolled on the database by 4 months of age (Soloff, et al., 2005). The response rate for the B cohort at Wave 1 was 53.6%. At Wave 2, the B cohort sample consisted of 4606 children aged 2-3 years (90.2% response rate), and at Wave 3 data were collected from 4386 children aged 4-5 years (85.9% of Wave 1 sample). Design, sample and population weights were calculated at each wave to ensure adequate representativeness of the data and to account for bias in sample attrition (Misson & Sipthorpe, 2007; Sipthorpe & Misson, 2009; Soloff, Lawrence, Misson, & Johnstone, 2006).

Data Collection

Data were collected from multiple informants using a variety of methods at each wave. The main source of information was the primary caregiver of the study child (Parent 1), who in the vast majority of cases was the biological mother of the study child (98.3% at Wave 1, 97.9% at Wave 2 and 97.6% at Wave 3). In addition to the in-home interview,

Parent 1 was also asked to fill in a questionnaire at each wave. At Wave 2, the questionnaire was divided into two surveys, one to be completed during the home visit, and the other to be completed and returned at a later time. Response rates on the self-complete questionnaires were generally good (85% at Wave 1, 98% for the in-home survey and 76.8% for the leave-behind survey at Wave 2, and 87.4% at Wave 3). Survey data were also collected from Parent 2, the study child themselves, parents living elsewhere, teachers and childcare workers.

Key measures

The key outcome measures used in this study were development indices created by the Australian Institute of Family Studies (Sanson, Hawkins, & Misson, 2010; Sanson, Misson, Hawkins, & Berthelsen, 2010). Indices were calculated for each cohort of children at each wave of data collection, and consisted of three domains; health and physical development, social and emotional functioning, and learning competence. The outcomes used in this study were restricted to the social and emotional functioning index and the learning competence index that were calculated for the B cohort at Wave 3.

Social and emotional functioning

The social and emotional functioning outcome index was based on data collected from the Strengths and Difficulties Questionnaire (Goodman, 2001). The SDQ is a validated 25-item questionnaire consisting of five sub-scales of five items each relating to the child's peer relationships, pro-social behaviour, internalising problems, externalising problems and hyperactivity. The SDQ was included in the Wave 3 Parent 1 self-complete questionnaire.

Conceptually, the social and emotional functioning outcome index was based on three sub-domains; social competence, internalising problems and externalising problems, which were combined to form one overall score. Social competence was based on the mean of the Prosocial and Peer Approval sub-scales of the SDQ. Internalising was based on the Emotional Symptoms sub-scale, and Externalising was based on the mean of the Hyperactivity and Conduct Problems sub-scales. The individual components were first standardised and positively scaled so that higher scores represented better functioning. The means of the component measures (e.g. Prosocial scale) were then calculated for each sub-domain (e.g. social competence). The sub-domain scores were individually standardised and then combined to create an overall mean score for social and emotional functioning, which was then standardised to have a mean of 100 and a standard deviation of 10 (Sanson, Misson, Hawkins, & Berthelsen, 2010). Though the social and emotional functioning outcome index is simply a "standardised" version of the SDQ, we chose to use the outcome index so that

results and interpretations would be comparable to the learning competence outcome index. Secondary analysis using original SDQ scores, as opposed to the social and emotional functioning outcome index, revealed the same pattern of outcomes described in Results.

Learning competence

The learning competence outcome index was based on four sub-domains of language, literacy, numeracy and approach to learning. *Language* was assessed using a shortened 40-item version of the Peabody Picture Vocabulary Test (Dunn & Dunn, 1997). This test requires children to identify one picture out of four that best represented the meaning of a word read out by the interviewer. *Literacy* was measured by three parent-rated and five teacher-rated 'yes/no' questions on the study child's reading skills (e.g. "Able to read simple words, e.g. dog, cat"), and six teacher-rated 'yes/no' questions on writing skills (e.g. "Able to write his/her own name"). *Numeracy* was measured by five teacher-rated 'yes/no' questions on the study child's numeric ability, such as counting and simple addition (e.g. "Able to count to 20"). *Approach to learning* was assessed using the Who Am I? (WAI) instrument (de Lemos & Doig, 1999). The WAI assesses cognitive processes associated with early literacy and numeracy skills, and includes tasks for the child such as copying figures, and writing their name, numbers, letters and words.

