

Who Am I? Supplementary Information

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This supplement presents the results of a large administration of *Who Am I?* The test is being used as part of *Growing Up in Australia* to assess four year-olds' readiness for school, and to examine how well the test results relate to outcomes, which will be collected as the children develop.

Growing Up in Australia

Growing Up in Australia is the Longitudinal Study of Australian Children (LSAC), initiated and funded by the Australian Government Department of Families, Community Services and Indigenous Affairs. The study explores family and social issues, and addresses a range of research questions about children's development and wellbeing. Its longitudinal structure offers opportunities for researchers to determine critical periods for the provision of services and welfare support, and identify the long-term consequences of policy innovations.

There are two cohorts of children in LSAC. The first cohort of 5000 children was aged less than twelve months in 2003/4. The cohort is being followed until the children are six to seven years old. The second cohort comprises 5000 children aged four years in 2003/4. This cohort will be followed until the children reach ten or eleven years of age.

Who Am I? in LSAC

Data are collected in LSAC by personal interview in children's homes. LSAC uses a number of assessments of children's development, and interviewers have been trained in the administration of all tests. In the cognitive domain, *Who Am I?* is being used to assess processes that underlie the learning of early literacy and numeracy skills when children in the cohorts are four years old. *Who Am I?* was administered by the interviewers, but scored by one person experienced in marking the test.

For the LSAC testing, there was a change to *Who Am I?* Item 11 ('This is a picture of me.') has been replaced with a sentence to be copied ('John is big.'). Responses to the new item were judged in the same manner as other items, with levels from 0 to 4. *Who Am I?* was administered to a total of 4365 children in the older cohort during 2004, between March and September.

Results

Table 1 shows the basic statistics for four age groups. These age groups can be compared to the age norm groups shown on page 23 of the *Who Am I?* Developmental Assessment Manual, remembering that Item 11 was changed for LSAC use. For each age group, the mean score was higher than the mean score for the younger group.

The standard deviation is a measure of the distribution of the scores: approximately two-thirds of all scores in the group fall between one standard deviation below the mean and one standard deviation above the mean. Standard deviations were similar for all age groups, indicating a similar spread of scores. The standard error of the mean is a measure of the variation of our estimate from the 'true' mean: we can be 95 per cent confident that the true mean falls in a range between two standard errors below our estimate of the mean and two standard errors above our estimate of the mean. Hence, when a 4-year-old child scores 23, we can be 95 percent certain that the actual score falls in the range 23 ± 0.6 (double the standard error of the mean provided in the table). The standard error is reflected in the bars above and below the centre points in Figure 1. Cronbach's α (Alpha) is a measure of the reliability of a test, based on its internal consistency.

