

AN EXPLORATION OF THE RELATIONSHIP BETWEEN WORD-ASSOCIATION AND LEARNERS' LEXICAL DEVELOPMENT

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This paper investigates the storage of lexical items in semantic fields by two groups of young Japanese learners of English through an analysis of their responses to a word-association task.

It was found that both groups of these L2 learners tend to respond to prompt words with their knowledge of loosely connected vocabulary, much unlike native-speakers of English. The authors argue that the results reinforce the idea that by concentrating on relevant topics among the L2 learners' personal interests in the classroom, it will facilitate more native-like retentiveness.

Key words : word association, co-ordinate, collocate, synonym, encyclopedic knowledge, synonym, encyclopedic knowledge

1. INTRODUCTION

1.1 Splichal and Butler-Tanaka's exploration of the relationship between word-association and lexical development follows a task detailed in McCarthy (1990:152), and also examines the extent to which the results of the task reflect Aitchison's (1994:83) assessment of native-speaker word-association experiments.

The specifics of McCarthy's task are that the list should include six to eight words with at least one grammar or function word, one or two "items from the everyday physical environment" and "a relatively uncommon or low-frequency word" which the subjects of the word-association test should be aware. McCarthy also specifies that when the test is delivered to the group, the students should be asked to "write down the very first word that occurs to them when each item is heard." Naturally enough, the procedure element of the task concludes by requiring that the results be gathered in and examined for patterns.

The task also contains three evaluation points, which are as follows:

1. Does such a word-association test tell you anything about how your students are making mental links between words they have learned?

2. At lower levels, are phonological differences playing an important role?
3. Do the results bear out the characteristic types of response discussed in 3.2?

The section (indent) 3.2 referred to above is contained in McCarthy's chapter titled "The Mental Lexicon", wherein he refers to Aitchison's findings regarding typical responses to word-association tests. As stated in the opening paragraph, Splichal and Butler-Tanaka also evaluate the word-association test results in terms of the typicality of the results of the native-speaker word-association tests outlined by Aitchison (1994:83-4). Aitchison noted four important findings. The first is that people almost always give responses that are from the same semantic field as the prompt word, e.g., *thread*, *pin(s)*, *eye* and *sew* in response to *needle*. Also, when the prompt is one of a pair, people usually pick the other item from the pair in response. Aitchison's third finding was that adults usually responded with a word of the same class, i.e., a noun produces a noun, a verb produces a verb, and so on. Finally, she noted that the commonest responses were words that could be classified as "co-ordinates." Splichal and Butler-Tanaka's contention is that collocations and not co-ordinates are the main sources of word-associations for L2 learners and that such a finding suggests that unlike native-speakers of English, L2 learners do not store lexical items in semantic fields and that this has implications for the teaching of vocabulary.

2. DEFINITIONS

2.1 Both Aitchison (1994) and McCarthy (1990) use the same classifications to categorize responses to word-association tests. The classifications are: co-ordination, collocation, superordination, and synonymy. Aitchison (1994:84-5) defines co-ordinates as "words which cluster together on the same level of detail, such as salt and pepper, butterfly and moth; red, white, blue, black, green." According to Aitchison, opposites are classed as co-ordinates, hence the surprising omission of antonyms from the classifications she uses to categorize word-association responses. It is Aitchison's opinion that antonyms are "co-ordinates in a group consisting of only two members" (1994:84).

2.2 It should be pointed out that in addition to antonyms being excluded from both Aitchison's and McCarthy's list of classifications, hyponyms are also excluded. The reason for this relates to the third of the four classifications; superordinates. The example of a superordinate provided by Aitchison (1994:85) is that of the colors *red*, *blue* and *green* being hyponyms of the superordinate, or 'hyperonym', *color*. However, Aitchison's reason for excluding hyponyms is based on the difficulty of

identifying superordinates.

This difficulty is supported by Carter (1987:38-9) who refers to Cruse (1977) when pointing out that in communicative discourse "it is the case that superordinates are sometimes distinctly marked rather than unmarked." For example, while *tea*, *milk*, *lemonade* and *beer* are all clearly hyponyms, what is the superordinate? Drinks or beverages?

