Objective versus estimated age of word acquisition: A study of 202 Italian children

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We provide objective data concerning the age of acquisition (AoA) of words from 202 Italian children 34–69 months of age. We investigated picture naming with 80 concrete words belonging to eight semantic categories that are included in a widely used battery for the study of naming and semantic memory. For each word, we calculated three different indices: two directly expressing the age at which a picture was given the correct name by at least 75% of the subjects, and one expressing the overall percentage of our children who were correct in the task. (For the latter index, we provide separate values for boys and girls.) The correlation between objective indices of AoA and adult estimates culled from the literature was not very high. Moreover, objective indices showed low correlations with frequency and familiarity, in contrast to adult ratings. We conclude that adult estimates of AoA present validity problems and should be used with caution. The full set of stimuli is available at www.psychonomic.org/archive.

A number of variables related to words are crucial for the speed and efficacy of picture naming and other lexical tasks in normal subjects and aphasic patients (Barca, Burani, & Arduino, 2002; Ellis & Morrison, 1998). Prior to Carroll and White's (1973) proposal that the age at which a word is learned is an important predictor of processing speed, only lexical frequency was taken into account (Oldfield & Wingfield, 1965). Despite subsequent evidence of the importance of age of acquisition (AoA), it was a long time before a clear distinction between its role and that of frequency was accepted. Connectionist models (Dell, 1986; Monsell, 1991; Plaut, McClelland, Seidenberg, & Patterson, 1996; Seidenberg & McClelland, 1989) also posited that lexical frequency was the key factor in word retrieval, maintaining that each time an item activates its representation in the brain the connections involved in this process are strengthened. Consequently, higher frequency should determine greater ease of retrieval (Ellis & Morrison, 1998). Only after the empirical data of Morrison and Ellis (1995; Barry, Morrison, & Ellis, 1997; Ellis &

Morrison, 1998) came to light did it become clear that AoA was a factor independent of frequency.

The skepticism about the relevance of AoA was based not only on theoretical but also on methodological grounds: Actual AoA estimates were mostly indirect ratings given by adults who were asked to tell at what age they had learned a given word. It is certainly easier to collect indirect measures than direct ones, but unless the validity of these ratings is demonstrated beyond a doubt (for a thorough review and discussion, see Morrison, Chappell, & Ellis, 1997), it is questionable whether or not adult judgments are genuine estimates of AoA or a compound estimate of the real AoA linked to other variables. In the study by Morrison et al. (1997), the correlation between objective AoA and rated AoA was about .75, a value that is not sufficient in and of itself to demonstrate that these variables are equivalent. A similar correlation of .72 was found between rated AoA and objective AoA in an Icelandic version of Morrison's et al.'s study (Pind, Jónsdóttir, Tryggvadóttir, & Jónsson, 2000). These concerns are raised also by data from other studies in which the correlation between rated AoA and frequency and/or familiarity has been quantified. For instance, Lotto, Dell'Acqua, and Job (2001) found correlations of .52 with frequency and .50 with concept familiarity, whereas Barca et al. (2002) reported values of .72 with child written frequency and .80 with word familiarity.

Beyond the contrast between objective AoA and rated AoA, the term *acquisition* and the instruments used in the

We extend a big "thank you" to all the children who participated in this study, to the teachers who tested them, and to Francesca Valentini, director of the three participating schools, who permitted and organized the testing. Rosemary Allpress revised the English text. Correspondence concerning this article should be addressed to R. Barbarotto, Neuropsychology Service, Centro S. Ambrogio, Fatebenefratelli, Cernusco s/N, Milano, Italy (e-mail: dott.riccardo@barbarotto.it).

assessment of AoA call for discussion. Newborns live in a world full of objects, and they become familiar with and learn to handle them long before naming them. Object knowledge is already present by the time the first verbal utterances emerge (see, e.g., Bloom, 2000). Pointing to objects, reaching for objects on demand, and word comprehension all antedate word production or word definition. A number of objective approaches have been used to assess AoA, the most frequently employed being word definition, naming, looking for (implicit) correct use of words in sentences, and parent questionnaires. It is obvious that different methods of assessment give rise to widely differing AoA values. Picture naming is an easy task to administer and score, and it gives an objective measure of word production. Picture naming was chosen by Morrison in her seminal study (Morrison et al., 1997), in which she used a partially modified set of Snodgrass and Vanderwart's (1980) pictures.