As for the social and emotional functioning index, the learning competence index was derived by standardising and combining the separate component measures into sub-domain scores, and then standardising and combining these sub-domain scores to form the overall index score. These total scores were then standardised to have a mean of 100 and a standard deviation of 10. Where applicable, standardisation was performed within one of five age groups, to account for the varying ages, and therefore the varying abilities, of the children (Sanson et al., 2010).

Playgroup participation

At each wave Parent 1 was asked "In the past 12 months, have you used any of the following services for the study child… Playgroups or parent-child groups?" and could respond either 'yes' or 'no'. Playgroup items were collected from the self-complete survey at Wave 1, the self-complete leave-behind survey at Wave 2, and the face-to-face interview at Wave 3. As there were no further questions on the type of playgroup attended, or the frequency of participation, we cannot distinguish between children who attended playgroup every week throughout the previous 12 months and those who attended just once. We also cannot distinguish between the types of playgroups that families were attending. At Waves 1 and 3 there were follow-up questions asking if playgroups or parent-child groups were a

service needed for the study child, but could not be accessed. Very few parents indicated that they wanted to access playgroups but were unable to (n = 99 at Wave 1 and n < 20 at Wave 3).

Family Disadvantage

Socio-economic Position (SEP) was used as the measure of family disadvantage. SEP, calculated each wave, is a composite measure derived from parent's educational attainments, household income and occupational prestige (Blakemore, Strazdins, & Gibbings, 2009). The measure is standardised to have a mean of 0 and a standard deviation of 1, where higher scores represent higher levels of SEP. Families were classified as being disadvantaged if they were in the lowest quartile of SEP for at least two out of three waves of data collection.

When considering the families that participated not only in all interviews from Wave 1 to 3, but also completed and returned all of the self-complete questionnaires, the final sample size was 2,958 children. This figure does not include further data loss through item-level non-response. All results presented are based on the families who participated during all three waves of data collection, except where noted. SAS 9.2 was the statistical software package used for all analyses, and sample weights were used to account for sample attrition bias across waves. Adjustments were also made to account for any postcode cluster effects resulting from the families being sampled by postcode.

Results

Playgroup attendance

Table 1 presents the proportion of Australian children who attended playgroup at each wave, with estimates based on the responding sample at each wave. Over 40% of children had participated in playgroups when aged 3-19 months (Wave 1), increasing to 53% at Wave 2 when children were aged 2-3 years and then decreasing to 25% at Wave 3 when children were 4-5 years old. The decrease at Wave 3 is to be expected, as this is the age when children transition into more formal education such as kindergarten or preschool. Wave 3 participation data is presented here to document the levels of playgroup use by this age group during the period of transition into formal schooling. As data from Waves 1 and 2 were not influenced by such transitions, further analyses were based on participation across Waves 1 and 2 only.

TABLE 1 ABOUT HERE

Children were categorised as having attended at Wave 1 only, Wave 2 only, and both Wave 1 and 2 or at neither wave. Each of these categories contains a small number of children who also participated in playgroups when they were 4-5 years old at Wave 3 (see Table 2). Of the children who attended playgroup at Wave 3 (n = 864) the majority (88%) had also attended playgroup when they were 3-19 months and/or 2-3 years.

TABLE 2 ABOUT HERE

Demographic characteristics

Table 3 presents the demographic characteristics of families according to the pattern of playgroup attendance across Waves 1 and 2, and shows that the demographic profile of families that consistently attended playgroup was clearly different to those who did not attend. Consistent playgroup attendance across Waves 1 and 2 was associated with higher maternal education, higher maternal age at the birth of their first child, higher household income, two-parent families (either blended or intact), families without socio-economic disadvantage and families that spoke English in the home. Conversely, associated with no playgroup participation was lower maternal education, lower maternal age at the first birth, mothers who consistently worked part-time or full-time across the 5-year period, low family income, single-parent families, disadvantaged SEP and a language other than English spoken in the home.

TABLE 3 ABOUT HERE

Associated outcomes of playgroup attendance

Multiple regression analyses were conducted to determine if, after controlling for socio-economic and family characteristics, playgroup participation was associated with improved child outcomes over time. Analyses were also stratified by family disadvantage and child gender to determine if results differed between disadvantaged and non-disadvantaged boys and girls. Socio-Economic Position, the variable used to define disadvantage, is itself a variable based on the education level of parents, family income and parent's occupational prestige. Though mother's education and family income were integral to the calculation of the disadvantage measure, these variables were also included in the regression models as there would still be variability in these items within the defined categories of disadvantage,

being the lowest 25% of SEP. This approach was taken to ensure that any relationships between mother's education, family income, playgroup participation and the outcome measures were accounted for within the sub-groups of family disadvantage.