2.3 Collocation was first promulgated by J. R. Firth in the 1950s who defined it as "the company that words keep" and it has been extensively explored by Halliday (1966); Sinclair (1966, 1987); McIntosh (1966); Mitchell (1975); Cowie and Mackin (1978); Mackin (1978); Cowie (1981); and Cowie et al. (1983), among others. Fernando (1996) provides the foregoing list and also expands on the definition by saying:

" . . . words generally co-occur in groups that conform to grammatical and semantic usage, e.g., strong/weak/black/Ceylon, etc. tea (Adj. plus noun). While the majority of collocations in a language are ad hoc, some are habitual in that they recur. These latter, along with idioms, exemplify the idiom principle."

McCarthy (1990:14) emphasizes the importance of typicality with regard to collocation; for without typicality it would be difficult to recognize untypical collocations. As McCarthy notes, untypical collocations present a problem for an L2 learner as they can easily be mistaken for what is typical and might then be used inappropriately by the learner. It is worth stating here that collocations need not be adjacent words; collocating items can be several words apart and yet still be thought to be collocates due to the regularity with which they are found in each other's company.

2.4 Synonyms are the final classification and are words which have the same, or nearly the same, meaning as other words. Carter and McCarthy (1988) state that "most linguists agree, though, that true synonymy (i.e., 100% interchangeability) is very rare." Nonetheless, as words of similar meanings are said to be prominent among responses in word-association tests, the question of whether a word is completely interchangeable is perhaps not relevant when one is assessing learners' lexical development.

3. DELIVERY OF THE TESTS AND AN ANALYSIS OF THE RESPONSES

3.1 The test was given to two differing groups of learners. One group was made up of first-year students at Fukui National College of Technology (FNCT) and the other consisted of first-year students at Jin-ai University (JU). The FNCT students were 15-

16 years old with three years of formal English education while the vast majority of the JU students were 18-19 years of age with six years of formal English education. Clearly, by virtue of their age and their greater exposure to English, it would be fair to consider the JU students as having a higher overall English ability than the FNCT students. As stated in 1.1 above, the authors' motive in using two groups of learners of higher and lower abilities was to establish whether there would be any differences between the two groups regarding the storage and retrieval of lexical items. The number of students in the FNCT group was 196 and the JU group numbered 126.

The students were given verbal instructions stating that after being handed a sheet of paper numbered 1 through 8, they were to write down the first English word that came to mind in the space next to the appropriate number in response to the eight words dictated by the teacher. The students were also instructed to not write down the exact words dictated by the teacher. They were further advised that if they were unable to spell a word, it would be permissible to write it in katakana. A brief demonstration of a word-association test was performed in order that the subjects might better understand what was required of them. The prompt words for the actual test were: *fast*, *school*, *sport*, *house*, *chair*, *relax*, *climb*, and *rocket*.

3.2 The main criterion for the choice of the prompt words was of course that they would all be words known to all of the learners. Furthermore, the first five words were all items the learners should be able to make immediate associations with, due either to the commonplace nature of the words, e.g., *fast*, or to the fact that they were items that they would encounter in their daily lives, e.g., *school*. In view of the probability that all of the learners were likely to have limited vocabularies and because word-association tests require a fairly rapid response, the authors thought it appropriate that most of the prompt words should not require prolonged consideration in order to elicit a response. *Relax* and *climb* were chosen in order that the list of prompts included some verbs in addition to nouns and an adjective. The verbs and the adjective also fulfilled McCarthy's criterion that the list include at least one grammar or function word. Similarly, the low frequency word, *rocket*, was also chosen to comply with McCarthy's criteria. The frequency of the chosen words was verified by reference to the British National Corpus (BNC) and in particular to the BNC frequency lists posted on the World Wide Web by Adam Kilgariff. According to Kilgariff, *rocket* has a frequency of only 884 while five of the other seven words have frequencies of between approximately 3,700 and 9,700. The two remaining words, *school* and *house*, have extremely high frequencies of around 50,000.

