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ABSTRACT

The longitudinal "Competent Children" project is intended to discover what impact family resources and early childhood education experiences have on the development of children's cognitive, social, communicative, and problem-solving competencies. This booklet summarizes the main findings of the first stage of this project. The report describes the competencies of 307 four-and-a-half-year-old children in the Wellington region, the Kapiti Coast, and the Wairarapa in the context of their family background, home activities, the length of their early childhood education experiences, and the quality of their current early childhood experience as they approach 5 years of age. Findings noted include the following: as children neared this age, the majority of children in this study were confident in their communication with others, could look after their own dressing and toileting, and solve problems in their explorations, games, and construction activities. Most children were familiar with books, and knew how books should be read, even if they had not yet started reading. About half the children could recognize the letters of their own name, and write their first names. Most children were familiar with numbers up to 10, whether in the form of counting or recognizing numerals. Just under half could recognize different shapes. (AA)

FIVE YEARS OLD & COMPETENT

CATHY WYLIE

NZCER

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A SUMMARY OF THE MAIN FINDINGS
OF THE FIRST STAGE OF THE
COMPETENT CHILDREN PROJECT

FOR PARENTS AND
EARLY CHILDHOOD EDUCATION TEACHERS

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NEW ZEALAND COUNCIL FOR EDUCATIONAL RESEARCH
Wellington 1996

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What is the Competent Children Project?

As a country, we have increasingly come to value early childhood education. Most New Zealand children now attend some kind of early childhood education before they go to school.

Overseas research has shown that good quality early childhood education has a bearing on children's achievement, and on their long-term education, employment, and social participation.

It is important that New Zealand has similar research, following children through from their days in early childhood education, until they leave school. So the Ministry of Education has funded the Competent Children Project.

Why is the project called 'Competent Children'?

Children, like adults, have a range of knowledge and skills that they use in their everyday lives. We wanted to look at children who were about to enter school, and find out what they could actually do in a number of areas. These areas are important for:

- ❒ children's own wellbeing
- ❒ school achievement and ongoing learning
- ❒ participation in employment and in society.

We assessed the children's performance in ten areas: in the traditional areas of literacy and numeracy, and also in social skills

with their peers, social skills with adults, taking responsibility for themselves, communication, logical reasoning skills, physical dexterity, curiosity, and perseverance.

WHERE DOES EARLY CHILDHOOD EDUCATION COME IN?

Because so few New Zealand children have no early childhood education experience at all, the project concentrates on different kinds of early childhood education. It aims to provide answers to these questions:

- ❒ What role does early childhood education play in the development of children's competencies — academic, learning, social, communication, and physical?
- ❒ Is this role different from the role which family resources and experiences play?
- ❒ What experiences do parents have of early childhood education services? Does this have a bearing on children's competency levels?
- ❒ What effect do differences in early childhood education quality have on the level of children's competencies?
- ❒ Do these effects remain until a child becomes an adult?

  Or are they tempered by changes in family situation, by school experiences, and by experiences in hobbies, organisations and groups outside the school and family?

Can the effects be seen in children's educational achievement, employment, social participation, and hopes for their future?

Who is in the study for this project?

The project is studying 307 children, and their parents, from the Wellington region, the Kapiti Coast, and the Wairarapa.

The children were randomly chosen at the age of four and a half, from 87 early childhood education services.

These services were also randomly chosen. They include 19 kindergartens, 20 playcentres, 20 childcare centres, including private preschools, 25 family day care homes, and three a'oga amata.

So far the project has collected data when the children were reaching the age of five, and when they were six years old. We are returning to the children when they are eight, starting in late 1996. We hope to collect data every two years after that, until the children have left school.

How competent were the children?

The children in the study showed us a wide range of competency levels. Most were confident in communicating with others. They could play peacefully with their peers, most of the time. They could look after their own dressing and toileting. They could solve problems in their exploration, games, and construction activities.

Most were familiar with books, and knew how they should be read — although only a few children were actually reading at this age. Around half could recognise the letters of their own name, and write their first name.

Most children were familiar with numbers up to 10. Just under half could recognise a range of different shapes. Around half the children could bounce and catch a ball, and keep their balance while hopping. Many were accurate in using their hands to pick up small objects, and lace cards. But very few could cut out shapes accurately, or trace around them.

