Word Learning by Young Bilinguals: Understanding the Denotation and Connotation Differences of "Cut" Verbs in English and Chinese

Keng Hwee Neo
School of Humanities
Nanyang Technological University
NEO016@e.ntu.edu.sg

Helena Hong Gao
School of Humanities
Nanyang Technological University
helenagao@ntu.edu.sg

Abstract

This paper discusses the semantic differences of four "cut" verbs in Chinese *jiǎn, qiē, xīu, gē* and their English counterparts *cut* (with scissors), *slice/cut*, *trim/prune* (away/off) and *cut* (off/out) and challenges that young bilingual children may encounter in word learning. The fine differences of the verbs were first identified with references to usage notes in dictionaries and thesaurus and then represented with an approach for lexical differentiation adopted from DiMarco et al., (1992).The nuances and subtleties of the denotation and connotation of the "cut" verbs were illustrated accordingly for the understanding of bilingual word learning by young children.

1 Introduction

"Cut" verbs belong to a sub-class of physical action verbs (PA verbs) named "hand action verbs with instrument" (Gao, 2001, 2015). The basic conceptual knowledge that forms the semantics of the verbs include the information of body part, the hand(s) in this case, the cut action in a specific manner, a particular instrument used, degree of force applied, motion direction of the hand(s), and/or a causative result. *Cut* in English and *qiē* in Chinese are the basic verbs of "cut" verb class. English speaking children were found to be able to use the verb *cut* in a causative syntactic frame

around 3 years old (Sethuraman and Goodman, 2004). Chinese speaking children started to produce the first "cut" verbs *qiē* 'cut' at 17 months old. This shows that children before 3 years old have had observations or even physically conducted cutting actions (e.g., cutting a cake or an apple, etc.). Other studies have shown that action words naming movable and manipulative objects that can be used when playing with hands or feet are among the first acquired vocabulary of young children (Tomasello 1992; Gao 2015; Ma et al. 2009; Tardif et al. 2009). Such action words are either PA verbs or verbs that indirectly denote certain physical actions. For example, in Gao's (2001; 2015) studies, a total of 143 PA verbs in Mandarin were found to have been used by children between 1.9 and 2.3 years old. These verbs can be classified into 12 categories and close to half of them depict hand actions with or without an instrument. Mu's (2009) study also found that PA verbs were the first and core vocabulary of Mandarin-speaking children between 1 to 2 years of age. Zhang's (2010) corpus-based analysis of the Chinese language use by children between 3 to 6 years of age discovered that the frequencies of their noun and verb usage were comparable and highly dominant in their production. Out of the 100 mostly frequently produced words by the children, 31 were identified as verbs.

The above and other studies pertaining to lexical acquisition of Mandarin by 1-to-6-year olds have highlighted the fact that verb acquisition is the most dominant among other word classes and that PA verbs represent the core of domain-specific lexical development that occurs in parallel with

cognitive development in children during this age period.

Due to the fact that the PA verbs acquired by young children are mostly those that depict physical actions involving everyday activities, monolingual children may not find it difficult to acquire them. However, for children who are acquiring two languages at the same time in places like Singapore, bilingual lexical development may not occur easily, since it does not solely depends on natural input, familiarity or physical experience of the actions. In bilingual lexical development, when L1 words are in close proximity to the semantics of L2 words, "functional equivalence" (cf. Nida, 1964) mapping may easily occur. Thus, the proximity of equivalence in the process of mapping between two words from two languages being acquired plays a crucial role. In the case of lexical near-equivalents, particularly for a set of near-synonyms with subtle differences in the semantic meanings, understanding the non-equivalent semantic features of seemingly paired words between two languages becomes more important in the study of bilingual lexical development. We assume that employing usage notes from dictionaries and thesaurus would be the first step, or the basis for identifying the fine differences between paired words from two languages before asking or accounting for why bilingual children acquired or used this word in L1 at this age but its paired word in L2 at a different age and why their word choices of certain pairs are correct and appropriate but certain others are not. We believe that an analysis of such bilingual word pairs would enable us to understand the differences in the process of bilingual word learning.

