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Collocational Constraints on the Intensifier *Highly*: A Corpus-based Study

YAMATO HYUUGA

1. Introduction

Intensifiers are adverbial items that modify adjectives, adverbs, or verbs, thereby strengthening or weakening their meaning. Quirk et al. (1985: 589-590) classified them into two types according to their function. One is the amplifier, which scales upwards from an assumed norm, and the other is the downtoner, which has a lowering effect, usually scaling downwards from an assumed norm. Among them, the amplifier is further subdivided into two groups: the maximizer (e.g., *absolutely*, *completely*, *totally*), which denotes the upper extreme of a scale, and the booster (e.g., *awfully*, *terribly*, *very*), which represents a high degree, or a high point on a scale. As for the downtoner, it is further sorted into four parts: the approximator, compromiser, diminisher, and minimizer. This study, however, focuses particularly on the amplifier, so we refrain from mentioning them in detail here. The categories of intensifiers stated above are as follows.

- (1) Types of intensifiers (Quirk et al. 1985: 589-590)
 - a. Amplifiers: maximizers (e.g., completely) and boosters (e.g., very much)
 - b. Downtoners: approximators (e.g., almost), compromisers (e.g., more or less), diminishers (e.g., partly), and minimizers (e.g., hardly)

Regarding the modification by the amplifier, it is known that maximizers are readily compatible with closed-ended (or ungradable) words since they point to the endpoint on a scale, and in contrast, boosters usually combine with open-ended, or gradable words since they denote a high degree on a scale. Thus, if the scalarity (or gradability) of an amplifier matches that of its modifcands, its modification is accepted. For example, the modification in which a closed-ended adjective *devoid* is intensified by a maximizer *completely* is easily accepted (e.g., *completely devoid*) because the two words are both ungradable and are compatible with each other. The modification in which an open-ended adjective *nice* is intensified by a booster *very* is also correct (e.g., *very nice*) as they are both gradable and their scalarities match perfectly. When the scalarity of an intensifier and that of its modifcands are not identical, however, the modification is not accepted. For example, the gradability of the maximizer *completely* clashes with that of the open-ended adjective *nice*, hence the ungrammatical choice **“*completely nice*.” In addition, the booster *very* and the closed-ended adjective *devoid* are not a good match, so the combination of the two items was rejected (e.g., **very devoid*). These linguistic facts tell us that the gradability of an intensifier and that of a word modified by it must be harmonized for its modification to be acceptable. To be concise, maximizers co-occur with closed-ended adjectives whereas boosters combine with open-ended adjectives. This modification principle of intensifiers, henceforth referred to as the “gradability constraint” in this paper, is generally applied to all intensifiers. Typical maximizers like *completely*, *totally*, and *utterly*, and boosters like *so*, *very*, and *awfully*, conform to this restriction. This explains the grammaticality of *completely dead* / *totally unacceptable* / *utterly impossible* / *so long* / *very bad* / *awfully happy*. The general modification principle of intensifiers is summarized below.

- (2) Gradability constraint (Quirk et al. 1985: 469)

If the gradability of an intensifier is harmonized with that of its collocates, its modification is accepted

Despite most degree modifiers satisfying the gradability constraint, a certain intensifier seemingly violates it. The word in question is an intensifying item *highly*, which we focus on in this paper. *Highly* is an intensifier classified as a booster, so the gradability constraint is supposed to force it to collocate with open-ended adjectives. It modifies many gradable adjectival items such as *obvious*, *toxic*, *likely*, and *critical* (e.g., *highly obvious* / *toxic* / *likely* / *critical*). However, numerous adjectives are open-ended yet cannot be modified by it. For example, *highly* cannot intensify open-ended adjectives like *good*, *happy*, *queer*, and *sage* (e.g., **highly good* / *happy* / *queer* / *sage*). Some kinds of gradable adjectives collocate with *highly* while others are incompatible with it. As *highly* only partly satisfies the gradability constraint, other modification restrictions are necessary to felicitously select its adjectival collocates. The fact that *highly* does not intensify all the gradable adjectives gives rise to two significant questions. The first is understanding what kinds of constraints must be assumed to properly select the adjectives collocating with *highly*, and the other is what drives it to acquire those collocational constraints. Thus, we deal with these two questions in this study.

This thesis consists of seven chapters. This chapter has introduced the topic and aim of the research. In Chapter 2, we review three previous studies on the collocational behavior of *highly*, that is, Quirk et al. (1985), Bolinger (1972), and Paradis (1997), and then highlight some crucial problems of each analysis. Chapter 3 and Chapter 4 attempt to confirm the validity of Bolinger (1972) and Paradis (1997) respectively, by investigating the collocational behavior of *highly* using a corpus, and then present some findings on each investigation. Chapter 5 provides three idiosyncratic collocational constraints on *highly*, based on the preceding arguments. In Chapter 6, we discuss what produces those peculiar restrictions on its adjectival collocation. Chapter 7 concludes this paper with a summary of our claims and an outlook for further study.