Do different levels of competency reflect different standards of early childhood education?

The answer is both yes and no.

On the *yes* side:

The quality of a child's early childhood education service is linked with significant differences in the levels of three of the ten competencies we studied. These three competencies are communication, perseverance, and peer social skills.

Communication: Children attending early childhood education centres which rated highly for quality were, on average, 7 percentage points ahead of those attending low-rating centres.

PERSEVERANCE: Children attending high-rating centres were, on average, 7 percentage points ahead of those attending low-rating centres.

PEER SOCIAL SKILLS: Children attending high-rating centres which were rated highly in the study scored on average, 9 percentage points more than those attending low-rating centres.

Two other factors were linked with differences in competency levels:

STARTING AGE for early childhood education experience was linked with differences in the levels of children's *physical skills.*

Children who started early childhood education when they were under two were, on average, 4 percentage points ahead of those who started in their third year, and 7 percentage points ahead of those who first attended early childhood education in their fourth or fifth years, in physical skills.

TOTAL LENGTH of early childhood education experience was linked with differences in the levels of children's *mathematics competency.*

Children who went to early childhood education for 48 months or more were, on average, 6 percentage points ahead of those who went for 36–47 months in total, 9 percentage points ahead of children who went for 24–35 months, and 11 percentage points ahead of those whose early childhood education experience was less than 24 months, in mathematics competency.

This finding makes sense when we remember that, in many early childhood education centres, children can explore materials and equipment which are often not available in their own homes.

These associations between children's early childhood education, and their levels of competence in communication, perseverance, peer social skills, motor skills, and mathematics, hold even after taking the important influence of family income into account. So we can conclude that *early childhood education is making its own contribution to children's competency levels.*

Since most of the associations are with the quality of early childhood education, we can also conclude that *quality does count.*

On the *no* side:

The following aspects of children's early childhood education experience did not affect their levels of competence:

- ❒ The number of early childhood education services a child has been to.

  Only 30 percent of the children in our study attended only one early childhood education service before they went to school. Most had experience of two or three.

- ❒ Attending two early childhood education services at the same time.

  Just under half the children we studied had some experience of this. The parents who were most likely to use more than one

early childhood education service were parents who had some difficulty finding suitable early childhood education, who were employed fulltime, or who wanted to combine a homecare option with group care. For example, almost all the children attending family day care were also going to the local kindergarten or playcentre.

- How involved parents were in their child's early childhood education.

  Most parents had some involvement. They might be parent helpers (mostly in the sessional types of early childhood education, such as playcentre, kindergarten, a'oga amata), or they might help with fundraising, trips and special events, working bees, or serving on committees.

  While there is no direct link between the level of children's competencies and the level of parental involvement, parents told us that their involvement boosted their own skills and brought them support, friendship, enjoyment, a better understanding of their own child, and a sense of achievement.

- Communication between parents and staff.

  Most parents were satisfied that they got enough information from staff about their child's time in the early childhood education centre. However, one in five would have liked more details. This was especially the case with parents who were employed full-time.

- Parents saying there had been some negative aspects of their child's early childhood education experience.

  Almost all the parents in the study – 95 percent – felt that, overall, their child's early childhood education experience had been positive. In particular, they noted benefits for the children's social skills, language skills, and independence.

  Yet just under half the parents also noted some negative aspects, related mainly to the child's relationships with other children at the early childhood education service.

What makes for quality in early childhood education?

We judged the quality of the early childhood education centres in our study by looking at 21 different aspects of good quality early childhood education provision. The items we looked at are listed below.

One visit to a centre does not allow a reliable assessment of quality. We visited each centre three times, over a period of three to four weeks.

More than half the centres *scored well* on these items:

- Staff are responsive to children.
- Staff model and encourage children to use positive and explanatory guidance or discipline approaches.
- Staff model/guide children in centre activities.

