



| | |
|-----------------------------|---|
| Title | Relationship between naming accuracy and age of acquisition and object familiarity |
| Other Contributor(s) | University of Hong Kong |
| Author(s) | Yiu, Oi-yan, Charen |
| Citation | |
| Issued Date | 2005 |
| URL | http://hdl.handle.net/10722/56221 |
| Rights | Creative Commons: Attribution 3.0 Hong Kong License |

Relationship between Naming Accuracy and Age of Acquisition and Object Familiarity

Charen Yiu Oi Yan

A dissertation submitted in partial fulfilment of the requirements for the Bachelor of Science (Speech and Hearing Sciences), The University of Hong Kong, April 30, 2005.

Abstract

Age of acquisition and object familiarity have been found to affect normal and aphasic naming processes. The present study collected age of acquisition and object familiarity ratings of the Snodgrass and Vanderwart (1980) picture set from 60 native Cantonese speakers. Significant correlations were found between each of the ratings and normal naming accuracy. Effects of age on age of acquisition and object familiarity ratings were also present. The elderly group rated both ratings significantly higher than the young adult group. Further analysis found that age of acquisition was the only valid predictor of normal naming accuracy. The influence of age of acquisition on the naming processes should be taken into consideration when choosing assessment and intervention materials for aphasic patients.

Relationship between Naming Accuracy and Age of Acquisition and Object Familiarity

Normal and aphasic confrontation naming abilities and psycholinguistics variables that affected them have been studied in various languages such as British English (Barry, Morrison, & Ellis, 1997; Ellis & Morrison, 1998; Hodgson & Ellis, 1998; Morrison, Chappell, & Ellis, 1997; Nickels & Howard, 1995), Cantonese (Law & Yip, 2004), French (Bonin, Peereman, Malardier, Méot, & Chalard, 2003), Icelandic (Pind & Tryggvadóttir, 2002), and Spanish (Cuetos, Aguado, Izura, & Ellis, 2002; Cuetos, Ellis, & Alvarez, 1999; Sanfeliu & Fernandez, 1996). Several variables have been identified to associate with both normal and aphasic naming performances. These variables included subjective and objective age of acquisition, word frequency, name agreement, visual complexity, imageability, object familiarity, and word length (in phonemes or in syllable).

Significant correlations were found between these variables and naming latency (Bonin, et al., 2003; Cuetos, et al., 1999; Morrison, et al., 1997; Pind & Tryggvadóttir, 2002) as well as between these variables and naming accuracy of aphasic patients (Lambon Ralph, Graham, Ellis, & Hodges, 1998; Nickels & Howard, 1995). However, intercorrelations between these variables were also significant. Hodgson and Ellis (1998) suggested that these variables might not have actual contribution to the confrontation naming processes. Instead, they may only correlate with factors that have genuine effects on naming. Thus, efforts have been made to identify factors that have independent effects on the naming processes.

Age of acquisition is the age at which a word is first acquired. It has been found to be a chief determinant of naming latency. Early acquired words are named within a shorter period of time than words that acquired later in life. Carroll and White (1973a) compared the effects of word frequency and age of acquisition on naming latency of university students. The subjective age of acquisition ratings, which were collected by asking participants to rate their age of acquisition of each stimulus, were used. They found that age of acquisition contributed

to naming latency significantly and concluded that age of acquisition was a relevant predictor of naming latency. The finding was replicated by Morrison, Ellis, and Quinlan (1992) who carried out a similar study. While the validity of the subjective age of acquisition ratings was questioned, objective ratings which are direct measures of children's word learning age were obtained. Significant correlation was found between subjective and objective age of acquisition (Carroll & White, 1973a; Gilhooly, & Gilhooly, 1980; Morrison et al., 1997). Moreover, objective age of acquisition ratings, like its subjective counterpart, were found to contribute significantly to naming latency of university students (Ellis & Morrison, 1998). The influence of age of acquisition on aphasic naming accuracy has been studied as well. Rochford and Williams (1962) asked thirty-two aphasic patients and one hundred and twenty children at age two to eleven to name a set of picture. Words that acquired at younger age were retrieved better by their aphasic patients. The result was replicated by various studies (Cuetos et al., 2002; Hirsh & Ellis, 1994; Hirsh & Funnell, 1995; Lambon Ralph et al., 1998) showing the independent effect of age of acquisition on aphasic naming accuracy.

Hirsh and Funnell (1995) also found an independent effect of object familiarity in their progressive aphasic patient. Object familiarity is defined as "the degree to which a person thinks about or comes into contact with a concept" (Snodgrass & Vanderwart, 1980, p.183). Familiar objects are named with higher accuracy than those that were rarely seen. Similar results were obtained by Lambon Ralph et al. (1998) and Cuetos et al. (2002). Object familiarity, like age of acquisition, also has independent effect on naming latency. Cuetos et al. (1999) showed that familiar objects were named faster by undergraduate students.

To summarize, age of acquisition and object familiarity have been found to affect naming accuracy of aphasic patients and naming latency of normal subjects. Although extensive works have been carried out to show the influences of age of acquisition and object familiarity on naming, relevant study is not available in Cantonese. The present study aimed

at examining the relationships between naming accuracy and age of acquisition and object familiarity in Cantonese. To ensure that the finding of this study would be comparable to similar studies carried out in other languages, the Snodgrass and Vanderwart (1980) picture set was chosen as the stimuli. Participants would be recruited from a wider age range in order to provide age of acquisition and object familiarity ratings which are more representative of the adult population.

The present study, firstly, targeted at finding the relationship between subjective age of acquisition and naming accuracy, and that between object familiarity and naming accuracy. With numerous studies showing relationships among normal naming latency, age of acquisition, and object familiarity, correlations between naming accuracy and age of acquisition as well as between naming accuracy and object familiarity were found in Hodgson and Ellis (1998) only. Based on Hodgson and Ellis (1998), it was predicted that naming accuracy would correlate significantly with the age of acquisition and object familiarity ratings.

Secondly, the present study would find out the relationship between age of acquisition and object familiarity. Intercorrelation between age of acquisition and object familiarity has been found in some studies (Hodgson & Ellis, 1998; Morrison et al. 1997; Snodgrass & Vanderwart, 1980). As stated before, evidence of an independent effect was needed to conclude that a factor has genuine effect on naming especially with the presence of intercorrelations between variables. If a significant correlation between age of acquisition and object familiarity is present, correlation between naming accuracy and age of acquisition and that between naming accuracy and object familiarity should be treated with caution.

Thirdly, this study would investigate the relationship between subjective and objective age of acquisition. Significant correlation between subjective and objective age of acquisition

has been showed in previous studies (Carroll & White, 1973a; Gilhooly, & Gilhooly, 1980; Morrison et al., 1997). It was predicted that similar result could be obtained in Cantonese.

Fourthly, the present study would find out if age of acquisition rating of the same object differs significantly in participants at different ages or education levels. Carroll and White (1973b) suggested that age of acquisition rating of an object would differ across time due to social and cultural changes. Morrison et al. (1997) provided evidence for Carroll and White (1973b) 's suggestion by showing the word "microwave" acquired early in children but it was rated relatively late by adults. While Morrison et al. and Bird, Franklin, and Howard (2001) provided examples of a relatively small number of words, the entire set of Snodgrass and Vanderwart (1980) picture would be used to compare the age of acquisition ratings of different groups of participant. It was predicted that age of acquisition would differ significantly between age groups. However, education level would not affect the ratings because most of the pictures depict daily objects that could be learned without schooling.

Finally, comparison would be made between object familiarity rating of the same object obtained from participants at different ages and having different education level. Poon and Fozard (1978, as cited in Hodgson and Ellis, 1998) showed that the elderly and young adults responded to objects with different familiarity differently. They found that the elderly needed shorter time to retrieve dated objects while the young adult group had shorter naming latency in naming contemporary objects. It is likely that dated objects are more familiar to the elderly but unfamiliar to young adults and the contemporary objects are relatively familiar to the young adults. It was predicted that age but not education level would affect object familiarity ratings as suggested in Poon and Fozard (1978, as cited in Hodgson & Ellis, 1998). Similar to age of acquisition, education level may not affect object familiarity ratings because most of the stimuli are objects that would be encountered in everyday situation.

Method

Participants

Sixty native Cantonese speakers (30 males and 30 females) were recruited in Hong Kong. They were divided into three age groups (young: 20-39 years, middle: 40-59 years, and elderly: 60 years above), and two education levels (0-14 years of education and above 14 years of education). Table 1 shows the mean age and mean number of years of education of the participants.

*Table 1**Mean Age and Mean Number of Years of Education of the Participants*

| Age | Education | Mean age in year (standard deviation) | Mean number of years of education (standard deviation) |
|-----------------|------------------|--|--|
| Young | Lower education | 29.8 (6.98) | 13.8 (0.63) |
| | Higher education | 27.0 (6.23) | 19.2 (1.31) |
| Middle- aged | Lower education | 46.6 (5.85) | 11.3 (2.16) |
| | Higher education | 46.5 (4.35) | 18.9 (1.37) |
| Elderly | Lower education | 73.3 (6.84) | 8.3 (3.71) |
| | Higher education | 70.6 (6.54) | 16.5 (2.41) |

Materials

All the 260 black-and-white Snodgrass and Vanderwart (1980) pictures were used in the study. Each of them was presented on an A4 paper. The rating scales of age of acquisition and object familiarity and the corresponding written instructions were presented on an A3 paper (see Appendix A).