AoA has not only theoretical but also clinical significance. It should be considered when clinical cases of language disorders are being investigated, in particular when the goal is to understand why some stimuli consistently give rise to the right response and others to error. However, it should also be considered that the AoA of a given word may depend on demographic variables. For instance, it is likely not to be the same for males and for females, because children are subject to different sex-based hormonal influences, may be exposed to different early environments, and may also be given different stimulations by their parents. Moreover, AoA may be different for different populations.

To the best of our knowledge, no objective or extensive norms for the Italian language have yet been collected, but various indirect ratings have been published on the basis of Snodgrass and Vanderwart's (1980) picture set (e.g., Nisi, Longoni, & Snodgrass, 2000) or other sets of pictures (e.g., Lotto et al., 2001). In fact, Axia (1995) collected normative picture naming data on children 12–36 months of age, but this study was based on a small set of words ($n = 20$). Caselli and Casadio (1995) collected semidirect AoA data using questionnaires administered to children's parents, which involved a large sample of 626 words. The children were divided into two groups, aged 8–17 months and 18–30 months, and for each word the percentage of acquisition in each group was given. Both comprehension and production of words were assessed through the

judgments of the parents. Gender-specific norms have not been provided in any study.

The present study was prompted by the need to have direct, objective, and gender-specific Italian AoA values to use in the data analysis of patients suffering from acquired brain lesions. These data will also make it possible to better clarify whether or not objective child-based estimations and adult ratings of AoA can be considered as equivalent measures.

METHOD

Subjects

Data were collected from three preschools in Milan. Some of the classes were homogeneous-age classes (3–4 or 4–5 years), whereas others were composed of mixed ages (3–6 years). The social background of the children's families was heterogeneous and generally representative of the social composition of the city of Milan. Two hundred two children were tested (see Table 1), 95 of whom were boys and 107 girls. Some children were not tested because they were absent from school on the day of the test or because informed consent was not forthcoming from the parents. Children who were not native speakers of Italian, were bilingual, had language problems, or had neurological diseases were also excluded.

The children's ages ranged from 34 to 69 months. Mean age was 50.6 months ($SD = 9.3$ months) for the whole sample and was balanced for gender: 50.4 months ($SD = 9.1$ months) for the boys and 50.7 months ($SD = 9.4$ months) for the girls.

Stimuli

The picture naming task was based on 80 color photographs of items belonging to a test memory battery widely used for the assessment of naming and semantic disorders (Laiacina, Barbarotto, Trivelli, & Capitani, 1993). Color photographs were used to maximize the reality effect of the pictures. In order to make our findings more comparable with those of other studies, the photographs taken were as similar as possible to the corresponding drawings of the Snodgrass and Vanderwart (1980) set. The items belonged to eight different semantic categories: three biological categories (animals, vegetables, and fruits), three artifactual categories (tools, vehicles, and furniture), musical instruments, and body parts. The pictures were printed on A4 sheets (29.7×21 cm, horizontally oriented) and occupied a 10×10 cm central spot.

Procedure

Each child was tested on all stimuli by one of the teachers of the class to which the child belonged. The children were tested 1 at a time, in a quiet setting outside the class. The pictures were presented individually in a fixed random order, with the teacher asking only "What is this?" No time limits for the answers were set, and only generic encouragement was allowed. If only a detail of the picture was named, the examiner would ask the child to name the whole item. For the three

Table 1
Demographic Data of the Sample

Age Groups (months)	Central Age Value (months)	Number of Subjects		
		Overall	Males	Females
34–39	36.5	25	14	11
40–45	42.5	54	23	31
46–51	48.5	32	13	19
52–57	54.5	28	16	12
58–63	60.5	49	23	26
64–69	66.5	14	6	8
Overall		202	95	107

items with composite names (*barca a vela* [sailboat], *sedia a dondolo* [rocking chair], and *chiave inglese* [spanner]), the teacher could elicit a more specific response if the child gave only the generic part of the name. If a child was tired or not willing to go on, testing could be resumed at another time on the same day or the following day.

