ADULT SPEAKERS’ DEFINITION AND USE OF WORDS: 
AN EXAMINATION OF PLATO’S PROBLEM AS APPLIED TO 
KNOWLEDGE OF WORD MEANING

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Plato’s problem that Chomsky applies to speakers’ knowledge of word meaning concerns the disparity between impoverished evidence given and perfect knowledge attained. This study explored whether the attained knowledge of word meaning is stable, articulated and known to adult speakers of Japanese. 118 university students judged twice the degree in which they knew the meanings of words (knowledge score) and the degree in which they could use the words in sentences (usage score), with two different intervening tasks being given between the two judgments. Some speakers engaged in a task of defining the meaning of the words and using them in sentences, while others did not. Findings showed that knowledge scores were comparable in the first judgments, while knowledge score decreased in the second judgments only for the speakers given a task of definition. No change was found in usage score regardless of the intervening tasks. Analyses of descriptions provided in the task of definition and use showed that the meanings of words were neither articulated nor known in detail to the speakers. These findings are not compatible with Plato’s problem.

Key words: word meaning, Plato’s problem, definition, knowledge and use

Plato’s problem constitutes a very core of Chomsky’s (1986, and many others) theory of language acquisition. This problem concerns how children attain rich, abstract and complicated knowledge of language even when only limited and impoverished experience is available to them. This “enormous disparity between knowledge and experience” (Chomsky, 1968, p. 78) has led him to attribute to children what he considers to be specific to language and to be given innately. Chomsky (1986) schematizes language acquisition in such a way that the language faculty, given appropriate experience1, passes from S₀ to Sₘ, with S₀ being an initial state, fixed and common to the human species and Sₘ being a relatively stable steady state — a state of children or adults who know a language. In this scheme, experience is characterized as being impoverished, whereas knowledge is characterized as being rich, complicated, abstract and high in specificity. Plato’s problem occurs primarily because the experience vastly underdetermines the finally attained knowledge. Children must therefore be endowed with innate Universal Grammar that acts on experience to provide that knowledge. However, he has never been concerned with the actual — rather than idealized — state of

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1 It should be emphasized that Chomsky has never provided any specification of this modifier, “appropriate.”
the knowledge of language. Instead, the state of knowledge is conceived as being what
his generative grammar describes, i.e., a formal theory which, he maintains, concerns
“the state of the mind/brain of the person who knows a particular language” (Chomsky,
1986, p. 3). Plato’s problem has long been discussed with respect to the syntactic aspect
of language. However, he has recently extended this problem to the other aspect of
language, i.e., word meaning, which we address in this study.

Chomsky (1991, 1993, 2000) argues that Plato’s problem is also striking in the
acquisition of lexical items. This is so because their “semantic properties are highly
articulated and intricate and known in detail that vastly transcends any relevant
experience, and is largely independent of variations of experience” (Chomsky, 1993, p.
24, emphasis added). Children, he posits, come to understand with surprising speed “the
meanings of words with remarkable delicacy, far beyond anything that the most
comprehensive dictionaries and grammarians begin to convey” (Chomsky, 2000, p. 185).
Hence a large part of lexical properties comes from the initial state of the language faculty,
so that the meanings of words are already known “with much or all of their intricacy and
structure predetermined” (Chomsky, 2000, p. 61) and the children’s task is only to assign
labels to the meanings. Notice that children’s knowledge of word meaning is again
described in a framework of logical problem of language acquisition, with no specification
of the actual state of lexical knowledge attained. This study explores an actual state of that
knowledge possessed by adult speakers of a language, individuals who, Chomsky should
rightfully claim, have acquired the meanings of words in their fullest detail. We carry out
this purpose by investigating how the speakers define the meaning of words.

Previous studies on this topic have largely been done on children, focusing on how
they define words as they develop metalinguistic abilities (e.g., Benelli, Arcuri, &
Marchesini, 1988; Clark, 1978; McGhee-Bidlack, 1991; Watson, 1985; Wehren, de Lisi,
& Arnold, 1981). The findings indicate, very generally, that children tend to define
words, first mentioning the function of an object which a word refers to (“a ball rolls or
bombs,” “a book is something to read”) and next mentioning concrete and perceptual
attributes of an object (“a ball is round,” “a book has many pages with words and/or
pictures”). This developmental trend of word definition follows the course in which, as
Nelson (1974) has described, functional aspects constitute the core that determines the
meaning of a word while perceptual aspects are attached to it probabilistically.