Procedure

Each participant attended an approximately ninety-minute session in a quiet environment. Before the session began, four black-and-white line drawings were presented one by one with the rating scales. The participants were asked to read the instructions and the ratings scales. Verbal explanation was given afterwards (Appendix A). Age of acquisition was rated using a seven-point scale with 2-year age band in each point on the scale (1: 0-2 years, 7: 13 or above). Object familiarity was rated using a five-point scale which ran from 1: unfamiliar (rarely encountered), to 5: highly familiar (encountered nearly everyday). After the participant was familiarized with the scales by rating the four pictures for practice, the session began. The Snodgrass and Vanderwart (1980) picture set was presented in either forward or backward sequence. Participants were required to rate the age of acquisition and the object familiarity of each picture at the same time. They could either tell or point to the number on the rating scales to indicate their ratings. The ratings were recorded immediately. Pictures that the participants failed to recognize were left out. A five to ten- minute rest was given upon request.

Data analysis

Reliability of object familiarity ratings were obtained by correlating the data obtained from the present study to that from Law and Yip (2004) using Pearson correlation. Law and Yip (2004) obtained naming accuracy, object familiarity ratings and normative data of other psycholinguistics variables from sixty Cantonese native speakers who were divided into three age groups and two education levels similar to that in the present studies. The significant positive correlation ($r= 0.48$, $p< 0.001$) suggested that ratings were reliable.

Normal naming accuracy data of the Snodgrass and Vanderwart (1980) picture set were also obtained from Law and Yip (2004). Pearson correlation was used to study the relationship between naming accuracy and subjective age of acquisition as well as that

between naming accuracy and object familiarity. Pearson correlation was used to show the relationship between subjective and objective age of acquisition as well. The objective age of acquisition ratings were obtained from The Hong Kong Corpus of primary School Chinese (Leung, & Lee, 2002). The modal name of each Snodgrass and Vanderwart (1980) picture obtained from Law and Yip (2004) was looked up in the corpus. The grade at which a modal name first appeared in the corpus was found and was coded under the same scale of the subjective rating. As only primary school data were available in the corpus, the objective age of acquisition ratings obtained were between six-year-old and twelve-year-old. It was equivalent to point-three to point- six on the subjective rating scale.

The effects of age and education level on the age of acquisition and object familiarity ratings were examined using two- way ANOVA. Post-hoc analysis would be carried out if there is a main effect of age on age of acquisition or object familiarity and/or interaction effect.

Results

The subjective age of acquisition and object familiarity ratings of each picture in the Snodgrass and Vanderwart picture set collected from the sixty participants and the naming accuracy of the same picture set obtained from Law and Yip (2004) are presented in Appendix B. As some of the modal names were not available in The Hong Kong Corpus of primary School Chinese (Leung & Lee, 2002), only 160 objective age of acquisition ratings are presented in Appendix B. The correlation between subjective and objective age of acquisition, thus, was obtained based on 160 items only.

Pearson product-moment correlation coefficients were calculated to show the relationships among subjective age of acquisition, objective age of acquisition, object familiarity, and naming accuracy. The correlation results are presented in Table 2 along with the mean and standard deviation of each variable.

Table 2

Correlations among Subjective and Objective Age of Acquisition Ratings, Object Familiarity Ratings, and Naming Accuracy along with the Mean and Standard deviation of each variable

| Variables [Mean (SD)] | Naming accuracy (%) [92.98 (15.40)] | Object familiarity [3.63 (1.48)] | Subjective age of acquisition [3.51 (0.93)] | Objective age of acquisition [3.18 (0.48)] |
|----------------------------------|---|--|---|--|
| Naming accuracy | 1.00 | 0.43 [^] | -0.47 [^] | -0.17* |
| Object familiarity | | 1.00 | -0.71 [^] | -0.25** |
| Subjective age of acquisition | | | 1.00 | 0.31 [^] |

[^]p<0.001 ** p<0.05 * p<0.01 n=260 except objective age of acquisition with n=160

Both age of acquisition and object familiarity correlated significantly with naming accuracy. Negative correlation between age of acquisition and naming accuracy showed objects acquired later in life were named with lower accuracy. Naming accuracy also varied with the familiarity of an object. Positive correlation between object familiarity and naming accuracy showed that familiar objects were named with higher accuracy than unfamiliar ones.

Significant negative correlation between subjective age of acquisition and object familiarity was also found. It was consistent with previous studies (Hodgson & Ellis, 1998; Morrison et al. 1997; Snodgrass & Vanderwart, 1980). As the two variables intercorrelated with each other and each of them correlated with naming accuracy significantly, the implication of the correlation between naming accuracy and age of acquisition, and the correlation between naming accuracy and object familiarity will be discussed later.

Significant positive correlation between subjective and objective age of acquisition showed that the subjective ratings were consistent with its objective counterpart.

Effects of age and education on subjective age of acquisition and that on object familiarity ratings were analyzed with two-way analysis of variance (ANOVA, age \times education). The mean subjective age of acquisition and object familiarity ratings of the six groups of participant are presented in Table 3.

Table 3

Means (and Standard Deviations) of Age of Acquisition and Object Familiarity Ratings of Each Group of Participant

| Variables | Education | Age | | |
|----------------------------------|-------------|------------|------------|-------------|
| | | 20-39 | 40-59 | 60 or above |
| Subjective age of acquisition | <i>High</i> | 3.25(1.17) | 3.43(1.32) | 3.92(1.77) |
| | <i>Low</i> | 3.22(1.07) | 3.91(1.44) | 4.08(1.49) |
| Object familiarity | <i>High</i> | 3.33(0.81) | 3.59(0.86) | 3.73(0.76) |
| | <i>Low</i> | 3.29(0.88) | 3.37(1.08) | 3.79(0.71) |

A significant main effect of age on subjective age of acquisition [$F(2, 54) = 3.77, p < 0.05$] was found. The Sheffe's test revealed that the overall mean of the age of acquisition ratings of the elderly group (60 or above) was significantly higher than that of the young adult group (20-39 years) ($p < 0.05$). Main effect of education level and interaction effect were not present.

A similar pattern of results was obtained for the effects of age and education on object familiarity. Age had a significant main effect on the object familiarity ratings [$F(2, 54) = 5.53, p < 0.05$] while education level did not. The Sheffe's test showed that the overall mean of the object familiarity ratings of the elderly group (60 or above) was higher than that of the young adult group (20-39 years) ($p < 0.05$). No interaction effect was found.

To summarize, naming accuracy was found to vary with age of acquisition as well as object familiarity. Early acquired words and familiar objects were named with higher accuracy while unfamiliar objects and late acquired words were less likely to be accurately named. Consistent with previous studies, significant correlations between age of acquisition and object familiarity and between subjective and objective age of acquisition ratings were found. Furthermore, the elderly subjects rated both age of acquisition and object familiarity significantly higher than the young adult group.

Discussion

The present study examined relationships among age of acquisition, object familiarity, and normal naming accuracy. Correlation between subjective and objective age of acquisition was also examined. Moreover, effects of age and education on age of acquisition and object familiarity ratings were investigated.

Significant correlations were found between age of acquisition and normal naming accuracy and between object familiarity and normal naming accuracy. The results were similar to that of Hodgson and Ellis (1998). They found correlations between naming accuracy and several psycholinguistics variables including age of acquisition and object familiarity. However, only independent effects of age of acquisition and naming agreement on naming accuracy were found in a regression analysis. The effect of object familiarity on normal naming accuracy was insignificant in their study even object familiarity correlated with normal naming accuracy. It was doubtful if object familiarity in the present study also has significant influence on normal naming accuracy when significant correlation between age of acquisition and object familiarity was obtained. Morrison et al. (1997) suggested that children acquired words earlier when they encountered that objects frequently. They found that object familiarity was one of the valid predictors of both subjective and objective age of acquisition. The effects of age of acquisition and object familiarity on normal naming

accuracy, therefore, would not be revealed by their significant correlations with normal naming accuracy alone. Further analysis was carried out to look for independent effects of subjective and objective age of acquisition and object familiarity on normal naming accuracy. The results of simultaneous multiple regression are presented in Table 4. Only subjective age of acquisition was a valid predictor of normal naming accuracy which was consistent with the result of Hodgson and Ellis (1998).

Table 4

Simultaneous Multiple Regression with Naming Accuracy as the Dependent Variable

| | Regression coefficients | Standard error | Standardized coefficients | t |
|----------------------------------|----------------------------|-------------------|------------------------------|--------|
| Subjective age of acquisition | -2.90 | 1.32 | -0.23 | -2.20* |
| Object familiarity | 1.40 | 1.31 | 0.11 | 1.07 |
| Objective age of acquisition | -1.76 | 1.78 | -0.08 | -0.99 |

* $p < 0.05$, $N = 160$, $R = 0.34$, $R^2 = 0.12$, $F(3, 156) = 6.80^*$

However, the effects of age of acquisition and object familiarity on normal naming accuracy are different from those on normal naming latency. Age of acquisition and object familiarity were found to contribute significantly to normal naming latency. Early acquired words are retrieved relatively faster because they are stored less fragmented than later acquired words in the phonological lexicon (Brown & Watson, 1987, in Ellis & Morrison, 1998). Familiar objects are named within a shorter period of time because they have richer semantic features that could speed up naming processing (Lambon Ralph et al., 1998). The difference between familiar and unfamiliar objects in the normal naming processing does not seem to play an important role in naming accuracy. However, independent effect of

subjective age of acquisition on normal naming accuracy was present. As mentioned above, age of acquisition was related to lexico-phonological processing (Hirsh & Funnell, 1995). According to Hodgson and Ellis (1995), difficulties in retrieving phonological representations of words appeared in all ages but would only be significant after seventy years old. They showed that retrieval difficulties were present in the elderly without any brain damage and could affect their naming accuracy significantly. It is probably because the time needed to retrieve the word exceeds the time limit in the naming task. Later acquired words might be more likely to be on the tip of tongue and their naming accuracy is relatively low. The objective ratings, however, failed to predict the naming accuracy because the number and range of ratings were reduced.