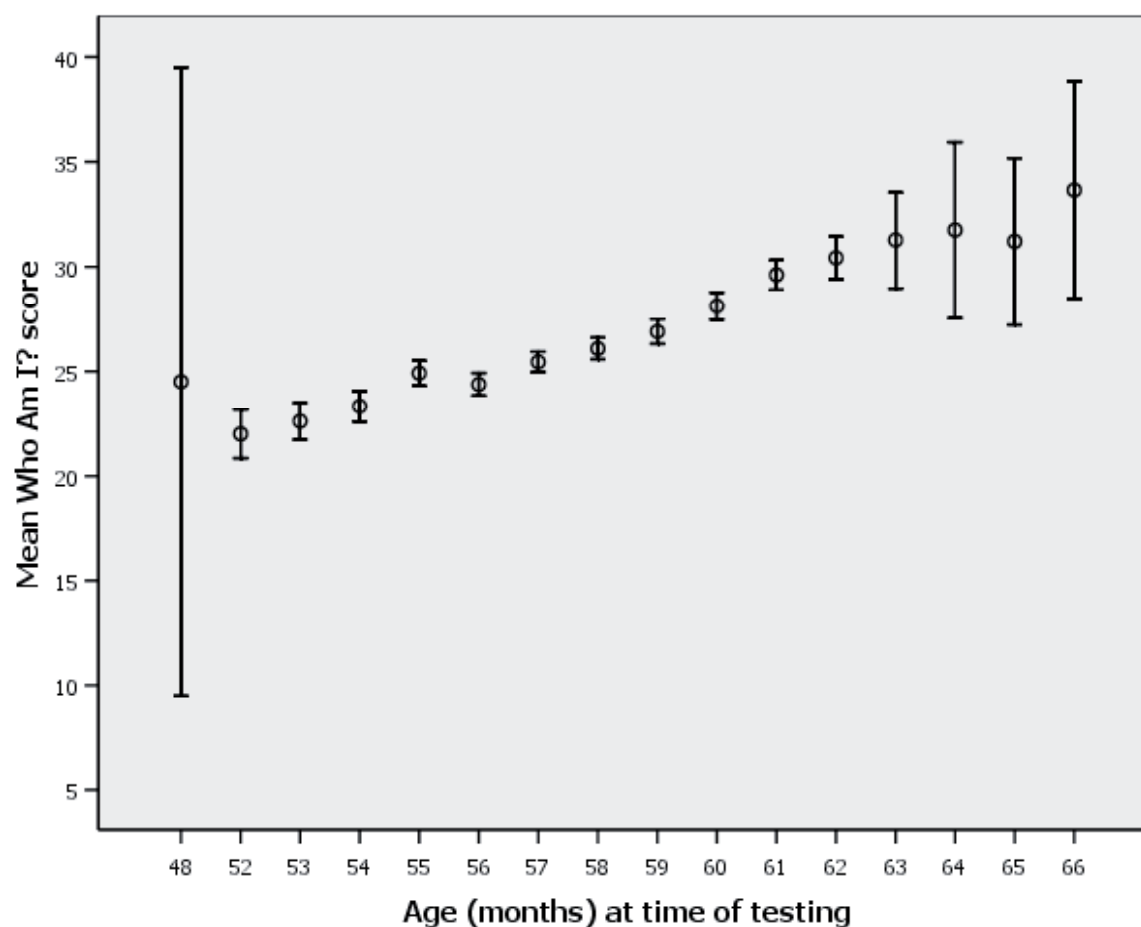
When examined by individual months, however, the same general trend can be seen (Figure 1), but with some variations:

- There were only two children tested who were aged 48 months, so the error of the estimate of the mean, as indicated by the top and bottom bars, is much larger;
- The group of children aged 55 months scored higher than those at 56 months;
- The five children aged 65 months had a lower mean score than children aged 63 and 64 months; and
- Standard errors of the mean estimates for children aged 63–66 months were much higher than the standard errors for children at other ages.

Overall, results on *Who Am I?* reflect the developmental nature of the tasks involved.

Table 1 Basic statistics for age groups tested in *Growing Up in Australia* (LSAC)

Age group	Number of Children	Mean Score	Standard Deviation	Std Error of Mean	Alpha
4:0–4:6	629	22.9	6.4	0.3	0.87
4:7–4:9	1708	25.0	6.5	0.2	0.87
4:10–5:0	1505	26.9	6.5	0.2	0.87
5:1–5:6	523	30.1	6.4	0.3	0.87

Figure 1 Mean *Who Am I?* scores by age in months for the *Growing Up in Australia* (LSAC) sample

All of the LSAC age groups in Table 1 scored slightly higher than did the norm groups in 1998. The LSAC sample was tested over a period of seven months, compared to a period of two months for the original age norm groups. It is likely that some of the difference in means can be attributed to this difference in test dates, with those tested during August and September likely to have benefitted from more time in formal educational settings. The wider spread in test dates is also likely to explain the larger standard deviation in the scores for all age groups. The lower standard error of the mean for each age group, however, is because of the increased sample size for each age group in the LSAC sample.

The LSAC administration of *Who Am I?* resulted in an overall reliability estimate of 0.89. This estimate was obtained from a Quest analysis (Adams & Khoo, 1996), and is similar to the reliability estimate (0.91) reported in the *Who Am I? Developmental Assessment Manual* (de Lemos & Doig, 1999). Reliability estimates of 0.87 for each of the four age groups, based on Cronbach's alpha, are consistent with the overall reliability estimate of 0.89. These figures indicate a high level of consistency among *Who Am I?* tasks in measuring a similar or highly-related constructs.