- ❒ Children can select their own activities from a variety of learning areas.
- ❒ Child-initiated imaginative play occurs.
- ❒ Fine motor skills are encouraged.
- ❒ Gross motor skills are encouraged.
- ❒ There are enough age-appropriate toys, books, and equipment to avoid children having to wait, compete or fight for them.
- ❒ There is easy and free access between inside and outside.
- ❒ There are good safety practices.
- ❒ Children are usually allowed to complete activities.
- ❒ Children support one another and co-operate.
- ❒ Children's play activities are not sex-stereotyped.

A fifth or more of the centres *scored poorly* on these items:

- ❒ Staff join children in their play.
- ❒ Staff ask open-ended questions that encourage children to choose their own answer.
- ❒ Stories are read, told, or shared.
- ❒ Children experiment with social and maths or science problems themselves.
- ❒ Tikanga Maori and/or te reo Maori is evident.
- ❒ Children's cultures are recognised or accepted.

Most centres had a *medium score* on these items:

- There is evidence of children's creativity (e.g., display of their current artwork).
- The environment is 'print saturated'.

We also found:

- Children in the higher scoring centres were more likely to be exploring their environment and having challenging conversations with adults.
- The level of aggressive behaviour among the children was very low overall — 2 percent of all our observations — but it increased in the poorer quality centres.

Overall, we found that in the *highest quality centres*:

- all staff had a diploma of teaching in early childhood education
- the highest staff salary was at least $15 an hour.

Full training in early childhood education teaching emerges as a crucial ingredient for quality.

A *reasonable salary*, which recognises the demands and complexity of early childhood education teaching, emerges as an important contributor to quality.

Adequate group size — the total number of children at a centre at any one time — and *an adequate ratio of adults to children* also boost the quality of early childhood education.

Half the centres in the study provided early childhood education of a good standard, or better. There were few extremes: very few centres were superb, and very few were dreadful. We found some reasons for this.

STRUCTURE

Each type of early childhood education service is structurally different from the others.

Kindergartens, for example, benefit by having fully trained staff. They often have good equipment, buildings, and room for outdoor play.

But they also have the highest group size (up to 45) of any service, and the worst staff:child ratios. They have only one teacher for every 15 children. This is much higher than the recommended ratio overseas, of one teacher for every 10 children.

So although the teachers' high level of training and qualifications has a positive impact on the overall quality of kindergartens, the large group size and poor staff:child ratios have negative effects, and reduce the overall quality.

On the other hand, family day care homes have very low group size — often as low as two or three children — and great ratios: one adult for every two to three children. But the adults have very rarely had early childhood education training.

Overall, the quality of the family day care homes was not as good as those types of early childhood education where staff have had some training. Salaries were also much lower in the family day care homes than in other services.

Does access to good quality early childhood education depend on family income?

In New Zealand, the answer is no.

In the United States, the children who go to good quality early childhood education centres come from either well-off or poor families. This is because government funding policy relies on targeting. Here in New Zealand, government has mainly funded services, without regard to family income. Our study found that as a result of this way of funding, access to good quality early childhood education is much fairer. Children from all income backgrounds can attend good quality early childhood education services.

This is an important finding. It tells us that government funding will be more successful in ensuring that children from all income backgrounds can access good quality early childhood education if the funding goes to services.

ARE DIFFERENCES IN FAMILY RESOURCES LINKED WITH DIFFERENCES IN CHILDREN'S COMPETENCY LEVELS?

Again, the answer is both yes and no.

Yes: Family income is linked with differences in children's competency levels.

The children's competencies which appear to be most clearly associated with differences in family income are literacy and mathematics.

Children from homes with incomes of less than $20,000 a year were, on average, 16 percentage points behind their peers in the highest income families ($60,000 or more) in mathematics, and 13 percentage points behind in literacy.

They were, on average, 12 percentage points behind their peers from high income families in social skills with peers. They were 7 percentage points behind in communication, social skills with adults, taking responsibility for themselves, and perseverance.

Similar patterns showed up for differences related to parental education and occupation.

These differences related to family income are not associated with any differences in the value that parents put on education. All the parents in our study put a high value on education and on children completing school and going on to tertiary study.

No: We found no differences in children's competency levels relating to their mother's *paid work employment.*

Yes — and no:

Some differences related to the children's *main ethnic group*, and whether they spoke *English as their first language*, also showed up. But these disappeared once we took family income into account.