To summarize, both normal and aphasic naming performances are affected by age of acquisition and object familiarity. Effect of object familiarity was not found in the present study because naming accuracy is not as sensitive to the differences between the processing of familiar and unfamiliar objects as naming latency. Naming latency, rather than naming accuracy, is more relevant in showing the influence of psycholinguistics variables on normal naming performances.

As predicted, the effect of age was found on age of acquisition and object familiarity ratings with the elderly group's ratings significantly higher than that of the young adult group. The age of acquisition of around 80% of the objects were rated higher by the elderly than the young adult group in the present study. It may be because most of the objects were not available or easily accessible in the past. We were interested in seeing if age of acquisition ratings of some semantic categories are rated higher by the elderly as suggested in Bird et al. (2001). Further analysis was carried out. The 260 objects of the Snodgrass and Vanderwart (1980) picture set were categorized into seventeen categories (see Appendix C). Table 5 presents the age of acquisition ratings of different semantic categories of the elderly group

and that of young adults as well as the differences in ratings between them. The greatest difference was found in electric appliances and followed by transport and fruits. As electrical appliances are common only in recent decades, it is reasonable that the elderly acquired them much later in life. It was unexpected that the ratings of transport and fruit were much higher in the elderly. However, when looking at the objects included in the two categories, it was found that most of them such as cherry, strawberry, traffic light, and plane were not easily accessible fifty or sixty years before. The results showed that the age of acquisition rating of individual objects in a semantic category could differ greatly. Thus, it may not be possible to determine the age of acquisition ratings of one object based on its semantic category.

Moreover, age of acquisition ratings collected from university students alone may not be applicable to the elderly. Normative data of age of acquisition of a large set of words that are collected from participants at different ages is needed.

The effect of age was also found on the object familiarity ratings with the elderly group ratings higher than that of the young adult group. The result was not consistent with the suggestion that dated objects such as tools are more familiar to the elderly and contemporary objects such as electrical appliances are more familiar to young adults (see Table 6). When collecting the ratings, the experimenter observed that the elderly and the young adult groups viewed familiarity quite differently. The elderly rated familiarity based on the accessibility of an object while young adults rated it based on the number of times they really came into contact with the object. The elderly tended to rate vegetables, for example, more familiar because it could be found easily in a supermarket even the elderly did not go to the supermarket everyday. Moreover, as many objects in the Snodgrass and Vanderwart (1980) picture set are not available or commonly seen in the past, they are comparatively more familiar to the elderly nowadays. Although the object familiarity rating was found to be reliable, its validity especially that obtained from the elderly is doubtful.

Table 5

Mean Age of Acquisition Ratings of Each Semantic Category of the Young Adult Group and the Elderly Group and the Differences between them (mean ratings of the elderly minus mean ratings of the young adults group)

| Semantic categories (number of items) | Mean ratings of the young adult group (20-40 years) | Mean ratings of the elderly group (60 years or above) | Differences |
|--|---|---|-------------|
| Electrical appliances (5) | 2.76 | 5.21 | 2.45 |
| Vehicles and related (11) | 2.97 | 4.73 | 1.76 |
| Fruits (11) | 2.73 | 4.12 | 1.39 |
| Wild animals (32) | 3.71 | 4.93 | 1.22 |
| Toys and games (12) | 3.72 | 4.72 | 1.00 |
| Kitchen utensils (15) | 3.24 | 4.03 | 0.80 |
| Daily objects (33) | 3.03 | 3.77 | 0.74 |
| Furniture (10) | 2.59 | 3.26 | 0.67 |
| Others (31) | 3.78 | 4.38 | 0.60 |
| Musical instruments (10) | 4.39 | 4.99 | 0.60 |
| Clothing (25) | 3.14 | 3.68 | 0.54 |
| Body parts (12) | 1.68 | 2.09 | 0.41 |
| Natural environment (8) | 2.30 | 2.69 | 0.39 |
| Domestic animals (13) | 2.30 | 2.69 | 0.39 |
| Vegetables (13) | 3.78 | 4.13 | 0.35 |
| Insects (9) | 2.91 | 3.19 | 0.26 |
| Tools (10) | 4.42 | 4.28 | -0.14 |

Table 6

Mean Object Familiarity Ratings of Each Semantic Category of the Young Adult Group and the Elderly Group and the Differences between them (mean rating of the elderly minus mean ratings of the young adults group)

| Semantic categories (number of items) | Mean ratings of the young adult group (20-40 years) | Mean ratings of the elderly group (60 years or above) | Differences |
|--|---|---|-------------|
| Vegetables (13) | 3.04 | 4.13 | 1.09 |
| Vehicles and related (11) | 3.50 | 4.30 | 0.80 |
| Natural environment (8) | 3.96 | 4.68 | 0.72 |
| Clothing (25) | 3.68 | 4.36 | 0.68 |
| Others (31) | 2.68 | 3.23 | 0.55 |
| Musical instruments (10) | 2.32 | 2.86 | 0.54 |
| Fruits (11) | 3.69 | 4.20 | 0.51 |
| Toys and games (12) | 2.68 | 3.16 | 0.48 |
| Daily objects (33) | 3.84 | 4.26 | 0.42 |
| Furniture (10) | 4.16 | 4.53 | 0.37 |
| Electrical appliances (5) | 3.98 | 4.32 | 0.34 |
| Kitchen utensils (15) | 3.87 | 4.20 | 0.33 |
| Tools (10) | 2.99 | 3.30 | 0.31 |
| Wild animals (32) | 2.32 | 2.53 | 0.21 |
| Body parts (12) | 4.76 | 4.97 | 0.21 |
| Domestic animals (13) | 3.58 | 3.68 | 0.10 |
| Insects (9) | 2.89 | 2.88 | -0.01 |

Clinical implications

Based on the present findings, it is recommended that age of acquisition should be taken into consideration when choosing stimuli for assessment and treatment for aphasic patients. While it usually takes more than an hour for a patient to name the entire set of Snodgrass and Vanderwart (1980) picture, the effect of age of acquisition on one's naming performance can be showed by asking patients to name a few pictures selected from the set. Pictures of different age of acquisition should be included. However, choosing materials based on semantic category is not recommended. When choosing stimuli for intervention, it will be better to consider the client's age as well. It is because words that are acquired early by younger individuals may not necessarily be acquired early by the elderly. Early acquired words are recommended to be introduced first and followed by later acquired words. The age of acquisition ratings collected in the present study can be used as a reference in choosing appropriate stimuli.

Further study

Hodgson and Ellis (1998) found an independent effect of age of acquisition on naming accuracy of the elderly only. The present study, however, showed the effect of age of acquisition on the general naming accuracy of participants across ages. Differences of naming accuracy in age were not considered. Correlations between the age of acquisition and normal naming accuracy are recommended to obtain for each age group. The study can show that if age of acquisition of particular age group correlates better with naming accuracy collected from participants at the same age. The result may be able to provide further evidence of applying age of acquisition ratings in assessment and intervention based on the patient's age.

Independent effects of age of acquisition and object familiarity were found on aphasic naming (Cuetos et al., 2002; Hirsh & Funnell, 1995). As it has been suggested that age of

acquisition affects lexico-phonological processing and object familiarity affects semantic processing (Hirsh & Funnell, 1995), further study is recommended to investigate the effects of age of acquisition and object familiarity on the types of naming error made by aphasic patients. The result can help to identify specific processing within the confrontation naming process which age of acquisition and object familiarity contribute most significantly.

Acknowledgements

I would like to thank Dr. Law Sam Po for her valuable advice and kind guidance. Thanks also to all participants who voluntarily participated in this study.

References

- Barry, C., Morrison, C.M., & Ellis, A.W. (1997). Naming the Snodgrass and Vanderwart pictures: Effects of age of acquisition, frequency, and name agreement. *The Quarterly Journal of Experimental Psychology*, 50A, 560- 585.
- Bird, H., Franklin, S., & Howard, D. (2001). Age of acquisition and imageability ratings for a large set of words, including verbs and function words. *Behavior Research Methods, Instruments, and Computers*, 33, 73-79.
- Bonin, P., Peereman, R., Malardier, N., Méot, A. & Chalard, M. (2003). A new set of 299 pictures for psycholinguistic studies: French norms for name agreement, image agreement, conceptual familiarity, visual complexity, image variability, age of acquisition, and naming latencies. *Behavior Research Methods, Instruments, and Computers*, 35, 158-167.
- Carroll, J.B. & White, M.N. (1973a). Word frequency and age of acquisition as determiners of picture-naming latency. *Quarterly Journal of Experimental Psychology*, 25, 85-95.
- Carroll, J.B., & White, M.N. (1973b). Age-of-acquisition norms for 220 picturable nouns. *Journal of Verbal Learning and Verbal Behavior*, 12, 563-576.
- Cuetos, F., Aguado, G., Izura, C., & Ellis, A.W. (2002). Aphasie naming in Spanish: predictors and errors. *Brain and Language*, 82, 344-365.
- Cuetos, F., Ellis, A.W., & Alvarez, B. (1999). Naming times for the Snodgrass and Vanderwart pictures in Spanish. *Behavior Research Methods, Instruments, and Computers*, 31, 650-658.
- Ellis, A. W. & Morrison, C.M. (1998). Real age-of-acquisition effects in lexical retrieval. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24, 515-523.
- Gilhooly, K.J., & Gilhooly, M.L.M. (1980). The validity of age-of-acquisition ratings. *British Journal of Psychology*, 71, 105-110.