Age norms based on *Growing Up in Australia*

Table 2 shows the age norms for the four age groups, based on the LSAC administration of *Who Am I?* Most of the percentile bands for the LSAC results are one or two items higher than they were for the original norming study, as reported in the Developmental Assessment Manual.

Table 2 Norms for age groups tested in *Growing Up in Australia* (LSAC)

%ile	Stanine	Description	% in this category	Age 4:0–4:6	Age 4:7–4:9	Age 4:10–5:0	Age 5:1–5:6
96+	9	Well above average	4	34+	36+	37+	40+
89-95	8	Above average	7	31-33	33-35	35-36	38-39
77-88	7		12	27-30	30-32	32-34	35-37
60-76	6	Average	17	25-26	27-29	29-31	32-34
40-59	5		20	21-24	23-26	25-28	29-31
23-39	4		17	18-20	20-22	22-24	26-28
11-22	3	Below average	12	15-17	17-19	19-21	22-25
4-10	2		7	12-14	14-16	15-18	17-21
1-3	1	Well below average	4	<12	<14	<15	<17

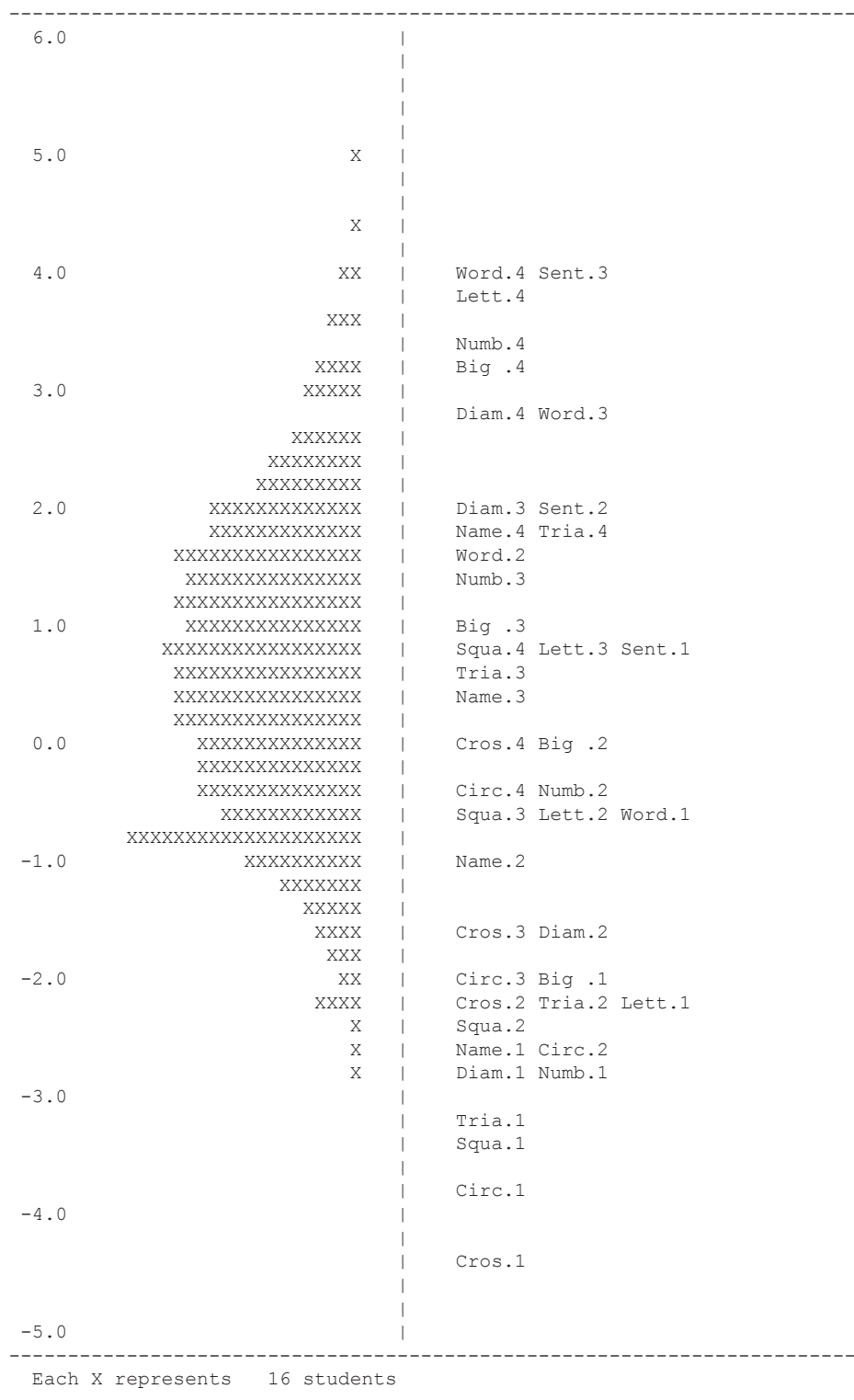
Item analysis

The Quest analysis also provided information on the difficulty of each item in the LSAC administration of *Who Am I?* These are reported in logits in Table 3, with an average of 0 for all 11 items on the test. Items with higher logit scores were more difficult than items with lower logit scores. Table 3 also shows the percentage of students in each of the four age groups who achieved Level 4 on each of the 11 tasks in *Who Am I?*

Table 3 Item difficulties and percentage achieving highest level on *Who Am I?* tasks

Item	Task	Difficulty (logits)	Percentage achieving highest level, by age group			
			Age 4:0–4:6	Age 4:7–4:9	Age 4:10–5:0	Age 5:1–5:6
1	Name	-0.38	13.4	21.6	30.0	43.0
2	Circle	-2.26	68.3	69.5	70.1	81.1
3	Cross	-2.01	52.1	60.0	64.5	76.7
4	Square	-1.41	31.9	40.3	48.4	60.8
5	Triangle	-0.77	11.5	19.0	28.2	42.8
6	Diamond	0.12	3.8	5.8	10.4	18.9
7	Numbers	0.41	2.4	3.0	7.8	17.2
8	Letters	0.47	2.2	4.0	6.4	11.1
9	Words	1.92	1.1	1.8	2.9	6.7
10	Sentence	3.34	.2	.0	.1	1.2
11	Big John	0.57	4.0	5.1	8.7	16.8