Scoring

Naming was considered correct if the subject responded with the target name, a correct synonym, or a name produced by almost 5% of adult controls (for details, see Laiacona et al., 1993). Every response that was not identical to the target name was recorded. Childish mispronunciations and names in dialect were considered as correct answers. Spontaneous self-corrections were accepted.

AoA Indices

Since the age range of our sample was not sufficiently extensive to permit documentation of the acquisition of names learned very early or very late, no single procedure for estimating AoA in our database can be free of criticism. Therefore, we decided to calculate different indices of AoA. The first aim was to obtain an index of the word AoA suitable for use in regression models in which AoA may be relevant. This index will be referred to as the *precocity of acquisition* (PoA) index. The second goal was to have direct AoA estimates for the Italian language comparable to data from different studies, and this was accomplished through two methods: a 75% rule and a logistic regression model (linear regression estimate, or LRE). This approach is substantially similar to that followed by Morrison et al. (1997). Details of these methods are reported below.

PoA index. The PoA index is high when a word is acquired early. This index is the overall success rate in the naming of each stimulus, obtained by collapsing the whole sample of subjects independently of age. It was calculated separately for boys and for girls.

PoA is a direct method and yields continuous values well suited for statistical analyses. A limitation of PoA is that the values of individual words are contingent on our sample of children.

Objective AoA following a 75% rule (AoA-75%). This index is low when a word is acquired early. This method was inspired by Morrison et al. (1997), with some differences in the extreme age groups (as will be explained later in this paragraph) added in order to obtain a direct measure of the AoA of a given word. To calculate this index, we subdivided the whole sample into six age groups of 6 months each (see Table 1). We considered a word as acquired when 75% or more of the children of a given age group named it correctly and when it was also named correctly by at least 75% of the children in the two subsequent age groups. In this case, the central value (Table 1) of the 75% correct age group was given (e.g., 48.5 for the 46- to 51-month age group; see the Appendix). Unlike Morrison et al., we adopted the following strategy for the outer age groups: If the naming success reached the 75% level only in the fifth age group (58–63 months), we decided to assign this age group as the AoA, although we could check the effective acquisition in only one subsequent group. For the sixth (64–69 months) and last age group of our sample, if the hit rate reached 75% we rated the AoA as 66.5; if the hit rate was less than 75% we rated it as >69 and indicated in parentheses the actual percentage of hits observed for this age group. For the first age group, if the hit rate was greater than 75%, the index was marked as <34 and we also indicated the actual percentage of hits in parentheses (see the Appendix).

Objective AoA adopting an LRE. This index also is low when a word is acquired early. This procedure, in principle, allows one to make a controlled statistical inference about items that have AoAs outside the observed range. The index yields an AoA value expressed in months. For each stimulus, we carried out a separate logistic regression analysis: The independent variable was age in months, and the dependent variable was response given by each child, coded as 1 if it was correct and 0 if it was incorrect. In the LRE, we calculated for each stimulus the age at which the expected hit rate corresponded to 75%. We considered as reliable the data obtained with the study

of stimuli via LREs that yielded at least a significance level of .1; the remaining stimuli were not analyzed and are marked as not available (n.a.) in the Appendix. The choice of a significance threshold of .10 is the general practice in the single-case analysis carried out for diagnostic purposes (Willmes, 1998). In our study, we decided to follow a 75% rule, whereas Morrison et al. (1997) followed a 50% rule: According to their methodology, the AoA of a given word was the age at which 50% (and not 75%) of the children appeared to have learned it. Our choice was suggested by the consideration that, according to the 50% rule, one might declare that a word is “acquired” even if almost half of the sample were unable to retrieve the name. This seems rather counterintuitive; moreover, two words could be appointed with the same AoA even if, at a given age, one were given the correct name by 51% and the other by 100% of the children.