- Hirsh, K.W. & Ellis, A.W. (1994). Age of acquisition and lexical processing in aphasia: a case study. *Cognitive neuropsychology*, *11*, 425-458.
- Hirsh, K. W. & Funnell, E. (1995). Those old, familiar things: age of acquisition and object familiarity and lexical access in progressive aphasia. *Journal of Neurolinguistics*, *9*, 23-32.
- Hodgson, C. & Ellis, A.W. (1998). Last in, First to go: Age of acquisition and naming in the elderly. *Brain and Language*, *64*, 146-163.
- Lambon Ralph, M. A., Graham, K.S., Ellis, A.W., & Hodges, J.R. (1998). Naming in semantic dementia- what matters? *Neuropsychologia*, *36*, 775-784.
- Law, S.-P., & Yip, J. T.-H. (2004). Normative data on picture naming and non-verbal semantic tests from Hong Kong Cantonese speakers. *Unpublished manuscript*.
- Leung, M.-T. & Lee, A. (2002). *The Hong Kong Corpus of primary School Chinese*. Paper presented at the 9th Meeting of the International Clinical Phonetics and Linguistics Association. Hong Kong.
- Morrison, C.M., Chappell, T.D., & Ellis, A.W. (1997). Age of acquisition norms for a large set of object names and their relation to adult estimates and other variables. *The Quarterly Journal of Experimental Psychology*, *50A*, 528 -559.
- Morrison, C.M., Ellis, A.W., & Quinlan, P.T. (1992). Age of acquisition, not word frequency, affects object naming, not object recognition. *Memory and Cognition*, *20*, 705-714.
- Nickels, L. & Howard, D. (1995). Aphasic naming: What matters? *Neuropsychologia*, *33*, 1281-1303.
- Pind, J. & Tryggvadóttir, H.B. (2002). Determinants of picture naming times in Icelandic. *Scandinavian Journal of Psychology*, *43*, 221-226.
- Rochford, G. & Williams, M. (1962). Studies in development and breakdown of the use of names Part I and II. *Journal of Neurology, Neurosurgery and Psychiatry*, *25*, 222-233.

- Sanfeliu, M.C., & Fernandez, A. (1996). A set of 254 Snodgrass-Vanderwart pictures standardized for Spanish: norms for name agreement, image agreement, familiarity, and visual complexity. *Behavior Research Methods, Instruments, and Computers*, 28, 537 - 555.
- Snodgrass, J. G. & Vanderwart, M. (1980). A standardized set of 260 pictures: norms for name agreement, image agreement, familiarity, and visual complexity. *Journal of Experimental psychology: Human Learning and Memory*, 6, 174-215.

Appendix A

Rating scale of age of acquisition

請選出你首次接觸以上物件之名稱的年紀



Rating scale of object familiarity

請選出你對以上物件的熟悉程度
(日常接觸或聯想到次數)



Verbal instruction

我地依家睇 d 圖畫, 睇完每一張你就話俾我聽你幾時識圖畫裡面個物件個名, 同埋而家係日常生活中, 你有幾經常接觸或諗到圖中的物件。如果一歲你就識個物件個名就指零至兩歲, 三歲識佢個名就指三至到四歲, 如此類推。跟住就係下面指俾我睇你係日常生活中有幾經常見到, 接觸到或諗到依個物件。如果你成日接觸到就指經常, 如果唔係成日見到就指間中, 如果好少見到就指很少。如果你唔認得圖中的物件係乜就話俾我知唔知。

Now, we start to look at some pictures. After you take a look at each picture, please tell me when you acquired the name of that object and how frequent you will encounter that object at present. For example, if you could tell its name at one, you should point to the number one which represents age zero to two; if you know its name at three, you should point to number two which represents age three to four. After that, you need to tell me how frequent you will encounter or think of that object by pointing on the scale below. If you use it or think of it nearly everyday, please point to number five. If you rarely encounter or think about the object, please point to point two. If you do not recognize what is presented in the picture, just tell me you don't know.

Appendix B

| | English name | Modal name in Chinese | Naming accuracy (%) | Subjective age of acquisition | | Object familiarity | | Objective age of acquisition |
|--------|---------------|-----------------------|---------------------|-------------------------------|------|--------------------|------|------------------------------|
| | | | | M | SD | M | SD | |
| SVON1 | Accordion | 手風琴 | 61.7 | 5.47 | 1.48 | 2.18 | 0.79 | -- |
| SVON2 | Airplane | 飛機 | 100.0 | 3.18 | 1.58 | 4.00 | 1.06 | 3 |
| SVON3 | Alligator | 鱷魚 | 56.7 | 4.49 | 1.92 | 2.83 | 1.05 | 5 |
| SVON4 | Anchor | 船勾 | 58.3 | 4.84 | 1.69 | 2.46 | 0.87 | -- |
| SVON5 | Ant | 螞蟻 | 83.3 | 2.52 | 0.89 | 3.47 | 1.08 | 3 |
| SVON6 | Apple | 蘋果 | 100.0 | 2.58 | 1.69 | 4.40 | 0.85 | 3 |
| SVON7 | Arm | 手 | 100.0 | 1.75 | 0.86 | 4.92 | 0.33 | 3 |
| SVON8 | Arrow | 箭咀 | 100.0 | 3.52 | 1.55 | 4.05 | 1.08 | -- |
| SVON9 | Artichoke | 蔬菜 | 0.0 | 5.00 | 1.84 | 2.65 | 1.20 | 3 |
| SVON10 | Ashtray | 煙灰缸 | 68.3 | 3.95 | 1.81 | 3.55 | 1.25 | -- |
| SVON11 | Asparagus | 蘆筍 | 66.7 | 5.78 | 1.59 | 3.08 | 1.12 | 4 |
| SVON12 | Axe | 斧頭 | 100.0 | 3.72 | 1.52 | 2.58 | 0.93 | 4 |
| SVON13 | Baby carriage | BB車 | 90.0 | 4.15 | 2.02 | 3.70 | 1.12 | -- |
| SVON14 | Ball | 波 | 100.0 | 2.80 | 1.84 | 3.88 | 1.17 | 3 |
| SVON15 | Balloon | 氣球 | 100.0 | 2.85 | 1.76 | 3.77 | 1.13 | -- |
| SVON16 | Banana | 香蕉 | 100.0 | 2.23 | 0.89 | 4.27 | 0.94 | 3 |
| SVON17 | Barn | 屋 | 83.3 | 3.40 | 1.76 | 3.14 | 1.19 | 3 |
| SVON18 | Barrel | 桶 | 100.0 | 4.35 | 1.73 | 2.37 | 0.78 | 3 |
| SVON19 | Baseball bat | 雷球棒 | 81.7 | 5.10 | 1.55 | 2.53 | 0.79 | -- |
| SVON20 | Basket | 籃 | 100.0 | 3.88 | 1.60 | 2.78 | 1.03 | 3 |
| SVON21 | Bear | 熊 | 100.0 | 4.37 | 1.91 | 2.50 | 0.91 | 3 |
| SVON22 | Bed | 床 | 100.0 | 1.92 | 1.00 | 4.85 | 0.55 | -- |
| SVON23 | Bee | 蜜蜂 | 93.3 | 2.98 | 1.23 | 3.12 | 0.92 | 3 |
| SVON24 | Beetle | 甲蟲 | 86.7 | 3.51 | 1.42 | 2.54 | 0.78 | 3 |
| SVON25 | Bell | 鐘 | 100.0 | 3.15 | 1.41 | 3.08 | 1.01 | 3 |
| SVON26 | Belt | 皮帶 | 100.0 | 3.33 | 1.45 | 4.28 | 0.90 | -- |
| SVON27 | Bicycle | 單車 | 100.0 | 3.33 | 1.68 | 3.92 | 1.05 | 3 |
| SVON28 | Bird | 雀仔 | 100.0 | 2.20 | 0.82 | 4.22 | 0.98 | 3 |
| SVON29 | Blouse | 恤衫 | 100.0 | 2.77 | 1.45 | 4.48 | 0.89 | 4 |
| SVON30 | Book | 書 | 100.0 | 2.28 | 0.96 | 4.72 | 0.58 | 3 |
| SVON31 | Boot | 靴 | 75.0 | 3.65 | 1.95 | 4.32 | 0.98 | 4 |
| SVON32 | Bottle | 樽 | 100.0 | 2.83 | 1.24 | 4.12 | 0.85 | 3 |
| SVON33 | Bowtie | 蝴蝶結 | 80.0 | 3.55 | 1.72 | 3.28 | 1.24 | -- |
| SVON34 | Bowl | 碗 | 100.0 | 1.93 | 0.69 | 4.78 | 0.61 | 3 |
| SVON35 | Box | 盒 | 75.0 | 2.57 | 1.27 | 3.92 | 1.14 | 3 |
| SVON36 | Bread | 麵包 | 100.0 | 2.82 | 1.85 | 4.52 | 0.70 | -- |
| SVON37 | Broom | 掃把 | 100.0 | 2.82 | 1.24 | 4.25 | 0.99 | 4 |
| SVON38 | Brush | 刷 | 100.0 | 3.55 | 1.48 | 3.48 | 1.13 | 3 |
| SVON39 | Bus | 巴士 | 100.0 | 3.23 | 1.62 | 4.50 | 0.83 | -- |
| SVON40 | Butterfly | 蝴蝶 | 100.0 | 2.65 | 0.86 | 3.45 | 1.03 | 3 |