Analyses were conducted separately for the learning competence outcome index (see Table 4) and the social and emotional functioning outcome index (Table 5). Each model controlled for equivalised household income, mother's age at birth of first child, the study child's attendance at day care and at preschool, mother's highest level of education, mother's degree of employment across Waves 1-3, study child's position amongst siblings and neighbourhood SEIFA (Socio-Economic Index For Area). For simplicity, the regression coefficients for these variables have not been presented, but are available on request.

Table 4 shows that after controlling for socio-economic and family characteristics, boys from disadvantaged families who only participated in playgroups when aged 2-3 years (Wave 2), and those who participated both at 0-1 and at 2-3 years (Wave 1 and 2) scored significantly higher on the learning competence outcome index than those boys from disadvantaged families who did not participate at either wave ($F_{(19, 2584)} = 21.53$, $p < .0001$, Adjusted $R^2 = .130$). Furthermore, in families that were non-disadvantaged, boys who attended playgroups both when aged 0-1 and 2-3 years (Wave 1 and 2) also scored significantly higher on learning competence than boys who did not attend playgroup ($F_{(19, 2584)} = 12.82$, $p < .0001$, Adjusted $R^2 = .079$). Girls from disadvantaged families who participated when aged 0-1 and 2-3 years (both Wave 1 and 2) scored significantly higher than girls from disadvantaged families who did not attend at either wave ($F_{(19, 2584)} = 46.19$, $p < .0001$, Adjusted $R^2 = .248$). There was no association between playgroup participation and learning competence among girls from non-disadvantaged families.

For the social and emotional functioning outcome index (see Table 5), girls from disadvantaged families who attended playgroup when aged 0-1 years and 2-3 years (both Wave 1 and 2) scored significantly higher than girls who did not attend playgroup at either wave ($F_{(19, 2441)} = 16.24$, $p < .0001$, Adjusted $R^2 = .105$). We found no association between playgroup participation and social and emotional functioning for non-disadvantaged girls, and no association for boys in either category of disadvantage.

TABLES 4 AND 5 ABOUT HERE

Discussion

This study set out to profile the characteristics of Australian families participating in playgroups, and to investigate the associations between playgroup attendance and child outcomes. We found that over 60% of infants aged 3-19 months in 2004 had attended playgroup at least once by 2008. We also demonstrated a positive association between continued playgroup attendance and learning competence outcomes for boys and girls, particularly from disadvantaged families, and between continued playgroup attendance and social-emotional functioning for girls from disadvantaged families. With the scarcity of playgroup research, this study makes a valuable contribution towards understanding the value of playgroups for children's social and learning development and shows the immense value of being able to use longitudinal data to assess these relationships.

To our knowledge this is the first empirical demonstration that Australian children who stand to potentially benefit the most from attending a playgroup were those who were less likely to access these services. There is a 10% differential in the proportion of children from disadvantaged families who had attended playgroups at least once over the 5-year period (60%) relative to children from non-disadvantaged families (70%). Having noted this, we were surprised at the overall level of some form of playgroup attendance by children from disadvantaged families, yet still concerned by the relative size of the gap between disadvantaged and non-disadvantaged families. This gap is significant and the findings support policies aimed at resourcing, facilitating and prompting disadvantaged families in the uptake of playgroup opportunities.

Playgroup attendance is clearly dependent upon the time resources of mothers, particularly those who are employed. A much higher percentage of mothers who were consistently employed across the 5 years had not participated in playgroups at Waves 1 and 2 (48%) compared to mothers who were not in the labour force (34.5%). Also, a higher percentage of children without siblings (31%) and study children with younger siblings (40%) had participated in playgroups at Waves 1 and 2 compared to youngest children who had older siblings (25%). Parents have limited time resources, and activities that their children can participate in together will be an effective use of time. Therefore a child with a younger sibling who attends playgroup is more likely to also attend a playgroup than is an only child. Children who are the youngest sibling, however, compete with the needs of their elder siblings who may already have commenced school, and the competition for time resources may mean that they miss out on the playgroup experience altogether.

This study has limitations. The observed effects described here may be confounded, that is we cannot be certain that it is playgroup participation per se that is responsible for

better outcomes in disadvantaged children. It may be that the parents who engage in playgroup services are the parents who also seek a diverse range of activities for their child to engage in, which may be the driving force of improvements to their child's cognitive ability or sociability. Future research on this topic could assess if parenting style or other parenting activities better explain such outcomes, rather than a specific activity such as playgroup. Also, another plausible explanation for the relationship between playgroup attendance and social and emotional functioning is that children who continue to attend playgroups have better social and emotional skills from the outset, consequently making playgroup attendance an enjoyable experience for both the parent and child. Parents of children who are less sociable with other children may not find the experience very enjoyable, and are therefore less likely to continue participating.