3.3 In order that any differences between the responses of the two groups of learners

Table 1. Responses given by the FNCT students.

fast	school	sport	house	chair	relax	climb	rocket
car 31.12%	study 29.59%	soccer 34.18%	family 33.16%	sit 35.20%	sleep 29.59%	mountain 74.48%	space 36.73%
train 18.36%	teacher 20.91%	baseball 22.44%	room 7.14%	desk 22.95%	music 17.34%	stairs 6.12%	NASA 15.30%
plane 13.26%	students 12.75%	tennis 13.77%	door 5.10%	table 13.26%	bath 8.16%	Mt. Fuji 4.08%	moon 9.18%
light 7.65%	class 5.10%	basketball 9.69%	dog 5.10%	wood 8.67%	my room 4.08%	sun 3.06%	fly 6.63%
run 5.10%	big 2.04%	run 3.57%	big 4.59%	sofa 4.08%	massage 3.57%	tree 3.06%	astronaut 6.12%
athletes 4.08%	friends 2.04%	volleyball 3.57%	garden 4.08%	rocking 2.04%	bed 3.57%	ladder 1.02%	big 3.06%
F1 2.55%	learn 1.53%	table tennis 1.53%	home 3.57%	school 1.02%	forest 2.04%	tired 1.02%	fast 3.06%
bird 2.04%	building 1.53%	tired 1.53%	yard 3.06%	cat 1.02%	holiday 2.04%		sky 3.06%
second 1.53%	test 1.53%	ball 1.53%	window 3.06%	relax 1.02%	aroma 2.04%		Apollo 2.55%
rocket 1.02%	clock 1.53%	player 1.02%	white 2.55%	wheelchair 1.02%	therapy 2.04%		space shuttle
slow 1.02%	lunch 1.02%	enjoy 1.02%	roof 2.04%		TV 2.04%		2.04%
baseball 1.02%	fun 1.02%		wood 2.04%		free time 1.53%		star 1.53%
ball 1.02%	gym 1.02%		sleep 2.04%		toilet 1.53%		bomb 1.53%
	pen 1.02%		table 1.53%		bathroom 1.53%		Hide 1.53%
	ground 1.02%		bed 1.53%		home 1.02%		Tanega Island
	sleep 1.02%		mother 1.53%		rest 1.02%		1.02%
			TV 1.53%		bath time 1.02%		universe 1.02%
			kitchen 1.53%		tea 1.02%		
			small 1.02%		green 1.02%		
			bath 1.02%		vacation 1.02%		
			beautiful 1.02%		house 1.02%		

fast	school	sport	house	chair	relax	climb	rocket
					green tea		
					1.02%		
					reading		
					1.02%		
					easygoing		
					1.02%		
					movie		
					1.02%		
					spa		
					1.02%		
					game		
					1.02%		

may be easily discernible, the responses are shown separately in Tables 1 and 2 below. The figures listed after each of the responses are the occurrence of the response expressed as a percentage. Due to the number of different words given as responses by the learners, those responses with an occurrence of less than 1% are not shown in the tables. However, in Tables 3 and 4, which demonstrate how the responses have been classified, all of the learners' responses are shown.

3.4 In view of the difficulty involved in identifying subordinates, Splichal and Butler-Tanaka decided to omit them from the categories used to classify the responses and to replace them with "encyclopedic knowledge" (McCarthy, 1990: 40-41). McCarthy states that "encyclopedic knowledge relates words to the world, and brings in origins, causes, effects, histories, and contexts." Therefore, the authors hoped that the inclusion of encyclopedic knowledge would enable them to more easily identify the mental links between words that their students had learned.

In Tables 3 and 4 the responses given by both sets of students are grouped under the four headings of "co-ordinates", "collocates", "synonyms", and "encyclopedic knowledge." The number of instances of a particular response to a prompt is shown in parentheses and the tables also illustrate the total number of instances for each of the four headings in respect of each of the prompt words.