This paper first analyses the semantic differences of the highly frequently used Chinese physical action verbs, *jiǎn, qiē, xīu, gē* and their English counterparts *cut(with scissors), slice/cut, trim/prune(away/off)* and *cut (off/out)* that may influence Chinese-English bilingual children's acquisition of the lexical semantic meanings of the words from the two languages, and then discusses the acquisition challenges for bilingual children in associating words from L1 or L2 with words from L2 or L1 with the above four paired words as examples. Employing the usage notes of dictionaries and thesaurus as reliable resources for illustrating the fine differences of the verbs, we adopted the approach of a two-part representation for lexical differentiation proposed by DiMarco et al. (1992) to demonstrate the nuances and subtleties of the denotation and connotation of the verbs that may explain why they can be challenges in bilingual word learning by bilingual children.

2 Chinese PA Verbs Acquired by Young Chinese-English Bilingual Children

Physical action verbs (PA verbs) in Chinese that express single actions or events are monosyllabic words (e.g., *ná* 'take', *hē* 'drink, etc.). According to Gao (2001), there are 494 monosyllabic PA verbs in Chinese that can be classified into seven categories based on the action features expressed by the lexical words, such as body part, contact, motion, motion direction, force, instrument, intention, patient object, and so on (Gao, 2001).

In this study, the 494 Chinese PA verbs in Gao's list were selected to compile a PA verb database. They were first collated with three parameters to illustrate the possibility of a full or near conceptual equivalence mapping of one Chinese verb with one counterpart in English that expresses an identical action concept. When one counterpart failed to do so, partial translation equivalence mapping was applied to match one Chinese verb with two or more synonymous English verbs expressing a similar physical action concept. The collating procedure was as follows:

(a) Each monosyllabic hand action verb in Chinese and its collocations in the form of bi-syllabic words or phrases were identified based on the meaning definitions found in the Dictionary of Contemporary Mandarin (DOCM) and the Modern Chinese Database designed by the Centre for Chinese Linguistics, Peking University (CCL-PKU).

(b) Corresponding equivalents in English of the monosyllabic physical action verbs in Chinese and their collocations in the form of bi-syllabic words or phrases were identified based on the meaning definitions found in the translation dictionaries, such as the Dictionary of Mandarin-English (DOME) and Oxford English Dictionary (OED).

(c) Use frequency of each monosyllabic physical action verbs in Chinese and their corresponding

collocations found in CCL-PKU were identified accordingly.

(d) Remarks were added to those verbs in the database that have one of the following three types of translation equivalence:

(i) Type 1: Full or near translation equivalence mapping of one Chinese verb to one English verb expressing a similar action concept.

(ii) Type 2: Near or partial translation mapping of one Chinese verb to several other synonymous English verbs expressing a similar action concept and vice versa.

(iii) Type 3: Near or partial translation mapping of several English verbs to several other synonymous Chinese verbs expressing a similar physical action concept and vice versa.

For the purpose of illustrating Type 3, another word-use frequency list of the meaning equivalence correspondence of the PA verbs from English to Mandarin were established on the basis of the above list to illustrate the degree of translation equivalence mapping of one English verb to several other synonymous Chinese ones expressing a similar action concept.

In order to identify a specific group of highly frequently used PA verbs in Chinese and their counterparts in English, the verbs produced by bilingual children aged from 1 to 6 years were selected for the lexical semantic analysis. The Chinese data were first drawn from Mu (2009)'s study on the early acquisition of verbs in young children aged from 1 to 2 years old and Zhang's (2010) corpus-based analysis of the language use by children aged from 3 to 6 years old. The children's productions of the various word classes in both studies were then examined and those PA verbs were selected for comparing with the Mandarin-speaking children's word production for action in Tardif's (2006) study. Twenty most frequently used action words were selected based on the above studies and the Mac-Arthur-Bates Communicative Development Inventory (CDI) for both English and Mandarin children aged 16 months old and Naigles's (2009) study on infants' learning of first verbs within the first two years of life. Subsequently, a specific group of highly frequently used verbs by children within the age range of 1 to 6 years old were found. Among them "cut" verbs *jiǎn* 'cut (with scissors)', *qiē* 'slice/cut', *xīu* 'trim/prune(away/off)' *and gē* 'cut (off/out)' were found. After the frequently used verbs were identified, the usage notes of dictionaries and thesaurus demonstrating the fine differences of the verbs were employed in a two-part representation for lexical differentiation (DiMarco et al., 1992). The results are expected to reveal the nuances and subtleties of the denotation and connotation of words that belong to a same class and that are near-synonymous in Chinese and English.