RESULTS

AoA Indices

The three indices obtained in our study are displayed in the Appendix and are discussed below.

PoA index. High PoA indicates early acquisition of a word. PoA values for each item are reported separately for girls and for boys.

Objective AoA-75%. Five of the 80 items reached the 75% hit level in the fifth age group (58–63 months) and maintained this level in the following age group. These stimuli were *arm*, *ear*, *lips*, *sledge*, and *vase*. Five stimuli reached the 75% level in the sixth band (64–69 months): *lamp*, *lettuce*, *onion*, *screwdriver*, and *watermelon*. Moreover, 28 of the 80 items did not attain the 75% hit level even in the sixth age group. Conversely, for 18 items the hit rate was already above 75% in the earliest age group (34–39 months).

Data analysis according to the 75% rule was not carried out separately for males and females because the necessarily smaller samples (boys vs. girls) and the cumulation of the scores on the central value of each age group would have rendered the procedure less precise.

Objective AoA following an LRE. High AoA following an LRE is also related to late acquisition of a word. All estimates of AoA falling within the age range of the sample (34–69 months) reached a p value of <.10, with the sole exception of *harp*. Of the 32 estimates that fell outside the 34- to 69-month range, 10 were discarded because the significance of the model did not attain the threshold of $p = .10$. These stimuli are marked as “n.a.” in the Appendix. Also with this index, the analysis was not split for gender, because with a smaller number of subjects the likelihood of missing significance would have been excessive.

Correlation Study

The correlation between the three indices reported above was always higher than .90: -.93 between PoA and LRE, -.93 between PoA and AoA-75%, and .91 between LRE and AoA-75%.

Table 2 shows the correlation between our PoA index and (1) the AoA index based on adult ratings by Nisi et al. (2000) and (2) the child estimates according to the 75% rule of Morrison et al. (1997). All of our stimuli are included in Nisi et al.’s corpus, but there is not a full over-

Table 2
Correlation Among Different Age-of-Acquisition (AoA) Indices

	Nisi et al.	Morrison et al.
Precocity of acquisition	-.631	-.772
Nisi et al.		.656

Note—Nisi et al., adult AoA estimates by Nisi et al. (2000); Morrison et al., direct AoA-75% data by Morrison et al. (1997).

lap with the Morrison et al. set, from which seven items included in our study were discarded for various reasons. Therefore, correlations between our PoA and Morrison's AoA-75% are based on a smaller set of 73 items. It should be borne in mind that PoA is high for words acquired early, whereas Nisi et al.'s and Morrison et al.'s indices, due to their definitions of *age*, are high when a word is acquired late. As such, the correlation of PoA with the latter indices will show an inverse relationship and have a negative sign.

Regarding the relationship between different measures of the AoA of the same stimuli, the PoA index showed a higher correlation with Morrison et al.'s (1997) than with Nisi et al.'s (2000) index (-.772 and -.631, respectively). The two indices based on direct child examination (that of Morrison et al. and that of the present study) showed very similar correlations (-.631 and .656, respectively) with Nisi's index, which is based on adult ratings.

The study of the correlations between AoA and different lexical variables (Table 3) confirmed the similarity between PoA and Morrison et al.'s (1997) AoA-75%. Both of them showed a low correlation with lexical frequency (.451 and -.485, respectively) and with familiarity (.297 and -.390, respectively). In contrast, Nisi et al.'s (2000) index based on adult estimates was more closely correlated with lexical frequency (-.742) and with stimulus familiarity (-.628).

A similar outcome was observed for the correlation with word length (Table 3). PoA and Morrison et al.'s (1997) AoA-75% showed a very low correlation with syllable length, whereas in Nisi et al.'s (2000) study long words were judged to have been acquired later ($r = .292$).

Correlations with the data from other studies (Axia, 1995; Caselli & Casadio, 1995) were not made because of the poor overlap between the stimuli of the different batteries.

DISCUSSION

Our survey was prompted mainly by the need to acquire valid AoA indices that can be applied as a model variable to the study of patients with acquired brain lesions.