3.5 Apart from the almost total absence of synonyms, perhaps the most striking aspect of the categorization of the responses is that as opposed to the native-speaker word-association test results outlined by Aitchison (*passim*), co-ordinates are the least common of the responses. Out of a total of 2,576 responses from both sets of students only 546 (21%) were co-ordinates. Collocates accounted for 851 (33%) of the responses and encyclopedic knowledge for 1,176 (46%). The breakdown for the two sets of

Table 2. Responses given by the JU students.

fast	school	sport	house	chair	relax	climb	rocket
train 24.60%	study 17.46%	tennis 24.60%	family 26.98%	desk 23.01%	sleep 23.01%	mountain 71.42%	space 32.53%
plane 19.84%	student 17.46%	soccer 23.01%	kitchen 8.73%	sit 20.63%	music 19.04%	rock 6.34%	moon 11.90%
run 11.11%	high school 11.11%	baseball 17.46%	dog 6.34%	table 14.28%	bath 16.66%	rock 4.76%	tennis 8.73%
car 7.93%	friend 5.55%	basketball 12.69%	home 4.76%	sofa 3.17%	aroma 4.76%	kill 2.38%	sky 6.34%
food 6.34%	teacher 5.55%	volleyball 5.55%	room 4.76%	bench 3.17%	bath time 4.76%	Mt. Fuji 2.38%	racket 5.55%
runner 5.55%	university 4.76%	archery 3.96%	parents 3.96%	wood 3.17%	bed 3.96%	steps 1.58%	NASA 4.76%
slow 3.17%	uniform 4.76%	ski 3.17%	wife 3.96%	rocking 2.38%	green 2.38%	cliff 1.58%	table tennis 3.96%
running 2.38%	children 2.38%	fencing 1.58%	big 3.96%	grandmother 2.38%	room 2.38%		space 2.38%
time 2.38%	college 2.38%		bed 3.17%	cat 2.38%	tea 1.58%		shuttle 2.38%
light 2.38%	school bus 2.38%		small 3.17%	relax 2.38%	bathroom 1.58%		Tanega 1.58%
breakfast 1.58%	subject 2.38%		white 3.17%	comfortable 2.38%	TV 1.58%		Island 1.58%
marathon 1.58%	class 2.38%		comfortable 2.38%	leg 1.58%	refresh 1.58%		fireworks 1.58%
fish 1.58%	club 1.58%		TV 2.38%	dinner 1.58%	comfortable 1.58%		war 1.58%
first 1.58%	desk 1.58%		dinner 2.38%	sleep 1.58%	eat 1.58%		fly 1.58%
first class 1.58%	lunch 1.58%		relax 2.38%	rest 1.58%			astronaut 1.58%
baseball 1.58%	life 1.58%		movie 1.58%	school 1.58%			future 1.58%
	classroom 1.58%		log 1.58%	VIP 1.58%			air 1.58%
	book 1.58%		roof 1.58%	brown 1.58%			
	chime 1.58%		door 1.58%				
	clock 1.58%						

Table 3. An analysis of the FNCT students' responses.

	co-ordinates	collocates	synonyms	encyclopedia knowledge
fast	slow (2), speed (1), express (1), flash (1)	car (61), run (10), ball (2), time (1), runner (1)	quick (1)	train (36), plane (26), light (15), athletes (8), F1 (5), bird (4), second (3), rocket (2), baseball (2), mosquito (1), spaceship (1), wind (1), low (1), tiger (1), million (1), rabbit (1), swallow (1), cheetah (1), mouse (1), Olympics (1), champion (1), brother (1), dog (1)
Totals	5	75	1	115
school	high school (1), Kohsen (1), Keio University (1)	teacher (41), students (25), friends (4), building (3), clock (3), lunch (2), ground (2), gym (2), children (1), club (1), girl (1), rules (1), uniform (1)		study (58), class (10), big (4), learn (3), test (3), fun (2), pen (2), sleep (2), white (1), hard (1), pencil (1), sailor uniform (1), homeroom (1), pencil case (1), homework (1), many people (1), desk (1), roof (1), here (1), pool (1), Seven Wonders of the World (1), math (1), classmate (1), notebook (1), tired (1), classroom (1), long (1), blackboard (1), after school (1), interesting (1)
Totals	3	87		106