3 Lexicons for Lexical Choice: Synonymy and Plesionymy within and between Languages

According to Dimarco and Hirst (1995), "the problem of lexical choice in text generation is to determine the word that conveys most precisely the denotation and connotation that are to be expressed." (Dimarco and Hirst, 1995: 1). The key issue is thus to distinguish between lexical near-equivalents which may occur in the form of near-synonyms or plesionyms (Cruse, 1986). As opposed to absolute synonyms, near-synonyms or plesionyms differ in their nuances of denotation or connotation which result in their non-interchangeability depending on the situated context owing to their varying shades of meanings and of style or interpersonal emphasis.

We consider the two dimensions along which synonyms can differ in terms of semantically (denotative) and stylistically (connotative) both across and within English and Mandarin respectively. More specifically, while denotation represents the semantic meaning of the word, connotation often refers to the style and interpersonal emphasis of its usage in a specific context. However, the boundary between denotation and connotation may not be at times all that distinct owing to some overlap of meaning within the set of near-synonyms (See further explanations of this in Section 5). Our main purpose is then to locate and highlight the differences between near-synonyms or plesionyms both between and within English and Mandarin respectively for the highly frequent used "hand action verbs with instrument", *jiǎn* 'cut (with scissors)', *qiē* 'slice/cut', *xīu* 'trim/prune (away/off)' and *gē* 'cut (off/out)' respectively.

4 Usage Notes: Structure, Content and an Illustrations of 13 "Cut" Verbs in English

We adopt the claim by DiMarco et al. (1992) that "it is usually the explicit purpose of the usage notes from the dictionary or thesaurus to explain to the ordinary dictionary user the differences between groups of near synonyms." Table 1 shows a typical example of the list of 13 near-synonyms for the concept of CUT from the Online Thesaurus of LDOCE.

No/Word	Meaning	Usage
1. cut	to divide something into two or more pieces, especially using a knife or scissors	---to cut the cake ---cut off the lower branches
2. snip	to quickly cut something, especially using scissors	---snipped the label off. ---snipped away at her hair
3. slit	to make a long narrow cut through something, especially using a knife	---slit the envelope open with a penknife. ---slit through the plastic covering.
4. slash	to cut something quickly and violently with a knife, making a long thin cut	---slashed the tyres on his car. ---slash his wrists
5. saw	to cut wood, using a saw (=a tool with a row of sharp points)	---Saw the wood to the correct length.
6. chop	to cut wood, vegetables, or meat into pieces	---chopping up firewood with an axe. ---chopped down the old tree. ---finely chopped onion
7. slice	to cut bread, meat, or vegetables into thin pieces	---slice the cucumber. ---Slice the bread thinly.
8. dice	to cut vegetables or meat into small square pieces	---dice the apple into cubes.
9. grate	to cut cheese or a hard vegetable by rubbing it against a special tool	---Grate the cheese and sprinkle it over the vegetables.
10. peel	to cut the outside part off something such as a potato or apple	---peeled the potatoes
11. carve	to cut thin pieces from a large piece of meat	---carved the turkey.
12. mow	to cut the grass in a garden, park etc.	---mowing the lawn.
13. trim	(also clip) to cut a small amount off something, especially to make it look neater	---trimming his beard. ---Trim the excess fat off the meat.

Table 1. Usage notes for the 13 near--synonyms for the concept of CUT from the Online Thesaurus of LDOCE

The structure and content of the usage notes of dictionaries and thesaurus contain invaluable reference on lexical discrimination for computational use in machine translation. According to DiMarco and Hirst (1995: 6), "while the style and length of usage note entries varies somewhat, the following structure is characteristic:

a statement of the meaning that is central or common to the set of words being discriminated and a description of the factors that distinguish each word in the set such as implications (denotational differences between the meanings of words), connotations (nuances that 'colour' a word's meaning) and applications (restrictions on a word's use), coupled with examples of the use of each word in the set." The content of usage notes then refer to the denotative and connotative dimensions and features of the language descriptions of distinguishing factors particular to the notes.