Therefore, we decided to study the 80 stimuli included in a semantic memory battery (Laiacina et al., 1993) currently employed by many researchers in this field (see, e.g., Borgo & Shallice, 2001; Silveri et al., 1997). The primary aim of this survey was not to plan a thorough study on the word acquisition process in children, since for that purpose a larger number of stimuli would be advisable. The original contributions of this study are (1) the evaluation of specific norms for female and male subjects and (2) an updated discussion of the validity of different ways of estimating AoA.

Gender-specific values of the AoA appear necessary today because recent data have shown that gender can affect one's familiarity with objects in everyday experience (Albanese, Capitani, Barbarotto, & Laiacina, 2000). As such, spurious differences within the set of stimuli may emerge unless gender-specific indices of the age of word acquisition, in addition to those of familiarity, are taken into account in single-case studies. Many single-case studies have included patients affected by naming disorders who presented a dissociation within the set of stimuli employed according to theoretically relevant dimensions—for instance, semantic category (for a review, see Capitani, Laiacina, Mahon, & Caramazza, 2003). In a number of recent studies, the authors felt it necessary to adopt a stringent protection against possible material artifacts by employing stimuli controlled for gender-specific familiarity (Laiacina, Barbarotto, & Capitani, 2005; Samson & Pillon, 2003). The data obtained in the present study will now make it possible to introduce AoA values controlled for gender as well.

The relevant question at this point is which of the three indices presented in the Appendix should be preferred. The PoA index prevents squandering of information, since it is based on the contributions of all the subjects in our survey for all stimuli. In this sense, it is similar to the estimates provided by Caselli and Casadio (1995) separately for two age groups, although the latter study was based on a questionnaire given to parents. In our view, PoA is the optimal index to use as a model variable in the analysis of experimental and clinical data. Moreover, its scale is more finely grained with respect to those of the indices that express objective AoA. The limitation of PoA is that the values do not include an explicit indication of the age at which a word is acquired. Nevertheless, the correlation of PoA with the objective estimates of AoA in our sample was very high ($>.90$).

The AoA-75% index is a simple method for assigning objective AoA values. Unfortunately, a large number of

Table 3
Correlations Among Different Age-of-Acquisition (AoA) Indices and the Most Relevant Variables of the Stimuli

	Frequency	Familiarity	No. of Syllables
Precocity of acquisition	.451	.297	-.089
Nisi et al.	-.742	-.628	.292
Morrison et al.	-.485	-.390	.074

Note—Nisi et al., adult AoA estimates by Nisi et al. (2000); Morrison et al., direct AoA-75% data by Morrison et al. (1997).

stimuli (46) could not be given a reliable estimate with this approach, because the ages at which they were learned were outside the age range of our sample of subjects. For such stimuli, a much wider age range would be needed. The LRE index, based on a logistic regression analysis, overcame some limits of the AoA-75% approach, allowing the estimation of 36 more items. However, even here 10 stimuli did not yield a satisfactory estimate.

In conclusion, PoA has optimal metric properties but a less informative face value. We suggest using this measure whenever accurate quantitative statistical evaluations of psychological effects must be obtained.

The second point of our study was the issue of ratings versus objective measures of AoA. The possibility of using the much more easily attainable rated values instead of objective ones was taken for granted after the study of Morrison et al. (1997). These authors maintained that subjective ratings showed a *high* correlation with objective measures and were a valid and reliable reflection of the real word-learning age. They suggested that when direct measures were not available, adult ratings could be an adequate substitute. Their final recommendation was indeed to give preference to objective values, but if these were not available one could confidently use adult ratings instead. Since then, only three additional studies of objective AoA have been published on the basis of similar databases derived from Snodgrass and Vanderwart's (1980) pictures, for Icelandic (Pind et al., 2000), Spanish (Piñeiro & Manzano, 2000), and French (Chalard, Bonin, Méot, Boyer, & Fayol, 2003), and none for Italian.