This study also lacked information on both the amount of playgroup attendance, and the type of playgroups attended. Our measure of playgroup attendance is therefore very broad, making it difficult to show clear associations between the frequency or timing of playgroup attendance and child outcomes. It is possible that with further detail on the patterns of playgroup participation, more informative results may have emerged. That is, data on the number of times a child attended playgroup within a 12 month period is much more precise than an indication as to whether the child attended at least once during the same period. Future research is needed to determine these patterns of playgroup participation, along with the number of families and children involved and the types of playgroup they attend. We would encourage the establishment of a dedicated study of playgroups that incorporates both qualitative and quantitative components to allow deeper investigation of how playgroups impact on child development, parent wellbeing, and community engagement. Given the vast numbers of children who do participate in playgroups, such research would be worthwhile.

This study focussed on outcomes for children aged 4-5 years; however the LSAC is an ongoing study and outcome measures will continue to be collected for these children when they are aged 6-7, 8-9, 10-11 and 12-13 years. These data will be valuable in assessing whether the positive association between playgroup attendance and child outcomes becomes stronger over time, or if other factors emerge as being more important.

In addition to the possible benefits of playgroup participation for children, playgroups can also offer a range of benefits to the parents who attend with their children, particularly those who are socially isolated. Playgroups offer parents a chance to talk with others about the trials and pleasures of parenting and child development, opportunities which are not only social in nature but educative as well. Developing new and extended social networks can also

improve the mental wellbeing of caregivers, which in turn, is better for children. This study therefore should be extended to investigate the mental wellbeing and social networks of parents who participate in playgroups compared to those who do not.

The findings here offer some support to those who develop family and early childhood policy in Australia. Some level of playgroup attendance is prevalent in families with young children, with over 6 in 10 families with young children taking part. The findings here offer some encouragement that not only are such early childhood services in demand, but that the children from disadvantaged families who engage in these services tend to have better associated learning and social outcomes than those who do not. However, even though the uptake of playgroup services by disadvantaged families was perhaps higher than expected, there is still more that could be done to attract disadvantaged families to playgroups, ensure their continued participation, and achieve greater equity in participation relative to more advantaged families.

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TABLES

Table 1: B-cohort children: Percentage participating in playgroups at each wave, with 95% confidence intervals.

Participation at each wave	Age range (years)	*N*	%	95% CI
Wave 1	0-1	*4206*	40.3	(38.3, 42.3)
Wave 2	2-3	*3491*	52.5	(50.4, 54.6)
Wave 3	4-5	*4385*	25.0	(23.4, 26.6)

Note: Estimates are based on the responding sample at each wave.

Table 2: B-cohort children: Percentage attending playgroups across Waves 1 and 2, with 95% confidence intervals.

Pattern of attendance across Waves 1 and 2	*N*	%	95% CI
Neither wave	*1022*	34.0	(32.0, 36.1)
Wave 1 only	*407*	13.0	(11.8, 14.2)
Wave 2 only	*690*	22.5	(20.8, 24.2)
Wave 1 and 2	*1007*	30.5	(28.5, 32.6)

Note: 106 children attended at Wave 3 but not at Waves 1 or 2, 59 at Waves 1 and 3, 236 at Waves 2 and 3 and 463 at Wave 1, 2 and 3.

Table 3. B-Cohort children at Wave 3: Percentage with selected family and demographic characteristics according to the pattern of playgroup attendance across Waves 1 and 2.