	co-ordinates	collocates	syn- onyms	encyclopedia knowledge
sport	soccer (67), baseball (44), tennis (27), basketball (19), volleyball (7), table tennis (3), wakeboard (1), swimming (1), golf (1), softball (1), F1 (1), fishing (1), badminton (1)			run (7), tired (3), ball (3), player (2), enjoy (2), hard (1), hit (1), Ichiro (1), exciting (1), sweat (1)
Totals	174			22
house	home (7), mansion (1)	dog (10), big (9), white (5), small (2), beautiful (2), old (1), expensive (1), detached (1), curry (1), hot (1)		family (65), room (14), door (10), garden (8), yard (6), window (6), roof (4), wood (4), sleep (4), table (3), bed (3), mother (3), television (3), kitchen (3), bath (2), work (1), life (1), warm (1), stay (1), relax (1), toilet (1), talk (1), dream (1), bathroom (1), washroom (1), free time (1), father (1), ground (1), my time (1), live (1), apple (1), my house (1)
Totals	8	33		155
chair	desk (45), sofa (8), wheelchair (2), bench (1), cradle (1)	table (26), rocking (4), small (1)		sit (69), wood (17), school (2), cat (2), relax (2), book (1), brown (1), steel (1), black (1), break (1), grandfather (1), people (1), sleep (1), floor (1), father (1), cockpit (1), China (1), my room (1), stand (1), tree (1), four legs (1)
Totals	57	31		108

	co-ordinates	collocates	syn- onyms	encyclopedic knowledge
relax	sleep (58)	time (1)	rest (2)	music (34), bath (16), my room (8), bed (7), massage (7), aromatherapy (4), forest (4), holiday (4), television (4), bathroom (3), free time (3), toilet (3), home (2), bath time (2), tea (2), green (2), green tea (2), vacation (2), house (2), reading (2), easygoing (2), movie (2), spa (2), game (2), go to bed (1), chair (1), hobby (1), eat (1), flower (1), friend (1), talk (1), lunch (1), sofa (1), Mr. Children (1), cutie (1), week (1), weekend (1), CD (1)
Totals	58	1	2	135
climb	drop (1)	mountain (146), stairs (12), Mt. Fuji (8), tree (6), ladder (2), down (1), hill (1), rock (1), rock climbing (1)		sun (6), tired (2), bird (1), hard (1), forest (1), monkey (1), movie (1), roof (1), sky (1), river (1), wood (1)
Totals	1	178		17
rocket	bomb (3), weapon (1), ICBM (1), space shuttle (4)	space (72), moon (18), sky (6), fire (1)		NASA (30), fly (13), astronaut (12), big (6), fast (6), Apollo (5), star (3), Hide (3), Tanega Island (2), universe (2), dream (1), failure (1), smoke (1), Mars (1), North Korea (1), Earth (1), punch (1), cosmos (1)
Totals	9	97		90

Table 4. An analysis of the JU students' responses.

	co-ordinates	collocates	syn- onyms	encyclopedic knowledge
fast	slow (4), slowly (1)	run (14), car (10), food (8), runner (7), time (3), breakfast (2)		train (31), plane (25), running (3), light (3), marathon (2), fish (2), first (2), first class (2), baseball (2), bird (1), dog (1), late (1), lady (1), name (1)
Totals	5	44		77
school	high school (14), university (6), college (3), junior high (1), education (1)	student (22), friend (7), teacher (7), uniform (6), children (3), bus (3), subject (3), club (2), lunch (2), life (2), book (2), clock (2), summer (1)		study (22), class (3), desk (2), classroom (2), chime (2), beautiful (1), go (1), love (1), baseball (1), sleep (1), jungle (1), far (1), fun (1)
Totals	25	62		39
sport	tennis (31), soccer (29), baseball (22), basketball (16), volleyball (7), archery (5), ski (4), fencing (2), football (1), swimming (1)	watch (1)		Olympics (1), athlete (1), car (1), club (1), ball (1), fun (1), sweat (1)
Totals	118	1		7
house	home (6)	dog (8), wife (5), big (5), small (4), white (4), comfortable (3), movie (2), log (2), new (1)		family (34), kitchen (11), room (6), parents (5), bed (4), television (3), dinner (3), relax (3), roof (2), door (2), gate (1), table (1), guitar (1), human (1), children (1), yard (1), garden (1), wood (1), mother (1), building (1), sleep (1), break (1), hate (1)
Totals	6	34		86