In fact, our data warn against assuming that adult ratings are valid substitutes for direct child measures. In the present study, our direct data are more correlated with Morrison et al.'s (1997) objective data than with Nisi et al.'s (2000) data, and Morrison et al.'s data are also less well correlated with the values provided by Nisi et al. The most interesting point, however, concerns the relationships between AoA estimates, frequency, and familiarity. The values obtained in our study and from Morrison et al.'s data were moderately correlated with frequency and familiarity (ranging from .297 to $-.485$), but Nisi et al.'s AoA data, derived from adult ratings, showed definitely higher correlations with frequency ($-.742$) and familiarity ($-.628$). This throws into question the validity of adult indices: In fact, the correlation between Nisi et al.'s data and our directly estimated PoA index ($-.631$) was lower than the correlation of Nisi et al.'s index with frequency ($-.742$) and equal to its correlation with familiarity ($-.628$). This outcome strongly suggests that when adults try to remember at what age they learned a word, they are substantially influenced by the actual frequency and familiarity of the stimulus, whereas the real AoA remains in the background.

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ARCHIVED MATERIALS

The following materials associated with this article may be accessed through the Psychonomic Society's Norms, Stimuli, and Data archive, www.psychonomic.org/archive/.

To access these files, search the archive for this article using the journal (*Behavior Research Methods*), the first author's name (Barbarotto), and the publication year (2005).

FILE: Barbarotto-BRM-2005.zip

DESCRIPTION: The compressed archive file contains two files:

Barbarotto-Description-and-Data.doc, a description of the three age-of-acquisition indices and demographic data about the sample and age of acquisition for each index (PoA index has separate values for boys and girls).

Barbarotto-Description-and-Data.txt, a plain-text version of the first file, which can be opened using a text editor or spreadsheet program.

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APPENDIX

Acquisition Indices, Values, or Estimates for Each Stimulus*

English Name (From Morrison et al., 1997)	PoA (%)			AoA-75% (months)	LRE (months)	Italian Name
	Overall	M	F			
accordion	21.29	23.16	19.63	>69 (43)	92	fisarmonica
aeroplane	92.08	93.68	90.65	36.5	35	aeroplano
apple	87.13	87.37	86.92	48.5	36	mela
arm	69.80	65.26	73.83	60.5	53	braccio
artichoke	16.34	18.95	14.02	>69 (36)	89	carciofo
asparagus	9.41	12.63	6.54	>69 (21)	108	asparago
axe	7.92	11.58	4.67	>69 (7)	n.a.	scure
banana	96.53	97.89	95.33	<34 (92)	25	banana
bed	99.01	100.00	98.13	<34 (100)	n.a.	letto
bell	68.81	66.32	71.03	54.5	52	campana
bicycle	99.01	100.00	98.13	<34 (100)	n.a.	bicicletta
bus	75.74	84.21	68.22	48.5	49	autobus
butterfly	98.02	97.89	98.13	<34 (96)	21	farfalla
camel	80.69	84.21	77.57	48.5	45	cammello
car	99.01	98.95	99.07	<34 (96)	32	automobile
carrot	93.56	94.74	92.52	<34 (76)	36	carota
caterpillar	44.55	45.26	43.93	>69 (57)	70	bruco
celery	6.44	2.11	10.28	>69 (0)	n.a.	sedano
chair	99.50	98.95	100.00	<34 (96)	29	sedia
cherry	57.92	63.16	53.27	>69 (71)	61	ciliegia
chisel	0.50	0.00	0.93	>69 (0)	n.a.	scalpello
corn	47.52	50.53	44.86	>69 (64)	62	pannocchia
cow	85.64	86.32	85.05	42.5	39	mucca
desk	9.41	9.47	9.35	>69 (21)	94	scrivania
dresser	13.37	13.68	13.08	>69 (14)	117	cassettone
drum	86.63	90.53	83.18	42.5	42	tamburo
ear	62.38	64.21	60.75	60.5	55	orecchio
eye	98.51	96.84	100.00	<34 (88)	32	occhio
finger	86.63	83.16	89.72	<34 (80)	33	dito
flute	10.40	12.63	8.41	>69 (29)	84	flauto
foot	96.04	95.79	96.26	<34 (88)	34	piede
French horn	51.49	52.63	50.47	>69 (57)	71	corno
frog	92.08	90.53	93.46	<34 (80)	34	rana
giraffe	89.60	91.58	87.85	42.5	40	giraffa
grapes	83.17	85.26	81.31	48.5	41	uva
guitar	85.64	89.47	82.24	<34 (80)	38	chitarra
hair	25.74	24.21	27.10	>69 (71)	79	capelli
hammer	85.15	86.32	84.11	48.5	42	martello
hand	99.01	98.95	99.07	<34 (96)	n.a.	mano
harp	6.93	9.47	4.67	>69 (14)	n.a.	arpa
helicopter	77.23	87.37	68.22	48.5	48	elicottero