Children from *sole parent families* also scored, on average, 7–9 percentage points less than children from two-parent families for communication, perseverance, and social skills with their peers. Yet once again, these differences became insignificant once we took family income into account.

In other words, when we look at differences among families, it is differences in family financial resources that seem to relate most clearly to differences in children's competency levels at the age of five.

Are there differences between the competencies of boys and girls?

We found only two differences between the average competency levels of boys and girls at this age.

- ❒ Girls tended to score around 7 percentage points more than boys on perseverance.
- ❒ Boys tended to score around 6 percentage points more than girls on curiosity.

Do children's activities at home make a difference?

Yes: In fact, they make a very important difference.

We asked parents about the kinds of reading, writing and number work that their child did at home. We found that differences in what children did at home in these areas did show up in different levels on our measures of literacy and mathematics.

But they also showed up in differences in logical reasoning. Writing activities were also linked to differences in physical skills.

Some of the common mathematical activities at home were counting, telling the child's own age, singing counting songs, using numbers when helping with housework or cooking, and telling the time. Just over half the children were comfortable using concepts of half or a quarter.

Children who did *more than these things* tended to have, on average, a higher score than others on mathematics (11 percentage points), literacy (10 percentage points), and logical reasoning (9 percentage points).

So what were these children doing that might be making a difference in their competency levels? They were playing board games and card games, solving puzzles, using the telephone, reading out numbers from letterboxes or signs, counting money, recognising patterns, writing numbers, and asking questions about such things as people's ages, or the number of days in a week or weeks in a year. Only a few, at almost five, were adding, subtracting or multiplying.

It is the use of numbers in a *range of different spheres of life*, including play and family recreation, that seems to make a positive difference for children.

Children whose parents *read to them* at least once a day scored, on average, 8 percentage points more on our literacy measure than those whose parents read to them less frequently. They also tended to have higher scores on our mathematics measure (around 7 percentage points).

Children who *could associate sounds with the right letters* also scored higher on average, not just for literacy and mathematics (9 percentage points more), but also for logical reasoning (10 percentage points more).

Most of the children had some *ideas about writing*, and practised it. Almost all the children could 'write' their own names (some more intelligibly to adults than others!) and most also liked to 'write' lists, or letters to people. Many copied family member names, and asked how to write specific letters.

Again, children who did *more than these things* tended to show higher competency levels than others — for literacy (7 percentage points more, on average), for mathematics (10 percentage points more), for logical reasoning (8 percentage points more) and for physical skills (4 percentage points more).

The activities that seemed to make a difference included pretend or 'real' writing and copying (over and above lists, letters, and people's names), using a computer or typewriter, or making books.

All these children's activities were significantly associated with higher levels of competency even after we had taken family income into account. In other words, they appear to have an impact all of their own.

These are important findings. They show us that *children's learning can be boosted at home through many everyday activities.*

We also found that children whose families had a *computer* also tended to score higher, on average, in literacy and mathematics (around 8 percentage points higher), and there were indicative associations with four other competencies. Children with a

computer in the home tended to score higher than others on logical reasoning, communication, physical skills, and independence (around 4–6 percentage points more).

We did not ask what the children did on the computer, but we will be asking that when we return to the children as they turn eight.

This association between family computer ownership and the levels of children's competencies remained even after we took family income into account. In fact, computer ownership appears more beneficial for children in low income families.

There has been some uneasiness about the impact of *television watching* on children. Teachers and parents can often tell by children's games what they have been watching the day before!

We asked only about the average number of hours a child spent watching television each day. The only association we found was that children who watched more than four hours of television a day scored, on average, 10 percentage points less on our mathematics measure. We found no difference between children who never watched television, and those who watched some on a regular basis.

When we return to the children at the age of eight, we will be asking more about the actual programmes they watch, as well as the overall amount of their television viewing.

ARE THESE RESULTS CONSISTENT WITH OTHER RESEARCH?

The more research we have that shows similar patterns, the more reliable the picture produced. This study has found some results that confirm overseas research, and some that point to important differences unique to New Zealand. It has also broken some new ground in finding out more about the contribution of children's activities to their development.

Our finding that *quality in early childhood education is associated with children's levels of competency* is consistent with overseas research.