	co-ordinates	collocates	synonyms	encyclopedia knowledge
chair	desk (29), sofa (4), bench (4)	table (18), rocking (3), comfortable (3), leg (2), chairperson (1), old (1), hard (1), wheelchair (1)		sit (26), wood (4), grandmother (3), cat (3), relax (3), dinner (2), sleep (2), rest (2), school (2), VIP (2), brown (2), pink (1), long (1), living (1), magazine (1), massage (1), cherry (1), gentlemen (1), room (1)
Totals	37	30		59
relax	sleep (29), refresh (2), comfortable (2)			music (24), bath (21), aromatherapy (6), bath time (5), bed (5), green (3), room (3), bathroom (2), tea (2), television (2), eat (2), coffee (1), smile (1), plant (1), body (1), sea (1), herb (1), tree (1), innocence (1), holiday (1), sofa (1), massage (1), tea time (1), home (1), love (1), sky (1), happy (1), sheet (1), nervous (1)
Totals	33			93
climb		mountain (90), rock (8), rock climbing (6), Mt. Fuji (2), steps (2), cliff (2), heaven (1), hill (1), tree (1)		kill (3), tired (1), fun (1), sun (1), hard (1), dangerous (1), murder (1), death (1), sad (1), lost pet (1), closed room (1)
Totals		113		13

	co-ordinates	collocates	syn- onyms	encyclopedic knowledge
rocket	space shuttle (3), fireworks (2), satellite (1), H2 (1)	space (41), moon (15), sky (8), fire (1)		tennis (11), racket (7), NASA (6), table tennis (5), Tanaga Island (2), war (2), fly (2), astronaut (2), future (2), air (2), big (1), cosmos (1), galaxy (1), adventure (1), dream (1), black hole (1), Mars (1), star (1), universe (1), fast (1), rise (1), noise (1), straight (1)
Totals	7	65		54

students reflects the overall trend with 23% (231/1,008) of the responses being co-ordinates among the JU students and 20% (315/1,568) among the FNCT students. Similarly, the figures (indent) for collocates and encyclopedic knowledge also show a close co-relation between both sets of students with 35% (349/1,008) and 42% (428/1,008) for collocates and encyclopedic knowledge respectively among the university students and 32% (502/1,568) and 48% (748/1,568) respectively among the FNCT students. Perhaps the only disparity between the two sets of students is that the FNCT students show a slight preference for encyclopedic knowledge over collocates.

That does, however, raise the question of when is a word a collocate and when is it an example of encyclopedic knowledge. Categorization is a subjective area and there may well be some disagreement over some of the categorizations of responses used in the analysis of this word-association test. One example can be seen in Table 3 in which thirteen responses naming different sports have been categorized as co-ordinates, but responses to *house* which name parts of a house or items found in a house have been classified as encyclopedic knowledge. It could be argued that in this case the co-ordinates could just as easily be classed as encyclopedic knowledge. However, the authors took the view that if co-ordinates are "words which cluster together on the same level of detail" (ibid.), then the names of sports in response to *sport* fulfill that criteria whereas rooms and household items in response to *house* do not. If the responses to *house* had included different types of houses or homes such as "apartment" or "bungalow", then those responses would have been classified as

co-ordinates.