		Playgroup access across Waves 1 & 2			
		None	W1 only	W2 only	W1 & W2
Characteristic	*N*		%	%	%
Mother's highest education[a]					
Less than Year 12	*806*	38.4	11.1	25.4	25.0
Year 12	*380*	35.3	11.6	24.6	28.4
Post school qualification	*1929*	30.8	14.4	20.0	34.8
Mother's employment across waves					
None	*636*	34.5	8.5	27.8	29.3
Occasional part-time	*1931*	31.0	13.0	22.0	34.1
Consistent part-time or full-time	*318*	48.1	19.0	16.1	16.9
Mothers age at birth of first child[a]					
Less than 20 years	*137*	46.1	14.7	27.1	12.1
20-24 years	*530*	40.9	11.1	25.6	22.4
25 years +	*2453*	31.5	13.3	21.3	33.8
Equivalised household income[a]					
Less than $30,000	*761*	38.9	12.8	24.4	24.0
$30,000-$49,000	*1096*	31.6	11.5	23.3	33.7
$50,000 or more	*1032*	31.8	15.4	20.3	32.5
Sibling position[a]					
An only child	*321*	31.5	15.6	22.3	30.5
Youngest child	*1261*	42.8	12.8	19.8	24.6
Middle child	*527*	37.7	11.5	23.6	27.2
Eldest child	*980*	21.6	12.9	25.3	40.3
Family structure[a]					
Single parent family	*274*	45.1	15.6	22.1	17.1
Two-parent family	*2845*	32.7	12.7	22.5	32.2
Family disadvantage					
Not disadvantaged	*2786*	31.4	13.4	21.1	34.1
Disadvantaged	*335*	43.8	11.5	26.5	18.3
Language spoken in home[b]					
English	*2895*	32.6	13.1	22.4	32.0
Other	*231*	47.1	12.3	23.2	17.4

a. Information collected and measured at Wave 3.
b. Information collected and measured at Wave 1.

Table 4. B-Cohort children at Wave 3: Learning competence outcomes according to playgroup attendance pattern, by family disadvantage and child gender.

	Not disadvantaged			Disadvantaged		
	Coeff.	*p*	95% CI	Coeff.	*p*	95% CI
Boys						
Intercept	87.05	<.0001	82.48, 91.61	85.19	<.0001	77.46, 92.92
Playgroup Attendance						
Neither W1 or W2 (ref)	-	-	-	-	-	-
W1, not W2	-0.05	0.951	-1.71, 1.61	3.35	0.068	-0.25, 6.94
W2, not W1	0.20	0.781	-1.22, 1.62	**3.19**	0.008	0.83, 5.56
Both W1 and W2	**1.36**	0.037	0.08, 2.63	**3.73**	0.018	0.66, 6.80
Girls						
Intercept	98.05	<.0001	93.79-102.32	96.18	<.0001	88.52, 103.85
Playgroup Attendance						
Neither W1 or W2 (ref)	-	-	-	-	-	-
W1, not W2	0.20	0.761	-1.09, 1.49	1.95	0.233	-1.26, 5.15
W2, not W1	0.43	0.520	-0.88, 1.73	0.95	0.476	-1.67, 3.57
Both W1 and W2	0.66	0.300	-0.59, 1.92	**4.46**	0.005	1.36, 7.57

Note: Fully adjusted model, includes equivalised household income, mother's age at birth of first child, study child's attendance at day care, study child's attendance at preschool, mother's highest level of education, mother's degree of employment across Waves 1-3, study child's position amongst siblings and neighbourhood SEIFA.

Table 5. B-Cohort children at Wave 3: Social and emotional functioning outcomes according to playgroup attendance pattern, by family disadvantage and child gender.

	Not disadvantaged			Disadvantaged		
	Coeff.	*p*	95% CI	Coeff.	*p*	95% CI
Boys						
Intercept	94.56	<.0001	89.70, 99.41	93.65	<.0001	85.55, 101.75
Playgroup Attendance						
Neither W1 or W2 (ref)	-	-	-	-	-	-
W1, not W2	-1.00	0.298	-2.90, 0.89	1.83	0.291	-1.58, 5.24
W2, not W1	-0.35	0.661	-1.94, 1.23	-0.93	0.514	-3.72, 1.87
Both W1 and W2	0.70	0.314	-0.67, 2.07	2.12	0.176	-0.95, 5.19
Girls						
Intercept	98.29	<.0001	92.72, 103.86	84.63	<.0001	75.13, 94.14
Playgroup Attendance						
Neither W1 or W2 (ref)	-	-	-	-	-	-
W1, not W2	0.84	0.312	-0.80, 2.48	0.46	0.836	-3.88, 4.79
W2, not W1	-0.47	0.581	-2.13, 1.19	-0.96	0.606	-4.61, 2.69
Both W1 and W2	-0.25	0.742	-1.73, 1.23	**4.77**	**0.005**	**1.48, 8.06**

Note: Fully adjusted model, includes equivalised household income, mother's age at birth of first child, study child's attendance at day care, study child's attendance at preschool, mother's highest level of education, mother's degree of employment across Waves 1-3, study child's position amongst siblings and neighbourhood SEIFA.