We could add, as Litowitz (1977) has done, to the above developmental phases two
additional phases, one phase preceding the above phases and the other following them.
The former concerns the phase in which children give particular words that are mere
association with the words to be defined (“sock,” and “head” as responses to “shoe” and
“hat”, respectively). The latter is the phase in which children approximate or attain the
Aristotelian form of definition that specifies a class name as well as particular defining
attributes or properties (“a knife is an instrument with a sharp edge for cutting
something”).

The development of definition could also be characterized as proceeding along the
continuum from the individually experienced to the socially shared, from the concrete to
the abstract (Al-Issa, 1969; Litowitz, 1977; Watson, 1985), or from the context-dependent
Nagata (1998) reported on a three-year-old child who defined words (henceforth target words), particularly those words from adverb and adjective, by simply putting a target word into a sentence which she constructed but which did not bear any relation with the target word. This type of definition included, for example, *always*, which was defined as “[Always is that] Dad *always* works” and *tomorrow*, which was defined as “[Tomorrow is that] what will I do *tomorrow*?” (An utterance in the brackets was not produced but implicated.) This sort of definition was also reported by Hagtvet (1992), who described it as “private/subjective/emotional association.”

Definition of this sort is interesting, because it indicates that children can use words adequately in their spontaneous utterances while they do not show a clear sign of metalinguistic knowledge of their meaning. It looks as if children could use a word without sufficient knowledge of its meaning. Also remarkable is a fact that this sort of definition occurs not exclusively in children but it also occurs — albeit not very often — even in adults, particularly when they judge words from adverb (Nagata, 1998). This observation is worthy to be explored, especially in light of Plato’s problem as applied to word meaning. This study thus addresses whether adult speakers have attained the alleged state of word meaning, i.e., the state of high articulatedness and subtlety.

Only several of prior studies have explored adult speakers (e.g., Markowitz & Franz, 1988; Nippold, Hegel, Sohlberg, & Schwarz, 1999; Nippold, 1999; Walker, 2001). Their analyses, however, are done on words from noun rather than those from other parts of speech. In this study, we place emphasis on words from other parts of speech. This is particularly because it is in these parts of speech that speakers tend to find difficulty to define meanings of words, exhibiting hence interesting types of definition. Actually, Nagata (2001) has demonstrated that the difficulty depends on part of speech, with adverbial words being more difficult than words from noun, verb and adjective.

In this study, we investigate the state of adult speakers’ knowledge of word meaning by analyzing the types of their attempted definitions. We demonstrate the instability of their perception of this state by administering two different judgment tasks: one that tests the subjective knowledge of word meaning and the other that tests the subjective ability to use the words in sentences. All the participants are given first these two types of judgment task. Then, some participants engage in an experimental task of defining the meanings of target words and using them in sentences, while others engage in a control task involving no activity of defining and using the words. Lastly, all the participants engage again in the same judgment tasks as those given in the first phase. Because the target words employed in this study are those used often by four-year-old children, it is expected that adult speakers will show high confidence both in knowing the meaning of the words and in using them in the first judgments. However, in the second judgments this high confidence in knowing the meaning of the words will decrease in the speakers given the experimental task, due to the difficulties they would experience in defining the words (Nagata, 1998, 2001). Such decrement, however, will not be observed in the speakers given the control task. In contrast, no change will be expected for the judgments on the use of the words irrespective of the intervening tasks, because the words to be tested are again those easily
used even by four-year-old children. Furthermore, speakers’ insufficient knowledge of word meaning will be revealed in various types of definition attempts that are, contrary to Chomsky’s claim, very far from being articulated and intricate. Our eventual purpose is thus to suggest that speakers do not always possess full knowledge of the meanings of words even when they show an ability to use the words.