A further example of the contentiousness concerning the categorization of responses is whether words classified as collocates are truly that, or is it coincidental that the response happens to collocate with another word? It might be argued that many of the responses classified as collocates in response to *school*, for example, might actually be examples of encyclopedic knowledge and have been classed as collocates not because of the students making the appropriate association, but because the authors have done so. Perhaps some of the collocates are the product of the authors' encyclopedic knowledge or, more precisely, their lexical knowledge. For example, does the students' lexical knowledge really extend to "curry house" or "sky rocket", and when they offer "children" in response to *school* or "ladder" in response to *climb*, is it perhaps only because they know that children go to school and that the purpose of a ladder is to climb it? However, such words in response to the prompts given are collocates no matter what the students' reasoning may be and, therefore, in the opinion of the authors they have been categorized correctly.

4. EVALUATION

4.1 When specifically referring to word-association tests conducted with native-speakers of English, McCarthy (1990:39-41) notes that "people respond in consistent ways" and that while word-association tests do not necessarily "mirror the retrieval process in any way, they do seem to suggest that words are organized into semantically related families in the mind." That may be so for native-speakers of English, but does it also apply to learners of the language?

4.2 The focus of this evaluation will, of course, center on McCarthy's three evaluation points listed in 1.1 as the third of those evaluation points involves making reference to Aitchison's findings. The first of McCarthy's evaluation points asks whether the test indicates anything about how the students are making mental links between words they have learned. The preponderance of responses categorized by the authors as encyclopedic knowledge appears to indicate that the words the students have learned, and are able to retrieve relatively quickly, are those which are most relevant to their lives. Whereas, according to Aitchison and McCarthy, native-speakers store words in semantic bundles such as the sewing related words in response to *needle* mentioned in 1.1 above, it appears that learners, perhaps because of their limited lexical knowledge, do not do so. Perhaps if *needle* had been one of the prompt words in the authors' word-association test, the most typical response may have been *sharp* as this would be within the likely encyclopedic knowledge of many of the learners. However, given the

students tendency to not choose co-ordinates it is thought unlikely that they would have chosen words associated with sewing as such an activity is probably not within the daily personal experience of most students in Japan, and it is not something that is covered by the textbooks that the students are likely to use. Of course, that does again raise the question of the difficulties surrounding categorization. If sewing words were part of the students' lexical knowledge and were given as responses to *needle*, would they then be classed as co-ordinates or as encyclopedic knowledge?

McCarthy's second evaluation point asks if phonological differences are playing an important role at lower levels. While the two groups of students are at different ages and have had differing amounts of English instruction, it is probably fair to say that neither group could be described as advanced and, therefore, it would be reasonable to say that both groups are lower level learners. As for phonological differences, it is apparent that with three of the prompt words in particular, i.e., *fast*, *climb* and *rocket*, there was some phonological confusion among a few of the students. In response to *fast* a few students offered words that would appear to be related to *first* and eight of the JU students mistook *climb* for *crime* and gave responses such as *kill*, *murder* and *sad*. In response to *rocket* there were quite a few students who clearly thought the word they had been given was *racket*. Responses such as those should serve as a reminder to all language teachers to never assume that all of the students in a class have correctly understood the key elements of a task.

The third of McCarthy's evaluation points concerns Aitchison's findings regarding word-association tests carried out on native-speakers. The characteristic types of responses noted by Aitchison are detailed in 1.1 above. The first of Aitchison's findings is that native-speakers almost always select items from the same semantic field as the prompt word: While some of the responses in the authors' word-association test could be said to be from the same semantic field as that of the prompt word, the frequency of occurrence is far from Aitchison's "almost always." For example, among the JU students only five responded to *fast* with *slow* or *slowly* and twenty-five responded with types of educational establishments in response to *school*. It is true, however, that in response to *chair* there was a high number of responses that could be said to be from the same semantic field. However, that appears to be due to many of the students choosing the other half of what they consider to be a pair, which is the second of Aitchison's findings. Among the FNCT students 26 gave *table* as their response to *school* and 45 said *desk*. While *table* is an obvious partner to *chair* and has therefore been classified as a collocates, in the minds of the students perhaps *desk* is also a partner to *chair*. However, with the exception of *fast*, the other prompt words do not have obvious partners, and therefore it may be inadvisable to draw conclusions about whether the students' choice of words mimics that of native-speakers in this