| | | | | | | | | |
|--------|-------------|-----|-------|------|------|------|------|----|
| SVON41 | Button | 鈕 | 100.0 | 2.97 | 1.46 | 4.40 | 0.92 | -- |
| SVON42 | Cake | 蛋糕 | 100.0 | 3.48 | 1.98 | 3.97 | 0.96 | 3 |
| SVON43 | Camel | 駱駝 | 83.3 | 4.67 | 1.64 | 2.33 | 0.86 | 4 |
| SVON44 | Candle | 蠟燭 | 100.0 | 2.87 | 1.03 | 3.08 | 0.96 | 3 |
| SVON45 | Cannon | 大炮 | 100.0 | 4.92 | 1.67 | 2.25 | 0.88 | 5 |
| SVON46 | Cap | 帽 | 93.3 | 3.22 | 1.61 | 3.43 | 1.27 | 3 |
| SVON47 | Car | 私家車 | 100.0 | 3.28 | 1.90 | 4.43 | 0.91 | 3 |
| SVON48 | Carrot | 紅蘿蔔 | 100.0 | 3.52 | 1.58 | 3.80 | 1.05 | -- |
| SVON49 | Cat | 貓 | 100.0 | 2.27 | 0.99 | 3.90 | 0.97 | 3 |
| SVON50 | Caterpillar | 毛蟲 | 100.0 | 3.37 | 1.13 | 2.47 | 0.79 | 3 |
| SVON51 | Celery | 西芹 | 100.0 | 4.23 | 1.84 | 3.77 | 1.00 | 3 |
| SVON52 | Chain | 鎖鏈 | 100.0 | 3.98 | 1.66 | 3.19 | 1.14 | 5 |
| SVON53 | Chair | 凳 | 100.0 | 2.18 | 0.98 | 4.68 | 0.68 | 3 |
| SVON54 | Cherry | 車厘子 | 90.0 | 4.85 | 1.85 | 3.77 | 1.09 | -- |
| SVON55 | Chicken | 雞 | 100.0 | 2.33 | 0.90 | 3.98 | 1.03 | 3 |
| SVON56 | Chisel | 鑿 | 100.0 | 5.21 | 1.85 | 2.57 | 0.96 | 4 |
| SVON57 | Church | 教堂 | 100.0 | 4.60 | 1.79 | 3.33 | 1.31 | 3 |
| SVON58 | Cigar | 雪茄 | 100.0 | 5.42 | 1.82 | 2.02 | 0.72 | -- |
| SVON59 | Cigarette | 煙 | 100.0 | 3.35 | 1.71 | 3.83 | 1.26 | -- |
| SVON60 | Clock | 鐘 | 100.0 | 3.00 | 1.37 | 4.72 | 0.69 | 3 |
| SVON61 | Clothespin | 衫夾 | 100.0 | 3.10 | 1.40 | 4.48 | 0.79 | -- |
| SVON62 | Cloud | 雲 | 100.0 | 2.72 | 1.22 | 4.45 | 1.00 | 3 |
| SVON63 | Clown | 小丑 | 100.0 | 4.52 | 1.71 | 2.55 | 0.87 | -- |
| SVON64 | Coat | 褸 | 100.0 | 4.00 | 1.85 | 3.85 | 1.02 | 3 |
| SVON65 | Comb | 梳 | 100.0 | 2.68 | 1.19 | 4.50 | 0.87 | 3 |
| SVON66 | Corn | 粟米 | 100.0 | 3.23 | 1.36 | 4.05 | 0.98 | -- |
| SVON67 | Couch | 梳化 | 100.0 | 3.52 | 1.94 | 4.75 | 0.57 | 3 |
| SVON68 | Cow | 牛 | 100.0 | 2.80 | 1.39 | 2.88 | 0.87 | 3 |
| SVON69 | Crown | 皇冠 | 100.0 | 4.55 | 1.89 | 2.20 | 0.86 | -- |
| SVON70 | Cup | 杯 | 100.0 | 2.32 | 1.11 | 4.63 | 0.78 | 3 |
| SVON71 | Deer | 鹿 | 100.0 | 4.18 | 1.61 | 2.33 | 0.75 | 3 |
| SVON72 | Desk | 檯 | 100.0 | 3.50 | 1.72 | 4.27 | 0.94 | 3 |
| SVON73 | Dog | 狗 | 100.0 | 2.15 | 0.86 | 4.42 | 0.85 | 3 |
| SVON74 | Doll | 洋娃娃 | 61.7 | 2.37 | 1.23 | 3.92 | 1.21 | -- |
| SVON75 | Donkey | 驢 | 100.0 | 4.05 | 1.76 | 2.58 | 1.07 | 3 |
| SVON76 | Door | 門 | 100.0 | 2.17 | 0.92 | 4.83 | 0.53 | 3 |
| SVON77 | Doorknob | 門鎖 | 95.0 | 3.75 | 1.84 | 4.68 | 0.75 | -- |
| SVON78 | Dress | 裙 | 100.0 | 3.17 | 1.52 | 3.95 | 1.17 | 3 |
| SVON79 | Dresser | 櫃 | 100.0 | 3.38 | 1.57 | 4.28 | 0.96 | 3 |
| SVON80 | Drum | 鼓 | 100.0 | 3.97 | 1.62 | 2.80 | 1.00 | 3 |
| SVON81 | Duck | 鴨 | 73.3 | 2.67 | 1.08 | 3.48 | 2.61 | 3 |
| SVON82 | Eagle | 鷹 | 100.0 | 3.93 | 1.64 | 2.63 | 1.01 | 3 |
| SVON83 | Ear | 耳 | 100.0 | 1.88 | 1.08 | 4.70 | 0.72 | 3 |
| SVON84 | Elephant | 大笨象 | 100.0 | 3.38 | 1.46 | 2.78 | 0.92 | 3 |

| | | | | | | | | |
|---------|-----------------|-----|-------|------|------|------|------|----|
| SVON85 | Envelope | 信封 | 100.0 | 3.85 | 1.52 | 4.03 | 0.96 | 3 |
| SVON86 | Eye | 眼睛 | 100.0 | 1.72 | 0.83 | 4.82 | 0.50 | 3 |
| SVON87 | Fence | 欄杆 | 100.0 | 3.80 | 1.45 | 3.63 | 4.25 | -- |
| SVON88 | Finger | 手指 | 100.0 | 1.77 | 0.83 | 4.85 | 0.55 | -- |
| SVON89 | Fish | 魚 | 100.0 | 1.98 | 0.83 | 4.43 | 0.85 | 3 |
| SVON90 | Flag | 旗 | 78.3 | 3.22 | 1.24 | 3.33 | 1.14 | -- |
| SVON91 | Flower | 花 | 100.0 | 2.18 | 0.89 | 4.20 | 0.94 | 3 |
| SVON92 | Flute | 笛 | 70.0 | 5.66 | 1.53 | 2.23 | 0.83 | -- |
| SVON93 | Fly | 烏蠅 | 88.3 | 2.62 | 0.96 | 3.45 | 1.10 | 3 |
| SVON94 | Foot | 腳 | 93.3 | 1.63 | 0.71 | 4.82 | 0.50 | 3 |
| SVON95 | Football | 欖球 | 65.0 | 5.78 | 1.50 | 2.17 | 0.67 | -- |
| SVON96 | Football helmet | 頭盔 | 100.0 | 5.85 | 1.37 | 2.59 | 1.21 | -- |
| SVON97 | Fork | 叉 | 100.0 | 2.93 | 1.56 | 4.57 | 0.77 | 3 |
| SVON98 | Fox | 狐狸 | 88.3 | 4.12 | 1.67 | 2.25 | 0.95 | 4 |
| SVON99 | French Horn | 法國號 | 51.7 | 5.14 | 1.94 | 2.28 | 0.93 | -- |
| SVON100 | Frog | 青蛙 | 95.0 | 3.07 | 1.25 | 2.82 | 1.02 | 3 |
| SVON101 | Frying pan | 平底鑊 | 100.0 | 4.80 | 1.75 | 3.72 | 1.18 | -- |
| SVON102 | Garbage can | 垃圾桶 | 100.0 | 3.47 | 1.67 | 4.60 | 0.74 | -- |
| SVON103 | Giraffe | 長頸鹿 | 100.0 | 3.93 | 1.64 | 2.48 | 0.87 | -- |
| SVON104 | Glass | 玻璃杯 | 100.0 | 2.35 | 1.02 | 4.62 | 0.72 | -- |
| SVON105 | Glasses | 眼鏡 | 100.0 | 3.38 | 1.56 | 4.55 | 0.87 | 3 |
| SVON106 | Glove | 手套 | 100.0 | 3.45 | 1.58 | 3.78 | 1.17 | -- |
| SVON107 | Goat | 山羊 | 100.0 | 3.73 | 1.35 | 2.47 | 0.79 | 3 |
| SVON108 | Gorilla | 猩猩 | 81.7 | 4.35 | 1.69 | 2.33 | 0.80 | 3 |
| SVON109 | Grapes | 提子 | 100.0 | 3.13 | 1.55 | 4.08 | 0.94 | 3 |
| SVON110 | Grasshopper | 草蜢 | 78.3 | 3.44 | 1.18 | 2.56 | 0.84 | 5 |
| SVON111 | Guitar | 吉他 | 91.7 | 4.70 | 1.79 | 3.07 | 1.13 | -- |
| SVON112 | Gun | 槍 | 100.0 | 3.42 | 1.37 | 2.69 | 1.13 | 3 |
| SVON113 | Hair | 頭髮 | 80.0 | 2.02 | 1.07 | 4.63 | 0.86 | 3 |
| SVON114 | Hammer | 鎚 | 100.0 | 3.58 | 1.66 | 3.48 | 1.11 | 5 |
| SVON115 | Hand | 手 | 100.0 | 1.73 | 0.99 | 4.92 | 0.28 | 3 |
| SVON116 | Hanger | 衣架 | 100.0 | 3.17 | 1.46 | 4.52 | 0.79 | -- |
| SVON117 | Harp | 豎琴 | 68.3 | 5.75 | 1.72 | 2.00 | 0.90 | -- |
| SVON118 | Hat | 帽 | 95.0 | 3.02 | 1.42 | 3.05 | 1.10 | 3 |
| SVON119 | Heart | 心形 | 100.0 | 3.48 | 1.67 | 3.95 | 0.95 | -- |
| SVON120 | Helicopter | 直昇機 | 100.0 | 4.53 | 1.73 | 3.17 | 1.08 | -- |
| SVON121 | Horse | 馬 | 100.0 | 3.42 | 1.50 | 3.63 | 1.21 | 3 |
| SVON122 | House | 屋 | 100.0 | 3.25 | 1.74 | 3.63 | 1.16 | 3 |
| SVON123 | Iron | 熨斗 | 100.0 | 4.22 | 1.67 | 3.80 | 1.02 | 3 |
| SVON124 | Ironing board | 熨衫板 | 100.0 | 4.64 | 1.83 | 3.77 | 1.13 | -- |
| SVON125 | Jacket | 褸 | 93.3 | 3.42 | 1.54 | 4.05 | 0.98 | 3 |
| SVON126 | Kangaroo | 袋鼠 | 90.0 | 4.87 | 1.75 | 2.35 | 0.88 | -- |
| SVON127 | Kettle | 水煲 | 100.0 | 3.38 | 1.38 | 4.32 | 0.98 | 3 |
| SVON128 | Key | 鎖匙 | 100.0 | 3.02 | 1.41 | 4.83 | 0.56 | -- |