**METHOD**

*Participants:*
A total of 118 students (73 men and 45 women) from Okayama University served as participants. They were all native speakers of Japanese, ranging in age from 18 to 46 years (mean age: 20.5 years).

*Stimulus Words:*
Twenty-five words were extracted from those listed in Iwabuchi and Muraishi (1976). This list included words produced by three children during their first five years. Hence the words were those observed very often among the utterances produced by Japanese four-year-old children. They were also the words whose definition appeared to be rather difficult. The 25 words selected came from seven different parts of speech:

- **Verb (4 items):** omou (think, feel), naru (become, turn into, act as, get), shiru (know), wakaru (understand);
- **Adjective (5 items):** kawaii (cute, tiny, lovely), hoshii (want to, like to), ureshii (glad, happy), yasashii (gentle, tender, kind), oishii (delicious);
- **Adjective verb (1 item):** suki (like);
- **Adverb (7 items):** yatto (at last, with difficulty), patto (suddenly, rapidly), moshika (maybe, perhaps), moo (soon, already, more), zuihun (fairly, very much), yappari (still, after all), koo (like this, this way);
- **Adverb and exclamation (1 item):** soo (so, Yes);
- **Conjunctive (5 items):** soshitara (and, (and) then), soshite (and, (and) then), sorekara (after that, (and) then), sorede (and, for that reason), soredeawa (if so);
- **Participial adjective (2 items):** donna (what kind of), sonna (that kind of).

*Design:*
A 2×2 factorial design included Intervening Task (experimental: definition and use, control: reading and writing) and Judgment (First, Second), with the first being a between-participants variable. One group of 75 participants was given a definition and use task, while the other group of 43 was given a reading and writing task, which served as a control task. All the participants engaged in the two types of judgments, knowledge and usage.

*Procedure:*
Stimulus items were presented in a booklet form. Two types of booklets, each consisting of five pages, were prepared: one for participants given a definition and use task and the other for those given a control task. The first and the last page of the booklets were the same for the two types of them. Thus, Page 1 explained what the participants were to do. Specifically, they were required to judge the 25 words with respect to meaning and usage. They first ranked the words for the degree in which they knew the meaning of the words on a 7-point scale. They were to give a score of 7 to the words they knew very well but a score of 1 to those they knew in the least degree. They were told to place the number — from 1 to 7 — inside the parentheses at the end of each word. Next they ranked the words for the difficulty with which they could use each word, again on a 7-point scale. They gave a score of 7 to the words that they thought they could use very easily but a score of 1 to those they could use with great difficulty. They placed the number inside another parentheses given after those for the judgments for meaning. The 25 words were shown in the lower half of the first page,

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2 Which word was included in which part of speech was based on Iwabuchi and Muraishi (1976).
Page 5 was for the second judgment for the 25 words, again with respect to meaning and usage. The two 7-point rating scales, one for knowledge judgment and one for usage judgment, were again shown in the upper half, while the 25 words were shown in the lower half, as in the same format as on Page 1.

The task given between the first and the second judgments differed for the two groups of participants. Participants given the definition and use task were required first to write the meaning of each target word and then to create a short sentence that contained the target word. The 25 words were given on Page 2 through Page 4, in the same order shown as on Page 1 and Page 5. Participants given the control task read instead a two-page science article about hairstyle and face written by Ohno (1996). The article included figures illustrating geometric analyses of faces as related with hairstyle. The participants were asked to write up their view regarding the article in about five lines of sentences on Page 4.

Data were gathered from two classes of students enrolling in an introductory course of psychology. One class of 75 students was given a booklet with the definition and use task while the other group of 43 was given the control task. The participants were given about 25 minutes to complete the task assigned.