APPENDIX (Continued)

English Name (From Morrison et al., 1997)	PoA (%)			AoA-75% (months)	LRE (months)	Italian Name
	Overall	M	F			
lamp	62.38	65.26	59.81	66.5	58	lampada
leg	86.14	81.05	90.65	48.5	41	gamba
lemon	83.17	83.16	83.18	42.5	39	limone
lettuce	58.91	58.95	58.88	66.5	72	insalata
lips	63.37	53.68	71.96	60.5	59	labbra
motorbike	95.05	98.95	91.59	<34 (96)	n.a.	motocicletta
mouse	91.58	89.47	93.46	42.5	39	topo
mushroom	78.22	76.84	79.44	48.5	47	fungo
nail	32.18	42.11	23.36	>69 (57)	71	chiodo
nose	27.23	26.32	28.04	>69 (71)	69	naso
onion	50.50	48.42	52.34	66.5	71	cipolla
orange	75.74	70.53	80.37	48.5	48	arancia
ostrich	40.10	47.37	33.64	>69 (43)	65	struzzo
pear	91.58	90.53	92.52	<34 (80)	34	pera
pepper	49.50	44.21	54.21	>69 (71)	68	peperone
piano	55.45	57.89	53.27	>69 (64)	63	pianoforte
pineapple	45.54	49.47	42.06	>69 (71)	68	ananas
pliers	35.15	46.32	25.23	>69 (50)	n.a.	pinza
rocking chair	73.27	73.68	72.90	48.5	49	sedia a dondolo
rooster	85.64	84.21	86.92	48.5	41	gallo
sailboat	79.21	81.05	77.57	54.5	46	barca a vela
saw	44.55	52.63	37.38	>69 (50)	67	sega
scissors	98.02	97.89	98.13	<34 (92)	33	forbici
screw	27.72	33.68	22.43	>69 (43)	107	vite
screwdriver	59.41	65.26	54.21	66.5	60	cacciavite
sledge	54.46	62.11	47.66	60.5	59	slitta
sofa	86.14	84.21	87.85	42.5	42	divano
spanner	15.84	25.26	7.48	>69 (36)	71	chiave inglese
stool	41.09	33.68	47.66	>69 (71)	83	sgabello
strawberry	80.20	78.95	81.31	48.5	46	fragola
swan	53.47	48.42	57.94	>69 (57)	67	cigno
table	68.32	70.53	66.36	54.5	58	tavolo
tomato	76.24	73.68	78.50	48.5	49	pomodoro
train	88.61	92.63	85.05	<34 (84)	35	treno
truck	90.59	92.63	88.79	<34 (80)	33	camion
trumpet	73.76	76.84	71.03	54.5	50	tromba
vase	59.90	53.68	65.42	60.5	58	vaso
violin	13.86	17.89	10.28	>69 (7)	n.a.	violino
watermelon	58.42	62.11	55.14	66.5	61	anguria

Note—PoA, precocity of acquisition; M, males; F, females; AoA-75%, age of acquisition values following the 75% rule [if naming performance did not reach 75% in the highest age group (64–69), or if naming success was already 75% or more in the lowest age group, the percentage of correct responses in the respective age group is indicated in parentheses]; LRE, logistic regression estimate; n.a., not available (the estimate yielded $p > .10$). *See text for details.

(Manuscript received September 8, 2004;
accepted for publication January 6, 2005.)