| | | | | | | | | |
|---------|--------------|-----|-------|------|------|------|------|----|
| SVON129 | Kite | 風箏 | 100.0 | 3.12 | 1.15 | 2.87 | 0.96 | 3 |
| SVON130 | Knife | 刀 | 100.0 | 3.17 | 1.74 | 4.38 | 0.85 | 3 |
| SVON131 | Ladder | 梯 | 100.0 | 3.57 | 1.45 | 3.33 | 1.08 | 3 |
| SVON132 | Lamp | 燈 | 100.0 | 3.55 | 1.74 | 3.88 | 1.17 | 3 |
| SVON133 | Leaf | 楓葉 | 100.0 | 2.95 | 1.28 | 3.88 | 1.26 | 3 |
| SVON134 | Leg | 腳 | 100.0 | 1.85 | 1.02 | 4.92 | 0.28 | 3 |
| SVON135 | Lemon | 檸檬 | 100.0 | 3.58 | 1.57 | 3.82 | 1.05 | 4 |
| SVON136 | Leopard | 豹 | 100.0 | 4.15 | 1.52 | 2.33 | 0.86 | 5 |
| SVON137 | Lettuce | 生菜 | 90.0 | 3.86 | 1.44 | 3.82 | 0.98 | 3 |
| SVON138 | Light Bulb | 燈膽 | 100.0 | 3.43 | 1.42 | 4.33 | 0.95 | -- |
| SVON139 | Light switch | 燈制 | 100.0 | 3.88 | 1.65 | 4.53 | 0.95 | 3 |
| SVON140 | Lion | 獅子 | 100.0 | 3.75 | 1.50 | 2.50 | 0.87 | 3 |
| SVON141 | Lips | 嘴唇 | 100.0 | 1.82 | 1.05 | 4.87 | 0.43 | 4 |
| SVON142 | Lobster | 龍蝦 | 90.0 | 5.22 | 1.71 | 3.28 | 0.96 | -- |
| SVON143 | Lock | 鎖 | 100.0 | 3.83 | 1.52 | 4.30 | 0.91 | 4 |
| SVON144 | Mitten | 手襪 | 100.0 | 3.95 | 1.77 | 3.35 | 1.09 | -- |
| SVON145 | Monkey | 馬騮 | 93.3 | 3.47 | 1.48 | 2.92 | 0.87 | 3 |
| SVON146 | Moon | 月亮 | 100.0 | 2.33 | 0.88 | 4.27 | 0.97 | 3 |
| SVON147 | Motorcycle | 電單車 | 100.0 | 4.35 | 1.85 | 3.67 | 1.31 | -- |
| SVON148 | Mountain | 山 | 95.0 | 3.05 | 1.19 | 3.77 | 1.28 | 3 |
| SVON149 | Mouse | 老鼠 | 100.0 | 2.58 | 0.89 | 3.02 | 1.10 | 3 |
| SVON150 | Mushroom | 蘑菇 | 100.0 | 3.90 | 1.46 | 3.55 | 1.08 | 3 |
| SVON151 | Nail | 釘 | 100.0 | 3.67 | 1.39 | 3.40 | 1.14 | 3 |
| SVON152 | Nail File | 指甲銼 | 83.3 | 5.05 | 1.76 | 3.29 | 1.11 | -- |
| SVON153 | Necklace | 頸鍊 | 76.7 | 4.10 | 1.76 | 3.28 | 1.03 | -- |
| SVON154 | Needle | 針 | 100.0 | 3.53 | 1.42 | 3.33 | 1.13 | 3 |
| SVON155 | Nose | 鼻 | 100.0 | 1.95 | 1.27 | 4.83 | 0.59 | 3 |
| SVON156 | Nut | 螺帽 | 36.7 | 5.17 | 1.46 | 3.02 | 1.10 | -- |
| SVON157 | Onion | 洋蔥 | 100.0 | 4.25 | 1.57 | 3.70 | 1.03 | -- |
| SVON158 | Orange | 橙 | 100.0 | 2.90 | 1.61 | 4.58 | 0.72 | 3 |
| SVON159 | Ostrich | 駝鳥 | 70.0 | 5.25 | 1.55 | 2.15 | 0.58 | 3 |
| SVON160 | Owl | 貓頭鷹 | 100.0 | 4.63 | 1.64 | 2.12 | 0.67 | -- |
| SVON161 | Paintbrush | 畫筆 | 100.0 | 3.38 | 1.14 | 2.70 | 0.83 | -- |
| SVON162 | Pants | 褲 | 100.0 | 2.35 | 1.10 | 4.82 | 0.57 | 3 |
| SVON163 | Peach | 桃 | 83.3 | 4.08 | 1.71 | 3.08 | 1.00 | 3 |
| SVON164 | Peacock | 孔雀 | 100.0 | 4.28 | 1.71 | 2.45 | 0.70 | 3 |
| SVON165 | Peanut | 花生 | 86.7 | 2.72 | 0.99 | 3.68 | 1.14 | -- |
| SVON166 | Pear | 梨 | 100.0 | 3.38 | 1.76 | 3.95 | 0.95 | 3 |
| SVON167 | Pen | 原子筆 | 83.3 | 3.53 | 1.64 | 4.70 | 0.67 | 3 |
| SVON168 | Pencil | 鉛筆 | 100.0 | 2.40 | 1.06 | 4.07 | 1.04 | 3 |
| SVON169 | Penguin | 企鵝 | 75.0 | 4.80 | 1.64 | 2.30 | 0.79 | -- |
| SVON170 | Pepper | 青椒 | 100.0 | 4.15 | 1.53 | 3.43 | 1.17 | -- |
| SVON171 | Piano | 鋼琴 | 100.0 | 4.17 | 1.75 | 3.20 | 1.05 | 3 |
| SVON172 | Pig | 豬 | 100.0 | 2.58 | 0.94 | 3.45 | 1.05 | 3 |