**RESULTS**

*Subjective State of Knowledge of Word Meaning*

Fig. 1 shows the mean scores for knowledge of word meaning and those for usage. Analyses were performed separately for the two types of judgments, knowledge and usage. Analyses of knowledge scores showed the main effects of Intervening Task ($F(1, 116)=46.94, p<.001$; $F(2, 48)=73.77, p<.001$) and Judgment ($F(1, 116)=61.62, p<.001$; $F(2, 48)=556.87, p<.001$) as well as the interaction between the two variables ($F(1, 116)=80.91, p<.001$; $F(2, 48)=730.84, p<.001$). However, as Fig. 1 shows,
these main effects and interactions were exclusively due to the low score obtained for the participants who were given the definition and use task and who rated the knowledge of the words in the second judgments. Specifically, there was no difference between the two groups in the first judgments, whereas in the second judgments the knowledge score became lower only when the participants were given the definition and use task. In contrast, such was not the case for the analyses of usage scores. Thus no change in usage score was found irrespective of the intervening tasks.

Types of Definition Observed

All the participants could easily create short sentences that included a target word embedded in them. The created sentences were each well-formed in the sense that they were acceptable Japanese sentences.

However, descriptions obtained for the definition task were varied both in type and in the level of sophistication. We classified them into six types in light of our purposes of this study and based on the previous studies (Hagtvet, 1992; Litowitz, 1977; Nagata, 1998, 2001, Walker, 2001). All the descriptions were classified by the author and a graduate student of psychology. Percent agreement between the two coders over a total of 1,875 descriptions was 98.8%. Disagreements were resolved through discussion.

Definition-like: The name of this category may look bizarre, but it rather reflects the exact state of the participants’ knowledge of word meaning. This is because different participants showed different levels of sophistication for different words. For example, some participants defined donna (what kind of) in a sophisticated way as a word “used when asking a question about a kind or a state of thing or event,” while others defined it in a less sophisticated way as a word “asking detail.” The latter sort of definition lacked explicitness, but it was classified into this category in that it implied that the word concerned a question about a certain state of something. In this respect, the percentage of occurrence shown in Fig. 2 overestimated the exact state of participants’ knowledge of word meaning. This category contained such definition responses that were not included in the remaining five categories into which we could classify definition responses rather easily.

Paradigmatic: This type of definition concerned a paradigmatic substitute of the target word with a word or a phrase or even with a sentence. In order to be classified into this category, the substitute, when replaced with the target word used in a created sentence, had to make the sentence acceptable both in terms of syntax and semantics. For example, there was a participant who defined donna simply as ikanaru and created a sentence, Kare-wa donna kao desu ka (he-topic what kind of face is Question: What kind of face does he have?). In this sentence, the target word, donna, can be replaced with ikanaru without any morphological or syntactic modification. The response of this sort is not a definition in a strict sense but simply a substitute of the target word with its synonym, produced probably by association.

In this category was also included a substitute formed in a sentence as, for example, mitame-ga yoi (be nice to look at), a response given to the target word kawaii (cute, lovely). The target word used in a created sentence, Sono imu-wa totemo kawaii (that
dog-topic very lovely is: That dog is very lovely. This category excluded such definition responses that could not replace the target word unless they received a morphological or syntactic modification. For example, there was a participant who defined a target word, *naru* (come true) and created a sentence, *Watashi-no negai-wa natta* (I-genitive wish-topic came true: My wish came true). However, *naru* cannot be replaced with *natta* without a modification of this response word for tense. *Minoru* (present tense) should become *minotta* (past tense) in order to be acceptable in the created sentence as in, *Watashi-no negai-wa minotta* instead of *Watashi-no negai-wa minoru*.

**Use-dependent:** This category again was not a true definition but was influenced by the meaning of a sentence the participant created. For example, there was a participant who defined *moo* (already) as “worse than expected,” and created a sentence, “*Moo owatte-shimatta.*” (Already over is: It’s already over). The target word does not include a failure or a negative connotation; however, the participant attached to it such a connotation, probably extracting the meaning involved in the sentence he or she had created. In this regard, the definition of this type relates closely with how a word is used in speakers’ experience.

**No response:** This concerned a failure of definition, that is, participants failed to give a definition to a target word.

**Underspecified:** This category included responses that were clearly deficit in definition — compared to those categorized in the Definition-like responses. For example, *donna* (what kind of) was defined as “asking something,” or *yasashii* (gentle) was defined as “someone’s character.” These definitions are underspecified in the sense that the former lacks what aspect of something is being asked and the latter does not
specify what aspect of someone’s character is relevant.