The above table explicitly distinguishes the differences in usage of the 13 "cut' verbs. Through examining the regularities within these explanations, the key factors in lexical differentiation could be determined. Referencing on the 26 dimensions for denotation and 12 for connotation described more fully by DiMarco et al. (1993), the following lexical features for differentiation of the 13 verbs are illustrated in the Figure1.
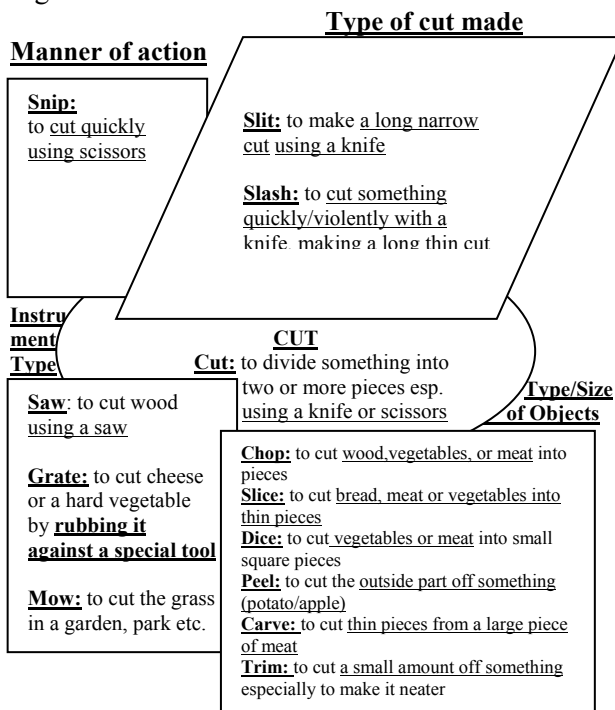
Figure. 1. Dimensions for the concept of CUT in English

The above figure clearly highlighted the lexical features for the differentiation of the 13 CUT verbs. The prototypical meaning of these verbs pertaining to the concept of the CUTTING ACT is

essentially to divide something into two or more pieces esp. using a cutting instrument (a knife or scissors). In terms of the denotation dimensions, there are 5 aspects ranging from the manner of action, i.e. speed and strength of cutting, the type of instrument for the cutting act, type of cut made from the action of cutting and the type and or size of the object being cut which would differentiate the semantic meaning of each of these verbs. For example, SNIP can only be used to denote the quick manner of cutting an object using scissors, which distinguish it from CUT which could include the use of knife in the cutting of an object without any specification of its manner of cutting. Consequently, the above-mentioned 5 lexical features in the denotational dimension distinguish the subtle nuances of the semantic meaning of each of the synonymous verbs respectively, though with some occasional overlap among these features. For instance, while both SLICE and DICE both refers to the cutting of specific objects such as meat or vegetables, the former requires the cutting into thin pieces as opposed to the latter which necessitates the cutting into small square pieces.

Within the denotative differentiae, the connotative differentiae could also co-exist in the form of emphasis of one of the components of the semantic meaning of a word such as the pair of synonyms SLIT and SLASH, while both denotes the use of a knife to render something into a thin, long, narrow cut, SLASH highlights the rapid and violent action which connotes an intended brutal act.

5 Lexical Differentiation: Denotation and Connotation

In this study, several highly frequently used PA verbs in Chinese that have near or partial conceptual equivalence in English are selected to account for the possible asymmetries in the children's acquisition of bilingual lexicon. By examining Gao's (2014) 494 Chinese PA verbs against various lists of action verbs found in Mu (2009), Zhang (2010), Tardif (2006), and Naigles' (2009) studies, we identified *jiǎn* 'cut (with scissors', *qiē* 'slice/cut', *xīu* 'trim/prune(away/off' and *gē*'cut (off/out' that have near or partial conceptual equivalence between the two languages and are also most

frequently used by bilingual children aged from 1 to 6 years old. Based on the operating principles of the usage notes methodology advocated by DiMarco et al. (1993), we then perform a lexical differentiation of these synonymous PA verbs in both Chinese and English in terms of their denotation and connotation distinctions to demonstrate the subtle differences in their word senses.

5.1 Lexical Differentiation of *Jiǎn, Qiē, Xīu* and *Gē* in Chinese: Denotation and Connotation

Table 2 shows a consolidated usage notes of the 4 near-synonyms *jiǎn, qiē, xīu* and *gē* for the concept of CUT from both the Dictionary of Contemporary Mandarin (DOCM) and Dictionary of Mandarin-English (DOME), with the translations of the Mandarin verbs meaning and collocation in English and the Mandarin to English verbs translation equivalents.