| | | | | | | | | |
|---------|-----------------|------|-------|------|------|------|------|----|
| SVON173 | Pineapple | 菠蘿 | 100.0 | 3.38 | 1.26 | 3.38 | 0.98 | -- |
| SVON174 | Pipe | 煙斗 | 100.0 | 4.13 | 1.66 | 2.23 | 0.85 | -- |
| SVON175 | Pitcher | 水壺 | 100.0 | 4.22 | 1.85 | 3.27 | 1.12 | -- |
| SVON176 | Pliers | 鐵鉗 | 78.3 | 4.65 | 1.64 | 3.25 | 1.14 | -- |
| SVON177 | Plug | 插蘇 | 100.0 | 4.48 | 1.64 | 4.12 | 1.03 | -- |
| SVON178 | Pocketbook | 手袋 | 100.0 | 3.60 | 1.56 | 4.25 | 1.02 | 3 |
| SVON179 | Pot | 煲 | 100.0 | 3.60 | 1.48 | 3.65 | 1.12 | 3 |
| SVON180 | Potato | 薯仔 | 100.0 | 3.66 | 1.49 | 3.85 | 0.98 | 4 |
| SVON181 | Pumpkin | 南瓜 | 71.7 | 4.50 | 1.69 | 3.27 | 1.07 | -- |
| SVON182 | Rabbit | 白兔 | 100.0 | 3.07 | 1.23 | 2.60 | 0.79 | 3 |
| SVON183 | Raccoon | 狸貓 | 93.3 | 4.96 | 1.58 | 1.90 | 0.61 | -- |
| SVON184 | Record player | 唱機 | 100.0 | 4.28 | 1.77 | 2.45 | 0.77 | -- |
| SVON185 | Refrigerator | 雪櫃 | 100.0 | 4.07 | 2.11 | 4.77 | 0.59 | 3 |
| SVON186 | Rhinoceros | 犀牛 | 83.3 | 4.97 | 1.66 | 1.97 | 0.59 | 5 |
| SVON187 | Ring | 戒指 | 100.0 | 4.07 | 1.56 | 3.60 | 1.21 | -- |
| SVON188 | Rocking chair | 搖凳 | 100.0 | 4.48 | 1.74 | 2.36 | 0.71 | -- |
| SVON189 | Roller Skate | 溜冰鞋 | 20.0 | 5.02 | 1.51 | 2.24 | 0.65 | -- |
| SVON190 | Rolling Pin | 麵包輥 | 66.7 | 4.85 | 1.70 | 2.83 | 2.60 | -- |
| SVON191 | Rooster | 公雞 | 100.0 | 2.28 | 0.80 | 3.62 | 1.14 | 3 |
| SVON192 | Ruler | 間尺 | 100.0 | 2.63 | 0.99 | 4.12 | 0.98 | 3 |
| SVON193 | Sailboat | 帆船 | 100.0 | 3.88 | 1.66 | 2.75 | 0.95 | 3 |
| SVON194 | Saltshaker | 胡椒粉樽 | 100.0 | 4.37 | 1.46 | 3.95 | 1.03 | -- |
| SVON195 | Sandwich | 三文治 | 100.0 | 4.37 | 1.82 | 3.82 | 1.00 | -- |
| SVON196 | Saw | 鋸 | 100.0 | 4.45 | 1.49 | 2.97 | 1.02 | 4 |
| SVON197 | Scissors | 較剪 | 100.0 | 2.97 | 1.16 | 4.13 | 0.83 | 3 |
| SVON198 | Screw | 螺絲 | 100.0 | 4.62 | 1.57 | 3.38 | 1.08 | -- |
| SVON199 | Screwdriver | 螺絲批 | 95.0 | 4.47 | 1.57 | 3.48 | 1.10 | -- |
| SVON200 | Sea Horse | 海馬 | 83.3 | 5.33 | 1.51 | 2.19 | 0.54 | -- |
| SVON201 | Seal | 海獅 | 20.0 | 5.68 | 1.52 | 2.22 | 0.49 | -- |
| SVON202 | Sheep | 羊 | 100.0 | 4.39 | 1.74 | 2.36 | 0.58 | 3 |
| SVON203 | Shirt | 恤衫 | 100.0 | 3.12 | 1.47 | 4.37 | 0.97 | -- |
| SVON204 | Shoe | 鞋 | 100.0 | 2.65 | 1.48 | 4.75 | 0.68 | 3 |
| SVON205 | Skirt | 裙 | 100.0 | 3.34 | 1.77 | 3.98 | 1.15 | 3 |
| SVON206 | Skunk | 臭鼬鼠 | 41.7 | 5.78 | 1.44 | 1.85 | 0.76 | -- |
| SVON207 | Sled | 雪橇 | 33.3 | 5.98 | 1.28 | 1.81 | 0.59 | -- |
| SVON208 | Snail | 蝸牛 | 100.0 | 3.53 | 1.41 | 2.55 | 0.87 | 3 |
| SVON209 | Snake | 蛇 | 100.0 | 3.17 | 1.12 | 2.50 | 0.65 | -- |
| SVON210 | Snowman | 雪人 | 68.3 | 4.27 | 1.76 | 2.32 | 0.85 | 3 |
| SVON211 | Sock | 襪 | 100.0 | 2.47 | 1.19 | 4.73 | 0.69 | 3 |
| SVON212 | Spider | 蜘蛛 | 100.0 | 3.42 | 1.42 | 2.72 | 0.83 | 3 |
| SVON213 | Spinning wheel | 衣車 | 53.3 | 5.22 | 1.65 | 1.85 | 0.52 | -- |
| SVON214 | Spool of thread | 線輥 | 100.0 | 3.85 | 1.45 | 3.08 | 1.09 | -- |
| SVON215 | Spoon | 匙羹 | 100.0 | 2.28 | 1.30 | 4.75 | 0.63 | 4 |
| SVON216 | Squirrel | 松鼠 | 83.3 | 4.65 | 1.66 | 2.28 | 0.76 | 3 |

| | | | | | | | | |
|---------|---------------|------|-------|------|------|------|------|----|
| SVON217 | Star | 星星 | 100.0 | 2.90 | 1.51 | 3.87 | 1.08 | 3 |
| SVON218 | Stool | 凳 | 100.0 | 2.20 | 0.80 | 4.17 | 0.94 | 3 |
| SVON219 | Stove | 煮食爐 | 100.0 | 5.43 | 1.80 | 3.42 | 1.29 | -- |
| SVON220 | Strawberry | 士多啤梨 | 100.0 | 4.87 | 1.88 | 3.57 | 1.09 | -- |
| SVON221 | Suitcase | 行李箱 | 95.0 | 4.20 | 1.65 | 3.53 | 0.96 | -- |
| SVON222 | Sun | 太陽 | 100.0 | 1.98 | 0.72 | 4.83 | 0.46 | 3 |
| SVON223 | Swan | 天鵝 | 96.7 | 3.13 | 1.41 | 2.75 | 0.88 | 3 |
| SVON224 | Sweater | 衫 | 100.0 | 3.05 | 1.62 | 4.28 | 1.03 | 3 |
| SVON225 | Swing | 鞦韆 | 100.0 | 2.90 | 1.41 | 3.57 | 1.08 | 3 |
| SVON226 | Table | 檯 | 100.0 | 2.25 | 1.23 | 4.65 | 0.68 | 3 |
| SVON227 | Telephone | 電話 | 100.0 | 3.72 | 2.12 | 4.77 | 0.59 | 3 |
| SVON228 | Television | 電視機 | 100.0 | 4.08 | 2.18 | 4.82 | 0.47 | 3 |
| SVON229 | Tennis racket | 網球拍 | 90.0 | 4.63 | 1.85 | 3.37 | 0.97 | 3 |
| SVON230 | Thimble | 頂針 | 36.7 | 4.92 | 1.76 | 2.54 | 1.10 | -- |
| SVON231 | Thumb | 手指公 | 100.0 | 2.05 | 0.95 | 4.78 | 0.56 | 3 |
| SVON232 | Tie | 呔 | 100.0 | 4.02 | 1.83 | 3.73 | 1.13 | 3 |
| SVON233 | Tiger | 老虎 | 100.0 | 3.68 | 1.40 | 2.48 | 0.70 | 3 |
| SVON234 | Toaster | 多士爐 | 100.0 | 4.85 | 1.72 | 3.15 | 0.98 | -- |
| SVON235 | Toe | 腳指 | 100.0 | 2.07 | 1.02 | 4.75 | 0.63 | 3 |
| SVON236 | Tomato | 蕃茄 | 100.0 | 3.57 | 1.45 | 4.00 | 1.04 | 3 |
| SVON237 | Toothbrush | 牙刷 | 100.0 | 2.52 | 1.16 | 4.90 | 0.35 | 3 |
| SVON238 | Top | 陀螺 | 68.3 | 4.00 | 1.45 | 2.25 | 0.73 | -- |
| SVON239 | Traffic light | 紅綠燈 | 100.0 | 4.15 | 1.94 | 4.63 | 0.76 | 3 |
| SVON240 | Train | 火車 | 100.0 | 3.95 | 1.79 | 3.88 | 0.94 | 3 |
| SVON241 | Tree | 樹 | 100.0 | 2.12 | 0.76 | 4.58 | 0.79 | 3 |
| SVON242 | Truck | 貨車 | 100.0 | 4.18 | 1.97 | 4.07 | 1.02 | -- |
| SVON243 | Trumpet | 喇叭 | 100.0 | 4.50 | 1.57 | 2.47 | 0.89 | 3 |
| SVON244 | Turtle | 烏龜 | 100.0 | 3.42 | 1.48 | 3.05 | 1.03 | 3 |
| SVON245 | Umbrella | 遮 | 100.0 | 2.83 | 1.32 | 4.05 | 0.85 | 3 |
| SVON246 | Vase | 花樽 | 100.0 | 3.30 | 1.37 | 3.30 | 1.01 | -- |
| SVON247 | Vest | 背心 | 100.0 | 3.98 | 1.66 | 3.25 | 1.19 | -- |
| SVON248 | Violin | 小提琴 | 86.7 | 4.72 | 1.65 | 2.73 | 0.97 | -- |
| SVON249 | Wagon | 手拉車 | 46.7 | 5.48 | 1.81 | 1.91 | 0.81 | -- |
| SVON250 | Watch | 手錶 | 100.0 | 3.52 | 1.55 | 4.52 | 0.83 | -- |
| SVON251 | Watering can | 淋花桶 | 83.3 | 3.90 | 1.63 | 2.88 | 1.01 | -- |
| SVON252 | Watermelon | 西瓜 | 100.0 | 3.27 | 1.74 | 3.88 | 1.00 | 3 |
| SVON253 | Well | 井 | 100.0 | 4.70 | 1.66 | 2.07 | 0.76 | -- |
| SVON254 | Wheel | 車轆 | 100.0 | 4.02 | 1.54 | 2.81 | 1.24 | -- |
| SVON255 | Whistle | 哨子 | 100.0 | 3.64 | 1.13 | 2.63 | 0.89 | -- |
| SVON256 | Windmill | 風車 | 78.3 | 5.02 | 1.64 | 2.00 | 0.64 | -- |
| SVON257 | Window | 窗 | 100.0 | 3.76 | 1.75 | 3.94 | 1.32 | 3 |
| SVON258 | Wineglass | 酒杯 | 93.3 | 3.90 | 1.80 | 3.58 | 1.06 | -- |
| SVON259 | Wrench | 士巴啦 | 80.0 | 5.15 | 1.59 | 3.30 | 1.18 | -- |
| SVON260 | Zebra | 斑馬 | 100.0 | 4.22 | 1.75 | 2.38 | 0.67 | -- |