regard. Aitchison's finding that adults usually respond with a word of the same class is difficult to confirm or refute here, mainly because many of the students involved could not be considered adults. Certainly, the nouns elicited nouns in response, however most of the responses to the verbs and the adverb were also nouns. As for Aitchison's finding that co-ordinates were the commonest responses, it has already been noted in 3.5 above that only 21% of the responses were co-ordinates and that co-ordinates lagged some way behind collocates and encyclopedic knowledge. This, together with the fact that the students' responses were, generally speaking, not from the same semantic field as that of the prompt words does indicate that L2 learners do not store lexical items in the same way as native-speakers.

However, the results of the test do not comfortably conform to the authors' hypothesis, as it was their contention that collocates would be the main set of responses. Clearly, words related to the students' encyclopedic knowledge made up the largest group of responses and, as has been discussed elsewhere in this paper, it is possible to argue that some of the collocates could possibly be classed as encyclopedic experience.

5. Conclusion

5.1 The principal question raised by the results of Splichal and Butler-Tanaka's tests is how to make use of the fact that encyclopedic knowledge accounts for most of the responses. The authors had anticipated collocates being the main type of response and were ready to suggest that greater attention be paid to drawing attention to collocates in classroom activities. The classroom implications now appear to revolve around the knowledge and experience of the learners and not around words that teachers and researchers consider to collocate with each other. It may be a well-worn and probably much over-used phrase, but "learner-centered" certainly seems to be the most appropriate approach to organizing a syllabus with the findings of these tests in mind.

While most textbooks attempt, at least in part, to engage students' interest by utilizing topics that are believed to be of interest to the learners, it must be said that quite often the topics chosen are unimaginative and the same topics can be found in any number of textbooks. For example, most basic level textbooks used by the authors in their extensive experience will include a unit focusing on countries and nationalities which, while laudable in its attempt to foster an international outlook, does little to engage the students' attention, similarly with units on occupations, the weather and housework. Admittedly, more recent textbooks have made an attempt to introduce more irrelevant topics. However, perhaps students' interest could be further engaged if at least some of the units in a textbook were to relate to contemporary subjects such as

the environment, recent scientific developments or political and sociological issues. For example, a unit relating to the history and development of the Internet would probably be interesting for many high school and university students and need not be too intimidating. The same could be said for other topics such as space exploration, recent historical events in the students' own country, or even the experiences of someone they are familiar with living in a foreign country.

While such topics may not be appropriate for absolute beginners, neither should they be the sole preserve of students who have gotten through enough textbooks to enable them to be seen as intermediate level learners. If students' interest can be engaged at the false beginner level, and if the textbooks students are using respect the fact that students have interests beyond the often simplistic ones portrayed in many textbooks, then perhaps we will see students making faster progress towards the goal of being able to express oneself fluently.

With more concentration on subjects germane to the personal interests of students as suggested above, Splichal and Butler-Tanaka posit that L2 learners will begin to mimic native-speakers by storing lexical items in the same semantic field, hence enabling them to quickly retrieve relevant vocabulary when interacting in L2.

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AN EXPLORATION OF THE RELATIONSHIP BETWEEN WORD-ASSOCIATION AND LEARNERS' LEXICAL DEVELOPMENT

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この論文は、仁愛大学と福井工業高等専門学校の学生に対して実施された研究授業の結果に基づいて、言葉の連想と語彙の発達との関連性について論じたものである。これら二つのレベルの異なったL2（第二外国語）学習者、すなわち学習期間の違う二つのグループを比べることによって、語彙の記憶とそれを情報として活用する能力に関して、グループによる違いが生じるかどうかを検証しようとするものである。

言語としての英語の講義要綱の体系化を考えるにあたって、学生の関心を高めることに加えてさらにもっと学習者中心のアプローチを考慮しなければならないことをこの研究結果の分析によって実証する。