Our finding that *teacher training and salaries* make a difference to quality is also consistent with overseas research, and with Anne Smith's research on New Zealand childcare centres catering for infants and toddlers.

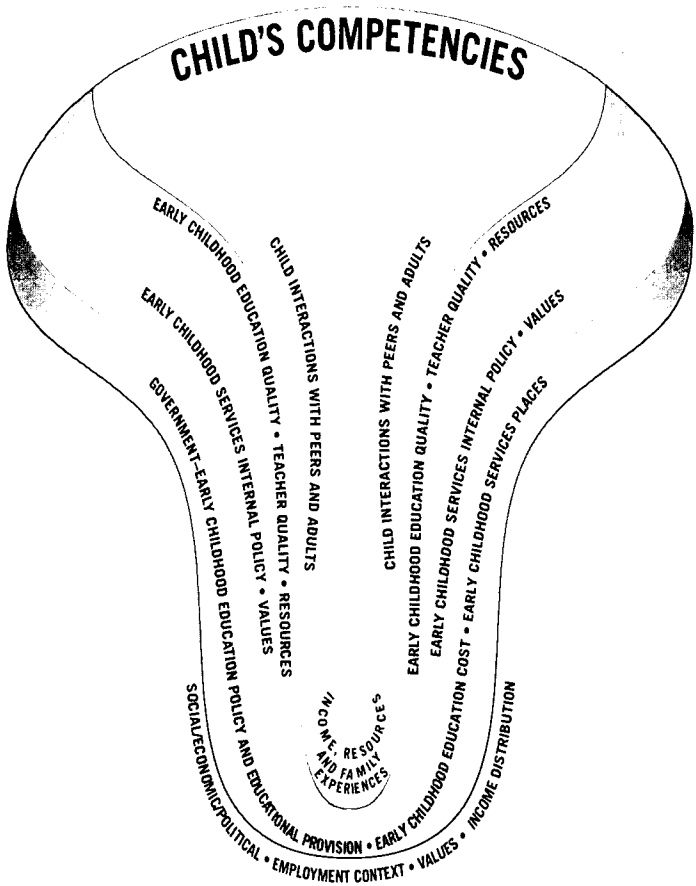
Family income has long been associated with differences in educational achievement, in research done both overseas and in New Zealand. It is also associated with differences in resources and activities at home. Our findings are consistent with this.

The study has begun to break some new ground by looking at a broad range of children's competencies. By doing so, we raise some questions about the different roles of early childhood education and family experience, and what we can expect of early childhood education.

Our finding that family income did not seem to be the deciding factor in children's access to good quality early childhood education is not borne out by overseas research. This draws attention to differences in government policy. The New Zealand system of *funding the service*, rather more than targeting according to family income, actually seems to provide fairer access for all families.

The New Zealand emphasis on *training for early childhood education staff*, and on having a floor of *minimal regulations for group size and staff to children ratio*, probably accounts for the lack of wide extremes of quality that are found, say, in the United States. The study does, however, indicate, room for improvement in the quality of our early childhood education.

Our finding that *home activities are important in children's development of literacy and numeracy* breaks some new ground. One particularly interesting finding is that maths activities can have a spin-off for children's literacy, and for their logical reasoning.



This diagram shows the immediate and indirect influences on children's competency levels

What next?

Our report on the information collected from the children at age six, their parents, and their primary school teachers will be ready in early 1997. Our report on the same children when they are eight will be ready in mid 1998.

We will be continuing to look at the impact of early childhood education in the ten competency areas. We will also be looking at the impact of school resources, family resources, and children's activities and interests.

The full report of the study is:

> *Competent Children at 5 — Families and Early Education* by Cathy Wylie, Jean Thompson, and Anne Kerslake Hendricks.

There is also a volume of technical appendices that gives all the detail of our statistical analyses: *Competent Children at 5 — Technical Appendices.*

These are available from NZCER.

Two reviews of the international research literature on the impact of early childhood education are also available from NZCER: *What Research on Early Childhood Education Can, and Can't, Tell Policymakers*, by Cathy Wylie; and *Early Childhood Education and Care: A Summary Review of the Outcomes of Inadequate Provision*, by Valerie N. Podmore.

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