Appendix C

Semantic categories

| Body parts (12) | | | | | | | |
|---------------------------|---------|---------------|-----|--------------|---------|------------|---------|
| Arm | 手 | Ear | 耳 | Eye | 眼睛 | Finger | 手指 |
| Foot | 腳 | Hair | 頭髮 | Hand | 手 | Leg | 腳 |
| Lips | 嘴唇 | Nose | 鼻 | Thumb | 手指 公 | Toe | 腳指 |
| Clothing (25) | | | | | | | |
| Belt | 皮帶 | Blouse | 恤衫 | Boot | 靴 | Bowtie | 蝴蝶 結 |
| Button | 鈕 | Cap | 帽 | Coat | 褸 | Dress | 裙 |
| Glasses | 眼鏡 | Glove | 手套 | Hat | 帽 | Jacket | 褸 |
| Mitten | 手襪 | Necklace | 頸鍊 | Pants | 褲 | Pocketbook | 手袋 |
| Ring | 戒指 | Shirt | 恤衫 | Shoe | 鞋 | Skirt | 裙 |
| Sock | 襪 | Sweater | 衫 | Tie | 吹 | Vest | 背心 |
| Watch | 手錶 | | | | | | |
| Daily objects (33) | | | | | | | |
| Baby carriage | BB 車 | Basket | 籃 | Book | 書 | Bottle | 樽 |
| Box | 盒 | Broom | 掃把 | Brush | 刷 | Candle | 蠟燭 |
| Clock | 鐘 | Clothespin | 衫夾 | Comb | 梳 | Doorknob | 門鎖 |
| Envelope | 信封 | Garbage can | 垃圾桶 | Hanger | 衣架 | Iron | 熨斗 |
| Ironing board | 熨衫板 | Key | 鎖匙 | Ladder | 梯 | Light bulb | 燈膽 |
| Light switch | 燈制 | Lock | 鎖 | Nail file | 指甲 銼 | Paintbrush | 畫筆 |
| Pen | 原子 筆 | Pencil | 鉛筆 | Plug | 插蘇 | Ruler | 間尺 |
| Scissors | 較剪 | Toothbrush | 牙刷 | Umbrella | 遮 | Vase | 花樽 |
| Watering can | 淋花 桶 | | | | | | |
| Domestic animals (13) | | | | | | | |
| Bird | 雀仔 | Cat | 貓 | Chicken | 雞 | Cow | 牛 |
| Dog | 狗 | Duck | 鴨 | Fish | 魚 | Horse | 馬 |
| Mouse | 老鼠 | Pig | 豬 | Rabbit | 白兔 | Rooster | 公雞 |
| turtle | 烏龜 | | | | | | |
| Electrical appliances (5) | | | | | | | |
| Lamp | 燈 | Record player | 唱機 | Refrigerator | 雪櫃 | Telephone | 電話 |
| Television | 電視 機 | | | | | | |

| Fruits (11) | | | | | | | |
|--------------------------|-----|-------------|------|---------------|------|----------------|-----|
| Apple | 蘋果 | Banana | 香蕉 | Cherry | 車厘子 | Grapes | 提子 |
| Lemon | 檸檬 | Orange | 橙 | Peach | 桃 | Pear | 梨 |
| Pineapple | 菠蘿 | Strawberry | 士多啤梨 | Water melon | 西瓜 | | |
| Furniture (10) | | | | | | | |
| Bed | 床 | Chair | 凳 | Couch | 梳化 | Desk | 檯 |
| Door | 門 | Dresser | 櫃 | Rocking chair | 搖凳 | Stool | 凳 |
| Table | 檯 | Window | 窗 | | | | |
| Insects (9) | | | | | | | |
| Ant | 螞蟻 | Bee | 蜜蜂 | Beetle | 甲蟲 | Butterfly | 蝴蝶 |
| Caterpillar | 毛蟲 | Fly | 烏蠅 | Grasshopper | 草蜢 | Snail | 蝸牛 |
| Spider | 蜘蛛 | | | | | | |
| Kitchen utensils (15) | | | | | | | |
| Bowl | 碗 | Cup | 杯 | Fork | 叉 | Frying pan | 平底鑊 |
| Glass | 玻璃杯 | Kettle | 水煲 | Knife | 刀 | Pitcher | 水壺 |
| Pot | 煲 | Rolling Pin | 麵包輥 | Saltshaker | 胡椒粉樽 | Stove | 煮食爐 |
| Toaster | 多士爐 | Spoon | 匙羹 | Wineglass | 酒杯 | | |
| Musical instruments (10) | | | | | | | |
| Accordion | 手風琴 | Bell | 鐘 | Drum | 鼓 | Flute | 笛 |
| French horn | 法國號 | Guitar | 吉他 | Harp | 豎琴 | Piano | 鋼琴 |
| Trumpet | 喇叭 | Violin | 小提琴 | | | | |
| Natural environment (8) | | | | | | | |
| Cloud | 雲 | Flower | 花 | Leaf | 楓葉 | Moon | 月亮 |
| Mountain | 山 | Star | 星星 | Sun | 太陽 | Tree | 樹 |
| Others (31) | | | | | | | |
| Anchor | 船勾 | Arrow | 箭咀 | Ashtray | 煙灰缸 | Barn | 屋 |
| Barrel | 桶 | Bread | 麵包 | Cake | 蛋糕 | Canon | 大炮 |
| Chain | 鎖鏈 | Church | 教堂 | Cigar | 雪茄 | Cigarette | 煙 |
| Clown | 小丑 | Crown | 皇冠 | Fence | 欄杆 | Flag | 旗 |
| Gun | 槍 | Heart | 心形 | House | 屋 | Needle | 針 |
| Pipe | 煙斗 | Sandwich | 三文治 | Snowman | 雪人 | Spinning wheel | 衣車 |
| Spool of thread | 線輥 | Suitcase | 行李箱 | Thimble | 頂針 | Wagon | 手拉車 |
| Well | 井 | Whistle | 哨子 | Windmill | 風車 | | |

| Tools (10) | | | | | | | |
|---------------------------|---------|--------------------|---------|------------------|-----|------------------|---------|
| Axe | 斧頭 | Chisel | 鏟 | Hammer | 鎚 | Nail | 釘 |
| Nut | 螺帽 | Pliers | 鐵鉗 | Saw | 鋸 | Screw | 螺絲 |
| Screwdriver | 螺絲批 | Wrench | 士巴 啦 | | | | |
| Toys and games (12) | | | | | | | |
| Ball | 波 | Balloon | 氣球 | Baseball bat | 雷球棒 | Doll | 洋娃 娃 |
| Football | 欖球 | Football helmet | 頭盔 | Kite | 風箏 | Rolling skate | 溜冰 鞋 |
| Sled | 雪橇 | Swing | 鞦韆 | Tennis racket | 網球拍 | Top | 陀螺 |
| Vegetables (13) | | | | | | | |
| Artichoke | 蔬菜 | Asparagus | 蘆筍 | Carrot | 紅蘿蔔 | Celery | 西芹 |
| Corn | 粟米 | Lettuce | 生菜 | Mushroom | 蘑菇 | Onion | 洋蔥 |
| Peanut | 花生 | Pepper | 青椒 | Potato | 薯仔 | Pumpkin | 南瓜 |
| Tomato | 蕃茄 | | | | | | |
| Vehicles and related (11) | | | | | | | |
| Aeroplane | 飛機 | Sailboat | 帆船 | Bicycle | 單車 | Traffic light | 紅綠 燈 |
| Bus | 巴士 | Train | 火車 | Car | 私家車 | Truck | 貨車 |
| Helicopter | 直昇 機 | Wheel | 車輪 | Motorcycle | 電單車 | | |
| Wild animals (32) | | | | | | | |
| Alligator | 鱷魚 | Bear | 熊 | Camel | 駱駝 | Deer | 鹿 |
| Donkey | 驢 | Eagle | 鷹 | Elephant | 大笨象 | Fox | 狐狸 |
| Frog | 青蛙 | Giraffe | 長頸 鹿 | Goat | 山羊 | Gorilla | 猩猩 |
| Kangaroo | 袋鼠 | Leopard | 豹 | Lion | 獅子 | Lobster | 龍蝦 |
| Monkey | 馬騮 | Ostrich | 鴕鳥 | Owl | 貓頭鷹 | Peacock | 孔雀 |
| Penguin | 企鵝 | Raccoon | 狸貓 | Rhinoceros | 犀牛 | Seahorse | 海馬 |
| Seal | 海獅 | Sheep | 羊 | Skunk | 臭鼬鼠 | Snake | 蛇 |
| Squirrel | 松鼠 | Swan | 天鵝 | Tiger | 老虎 | Zebra | 斑馬 |