*Irrelevant:* This category contains such responses that fell off the mark, including, for example, a mere repetition of a target word such as *omou* (think) given as a definition response to a target word, *omou*, or an unexpected response such as *henkan* (transformation) given as a definition response to a target word, *sonna* (that kind of).

Fig. 2 shows relative occurrences of each type of definition.

**DISCUSSION**

Both the mean scores for knowledge and usage were comparable in the first judgments, with each score being about six on a 7-point scale. This indicates that the participants believed that they knew the meaning of the words well enough and they could easily use them in sentences. However, in the second judgments after they experienced the definition task, the knowledge score decreased while the usage score remained unchanged. In contrast, for the participants given the control task no difference appeared between the first and the second judgments both for the knowledge scores and for the usage scores\(^4\). The findings thus indicate that only the experience of defining the meaning of words weakened the high confidence that the participants had attached to the subjective knowledge of word meaning\(^5\).

These findings are to be noted in two respects. First, speakers’ subjective state of knowledge of word meaning is not stable but is likely to fluctuate as in a way as we have demonstrated for the judgments of grammaticality of sentences (Nagata, 1988, 1989, 1992, 1997a, 1997b). While a confidence rating does not tap directly into the exact state of speakers’ knowledge, it still reveals that they perceive their knowledge of word meanings as not so reliable as they did before experiencing the definition task.

Second, the state of knowledge does not appear to be highly articulated or subtle, nor even known in detail to the speakers. This can be seen in the descriptions given by the participants when they defined the meaning of words. Although Fig. 2 shows Definition-like responses occurred most often, the responses included in this category are, as

\(^4\) Participants-based Pearson correlations between knowledge score and usage score were \(r=.52\) and \(r=.47\) in the first and for the second judgments, respectively, for the control group, while they were \(r=.77\) and \(r=.27\) for the experimental group. The correlation dropped markedly only in the latter group that had experienced the intervening task of definition and use.

\(^5\) This interpretation seems to be supported also by participants-based Pearson correlations found between the occurrence of six types of definition and the disparity in knowledge score between the first and the second judgments. The disparity score here was defined as a score obtained for each participant by subtracting a score in the second judgments from that in the first judgments on each target word and summing the differences over the twenty-five target words. Thus the greater the disparity, the greater the participants decreased their confidence in the second judgments. Significant correlations were found between the disparity score and the occurrence of Definition-like responses (\(r=-.30, p<.05\)) and between the disparity score and that of No response (\(r=.45, p<.001\)). Since the former type of definition suggests participants’ feeling of success in defining the words while the latter type suggests their feeling of failure, we could say that whether or not the participants dealt with the task of definition successfully influenced the subsequent judgments of knowledge of word meanings.
mentioned above, not always the perfect form of definition. Many definition responses involved therein are those which are far from being called subtle, articulated and complicated. Furthermore, we cannot neglect frequent occurrences of other types of definition. Paradigmatic definitions are basically synonym responses elicited simply by target words, hence imposing little metalinguistic processing on the speakers. These occurred, on average, once or more times out of five attempts at definition. Use-dependent definitions resemble those responses we have observed in three-year-old child, i.e., definitions reflecting speakers’ particular experiences related with a target word. Most recently, Walker (2001), too, has reported for nouns that about 7% of her adult subjects’ responses included this type of definition. This percentage is comparable to that obtained in the present study (see Fig. 2). Underspecified definitions are those responses that are incomplete or even deficit and these too occurred as often as the Use-dependent type of definition. Moreover, there were a number of responses that failed to define the meaning of words. These include not only blank responses but also remarks, expressing bewilderment through the use of the sentences like “I don’t know” and “I can’t tell.” 

Taken together, analyses of the participants’ descriptions indicate that their knowledge of word meaning is very far from complete: it is neither subtle nor articulated. The findings are to be noted, because this state of their knowledge of word meaning was obtained for the words which four-year-old children ordinarily use without any difficulty in their daily life.