Mandarin Character	Piny in	English Meaning	Mandarin Verbs Meaning and Collocation	Translations of The Mandarin Verbs Meaning And Collocation in English	Mandarin to English Verbs Translation Equivalent
剪	jiǎn	**cut with scissors**, clip, trim, snip, shear	**1.用剪刀等使东西断开**（剪裁/剪纸/剪指甲/剪几尺布做衣服） **2.剪裁**：缝制衣服时把衣料按照一定尺寸断裁开	**1. cut (with scissors)**/clip/trim/snip/shear (cut open/trim one's nails/the letter was cut open) **2. cut out** (a garment)/tailor: (the coat was well cut and well made)	剪---cut with scissors, clip, trim, snip, shear 剪(裁)---cut out
切	qiē	**cut, slice**	**1.用刀把物品分成若干部分**（切西瓜/把肉切成丝儿） **2.切割**：用刀等把物品截断	**1.cut /slice** (cut up vegetables/cut into halves/slice meat/sliced into his fingers by accident when cutting vegetables) **2. slicing/cutting** (cutting part)	切(割)----cut, slice
修	xīu	**trim, prune (away/off)**	**1.剪或削，使整齐**（修树枝/指甲） **2.修剪**：用剪子一类的工具修（枝叶、指甲、毛发等）：（修剪松墙/八字胡修得十分整齐）	**1. trim/prune** (prune away/off branches /trim /manicure one's fingernails)	修(剪)---trim, prune (away/off)
割	gē	**cut (off/out),** slice, mow, excise, chop up	**1.用刀截断**（割腕/麦子） **2.割除**：割掉；出去（割除肿瘤） **3.割断**：截断；切断（割断绳索）	**1. cut/mow** (cut paddy/cut apart/break up) **2. cut off/cut out/excise** (cut off/remove the tonsil) **3. cut off/chop up** (cut off connections with)	割---cut (off/out), mow 割(除)---cut (off/out), excise, remove 割(断)---cut off/ chop up

Table2. Usage notes for jiǎn, qiē, xīu and gē from DOCM and DOME

The above table explicitly distinguishes the differences in usage of the 4 "cut" verbs. Through examining the regularities within these explanations, the key factors in lexical differentiation could be determined. Referencing on the 26 dimensions for denotation and 12 for connotation described more fully by DiMarco et al., (1993), the lexical features for differentiation of *jiǎn*, *qiē*, *xīu* and *gē* are illustrated in the following Figure 2.
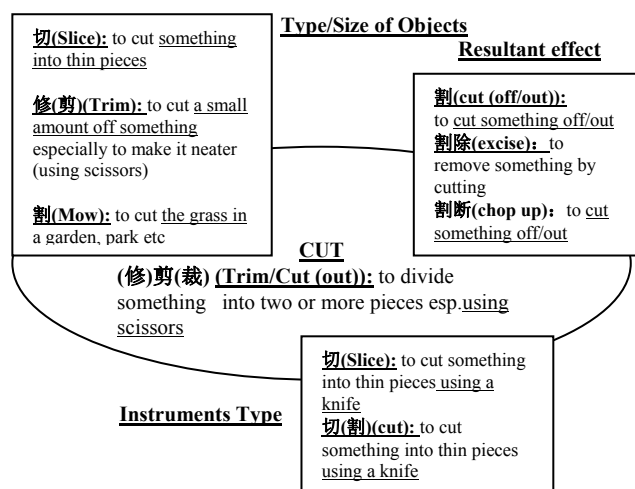

Figure. 2. Dimensions for the concept of CUT in English

The above figure clearly highlighted the lexical features for differentiation of *jiǎn, qiē, xīu* and *gē*. The prototypical meaning of these synonymous verbs pertaining to the concept of the CUTTING ACT realized by the lexicon *jiǎn* is essentially to divide something into two or more pieces esp. using scissors. In terms of the denotation dimensions, there are 3 aspects: the resultant effect of cutting, the type of instrument for the cutting act and the type and or size of the object being cut which would differentiate the semantic meaning of each of these verbs. For example, *qiē* can only be used to denote the cutting of an object into thin pieces using a knife, which distinguish it from *jiǎn* which refers to the use of scissors in the cutting of an object into mere pieces without any specification on its thickness. Additionally, though *jiǎn* and *xīu* both share the same denotational dimension of using scissors in the act of cutting, *xīu* specifically denotes the cutting of a small part off something especially to make it neat, which distinguishes it from *jiǎn* denoting the cutting of an

object into mere pieces without any specification on its sizes. Interestingly, owing to the bi-syllabic structure lexicon formation of Modern Chinese, both the monosyllabic lexicon *xīu* and *jiǎn* could combine into a bi-syllabic lexicon *xīu jiǎn* to denote specifically the cutting of a small part off something especially to make it neat using scissors.