Information on the threshold required to move from one level on a task to the next higher level on that task can be shown graphically in an item map. In the item map in Figure 2, the Xs to the left of the dashed vertical line represent the students distributed according to their performance on *Who Am I?* To the right of the dashed line the thresholds for each task are plotted. Both the students and the thresholds are on the same scale. For all items, higher levels of each task had higher logit values, indicating that higher scores were achieved by children who had performed better on the test. The item map also indicates that the distribution of children was only slightly above the distribution of the items, indicating that there was a good match between the difficulty of the items and the children's performance levels.

Figure 2 Item map for all cases on the *Who Am I?* test, LSAC administration

Note: The value for Sent.4 (sentence task, level 4) was 6.59, beyond the scale of the item map.

Using the LSAC results

The results reported in this supplement are based on the version of *Who Am I?* used in *Growing Up in Australia*, the Longitudinal Study of Australian Children (LSAC). Data collected for this part of the study was conducted in between March and September of 2004, with close to 5000 children aged 48 to 64 months being tested. Results in this administration of *Who Am I?* varied slightly from the results used in the norming study because of one different task and different time of the year when the test was administered. Taking into account these differences, the results indicate that *Who Am I?* is a robust assessment instrument for use with children at this age.

Acknowledgements

The research reported here was conducted as part of *Growing Up in Australia*, the Longitudinal Study of Australian Children. LSAC was initiated and is funded by the Australian Government Department of Families, Community Services and Indigenous Affairs. The Australian Institute of Family Studies is the lead agency for the study. LSAC interviewers administered the tests in the children's homes. Tests were scored and coded by Catherine Underwood of ACER.

References

Adams, R.J. & Khoo, S.T. (1996) *Quest: The Interactive Test Analysis System (Version 2.1)*. Melbourne: ACER.

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