In striking contrast with the incomplete knowledge of word meaning is their substantial ability to use words in sentences. Every participant could provide a sample sentence for each target word without experiencing difficulty. This finding suggests that speakers are capable to practically use words even without knowing their meanings to a sufficient extent. Actually, this possibility was suggested by Nelson and her colleagues (Nelson, Hampson, & Shaw, 1993; Levy & Nelson, 1994; Nelson, 1996) when they say that children may acquire use before meaning. Specifically, “for words that are less transparent than basic object words and that may not be mapped directly onto the child’s pre-existing concepts, children may acquire the word form and use it in a particular syntactic/discourse context where to adult ear it ‘sounds right’... Most children, for example, do not understand the terms yesterday and tomorrow correctly until four or five years, although three of the children aged 1; 8 [1 year 8 months] in this sample were reported to use tomorrow” (Nelson et al., 1993, p. 81. The brackets added.). This description about the disparity between use and meaning is exactly what Nagata (1998) has observed in his daughter. Nelson (1996) assumes that children, though displaying such a disparity in a certain period of concept and lexical development, eventually attain the adult level of full meaning. However, the present findings, as well as our previous ones (Nagata, 1998, 2001), suggest that it does not seem to be the case. We shall claim instead that even adult speakers have not yet attained the alleged state of word meaning. The actual state of knowledge of word meaning does not appear to be perfect. The state of knowledge we are describing here resembles the skill that Miller (1999) characterizes as “what people know when they know the meaning of a word (p. 5)”, i.e., the skill of “incorporating that word appropriately into meaningful linguistic contexts (p. 5).”
Speakers have an ability to use words in particular syntactic and discourse context, though, it seems, that ability does not necessarily entail complete and subtle knowledge of word meaning.

There is actually evidence that supports our present claim. For example, Shore and colleagues (Shore & Durso, 1990; Durso & Shore, 1991; Shore & Kempe, 1999) have shown that English speakers were able to distinguish between correct and incorrect uses of words even when they claimed to have partial knowledge about the words. The evidence of this sort could be interpreted to indicate that correct use of words does not necessarily require speakers to possess full knowledge of word meaning. Even partial knowledge therefore could underlie speakers’ correct use of word meanings. Their state of knowledge may be similar to what Landauer and Dumais’ (1997) inductive mechanism produces with respect to word meaning, constantly in flux and not perfectly known.

Plato’s problem is empirically valid only if the disparity between evidence given and knowledge attained is empirically substantiated. The present findings provided certain evidence that the actual state of knowledge of word meaning attained is far from the state that Chomsky characterizes as highly articulated, intricate and known in detail to children as well as to adult speakers. His description of children and adults as individuals possessing highly articulated knowledge of word meaning appears to be based primarily on their ability to use words. This is because he has not yet provided empirical evidence for his argument that children and adult speakers actually possess the same knowledge as he argues they do, except that he refers implicitly to their ability to use the words. The present findings suggest that speakers’ ability to use words does not immediately imply their possession of the perfect knowledge of the meanings of words. We shall argue therefore that one prerequisite for the disparity would no longer be valid, i.e., the prerequisite that word meaning attained is remarkably rich and complicated. This could not but raise a serious problem about the disparity and hence about his theory of Plato’s problem as applied to lexical knowledge.

Lastly, a note should be added about the methodology we adopted in this study in order to approach the actual state of speakers’ knowledge of word meaning. Several methods have previously been employed, as Miller (1999) remarks. In this study, we have utilized a method of definition, primarily because Chomsky (1988, p. 190–191) himself employs it when referring to Plato’s problem by contrasting linguists’ difficulty to define words with children’s ability to learn them easily. Critics may argue that since this method taps only speakers’ explicit knowledge, it cannot reveal their implicit knowledge which instead is crucial to the knowledge of word meanings. However, the nature of implicit knowledge is not compatible with Chomsky’s description of the knowledge of word meanings as being “known in detail,” because this description implies that the knowledge of word meanings is as explicit as to be specified to its fullest extent. What we have to do first seems to empirically explore what sort of knowledge it actually is that enables speakers to use words before relying excessively on Plato’s problem.
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(Manuscript received February 12, 2003; Revision accepted July 22, 2003)