Consequently, the above-mentioned 3 lexical features in the denotational dimension distinguish the subtle nuances of the semantic meaning of each of the synonymous verbs respectively, though with some occasional overlap among these features. For instance, the monosyllabic word *gē* in Chinese has the following denotational meanings:

1. **Type/Sizes of Objects:**

gē 'mow': to cut the grass in a garden, park etc.

2. **Instrument Type:**

qiē (*gē*) *cut*: to cut something into thin pieces using a knife

3. **Resultant Effects:**

gē 'cut (off/out)': to cut something off/out

gē chú 'excise': to remove something by cutting

gē duàn 'chop up': to cut something off/out

Firstly, in the lexical feature of the type or sizes of objects, *gē* 'mow' specifically denotes the cutting of the grass in a garden or a park, etc. Secondly, in the lexical feature of the type of instrument, when combined with the word *qiē* 'slice' to form the bi-syllabic Chinese lexicon *qiē gē* 'cut', it then denotes specifically the cutting of something into thin pieces using a knife, which emphasizes the original denotational meaning of *qiē* instead of *gē*. Thirdly, in the lexical feature of the resultant effects of the cutting act, *gē* 'cut (off/out)' denotes the act of cutting to render something off/out as the resultant effect which could also be denoted with a greater emphasis on the removal of something through the act of cutting by either combining the monosyllabic verb *chú* 'remove' and *duàn* 'break' to form *gē chú* 'excise' denoting the removal of something by cutting and *gē duàn* 'chop up'

denoting the cutting off or out of something respectively.

Within the denotative differentiae, the connotative differentiae could also co-exist in the form of emphasis of one of the components of the semantic meaning of a word such as the pair of synonyms *gē chú* 'excise' and *gē duàn* 'chop up': while both denote the removal of something through the act of cutting possibly with a cutting instrument like a knife, *gē chú* 'excise' highlights the excising action which connotes the complete removal of something undesirable while *gē duàn* 'chop up' emphasizes the forceful act of chopping up or hacking of something for the purpose of breaking it.

5.2 Challenges for Bilingual Children in "Cut" Verb Learning

In sections 4 and 5, the semantics of thirteen "cut" verbs in English and four "cut" verbs in Chinese that are frequently used in daily life were illustrated with usage notes. The illustrations show that the semantic differences between the words within and between the two languages are big enough to cause challenges for young bilingual children to acquire the verbs easily. For example, the manner distinctions and causative results of the different cut actions may not be easily acquired by young bilingual children through daily life experience. To understand how the process of learning happens at an early age and whether there is an order of learning of the verbs within a PA verb class, an analysis of the semantics of the verbs from learners' perspective becomes necessary. The semantic differences between the paired verbs in the two languages can also become evident through a comparative illustration of the verb semantics.

From the illustration of the denotation and connotation differences between the "cut" verbs in English and Chinese, we can see that it would require more linguistic and real-world knowledge for bilingual children to be able to acquire fully "cut" verbs, which explains why empirical studies of Chinese-English bilingual word learning have not shown any data of bilingual children's full acquisition of all the "cut" verbs in their preschool years.

6 Conclusion

It This paper discusses the semantic and stylistic differences of the highly frequently used Chinese physical action verbs, such as *jiǎn, qiē, xīu, gē* and their English counterparts *cut* (with scissors), *slice/cut*, *trim/prune*(away/off) and *cut* (off/out) that may influence Chinese-English bilingual children's acquisition of these differences between the two languages. Employing the usage notes of dictionaries and thesaurus as a methodology, the fine differences of the verbs were demonstrated in a two-part representation for lexical differentiation (DiMarco et al., 1992). The nuances and subtleties of the denotation and connotation of the "cut" verbs were illustrated accordingly.

Acknowledgments

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