2. Previous Studies

This chapter examines three previous studies which deal with the modification restrictions on the intensifier *highly*. Firstly, in Section 2.1., we briefly consider Quirk et al. (1985) again, which claims that intensifiers generally follow the gradability constraint in their modification. Secondly, in Section 2.2., we focus on Bolinger (1972), which argues that *highly* tends to modify polysyllabic adjectives¹ but avoids collocating with monosyllabic ones. This collocational restriction is hereinafter called the “phonological constraint.” Thirdly, in Section 2.3., we address Paradis (1997), which suggests that *highly* combines well with formal adjectives over informal ones. We henceforth refer to this restriction as the “register constraint.” Lastly, in Section 2.4., we note some crucial problems that each of the three previous studies has.

2.1. Gradability Constraint

As discussed in Chapter 1, general intensifiers follow the gradability constraint (Quirk et al. 1985: 589-590), to the effect that, if the scalarity or gradability of an intensifier and that of its modificands are the same, the modification of the intensifier is accepted. If we apply this constraint to the adjectival modification by *highly*, it should collocate with open-ended adjectives because it is also gradable. The application of the gradability constraint to *highly* is as follows.

¹ Technically speaking, the prefix *poly-* means “three or more.” In this paper, however, we use this prefix to denote “two or more” instead for the sake of convenience. Thus, polysyllabic adjectives or polysyllables refer to words consisting of two or more phonological elements. Also, polymorphemic adjectives refer to words consisting of two or more morphemes.

(3) Gradability constraint

The intensifier *highly* is categorized as the booster, so it modifies open-ended adjectives.

As the summary (3) shows, the gradability constraint compels *highly* to intensify only gradable adjectives. In fact, it is capable of combination with open-ended adjectives but incapable of modifying non-gradable ones (e.g., *highly qualified / desirable / important*, **highly devoid / dry / naked*). All intensifiers basically obey the gradability constraint when modifying other parts of speech, so it should be applied to the adjectival collocation of *highly* as a matter of course.

2.2. Phonological Constraint

Bolinger (1972) states that the intensifier *highly*, in its premodification of adjectives, has a strong tendency to evade collocating with monosyllables but prefers co-occurring with polysyllables. To demonstrate that *highly* does have such a phonological preference on its collocation, he provides the following examples.

(4) highly indignant, incensed, *highly mad, sore
highly evident, obvious, *highly clear, plain
highly unusual, curious, *highly strange, queer, highly odd
highly intelligent, *highly bright, smart, wise, sage
highly satisfactory, *highly good
highly impenetrable, *highly dense
highly nourishing, productive, *highly rich (Bolinger 1972:53)

In the above examples (4), the acceptability of adjectival modification by *highly* is presented. Bolinger (1972:53) argues that when *highly* premodifies synonymous adjectives (e.g., indignant, incensed, mad, sore), its intensification of polysyllables is preferred and considered to be grammatical (e.g., *highly indignant / incensed*), while its intensification of monosyllables is avoided and is quite difficult to accept (e.g., **highly mad / sore*). Offering the examples in (4) above, he maintains that when it premodifies adjectives, *highly* phonologically favors polysyllabic ones. This phonological preference on the collocation of *highly* is summarized as the “phonological constraint” below.

(5) Phonological constraint

The intensifier *highly* prefers modifying polysyllabic adjectives to monosyllabic ones.

Typical intensifying items such as *very*, *terribly*, or *completely*, can all premodify adjectives regardless of whether they are monosyllabic or polysyllabic (e.g., *very nice / interesting, terribly sad / surprising, completely new / different*). Intensifiers generally carry no phonological preference when collocating with other lexical items. Thus, it seems that the phonological constraint is peculiar and only applicable to *highly*.

2.3. Register Constraint

Paradis (1997: 85) notes that unlike general intensifiers such as *awfully* or *terribly*, *highly* does not modify typical open-ended adjectives like *good*, *long*, or *fast* (e.g., *awfully good / long / fast, terribly good / long / fast, *highly good / long / fast*). While Bolinger (1972) would ascribe

the unacceptability of the collocation *highly good / long / fast* to these adjectives being monosyllabic, Paradis (1997) claims that *highly* is, compared to the general intensifiers, a formal degree modifier that is used in more matter-of-fact and less evaluative contexts and favors taking formal adjectives as its modificands. The formality of *highly* makes it readily combine with formal adjectives. This collocational restriction is what we call the “register constraint” in this thesis, and it is summarized as follows.

(6) Register constraint

The intensifier *highly* prefers modifying formal adjectives to casual or colloquial ones.

As seen above, typical intensifiers can modify common adjectives like *nice*, *cute*, or *funny* with ease, so the register constraint seems to be only applied to *highly*, just as the phonological constraint.

2.4. Some problems

We have so far reviewed the three collocational constraints on the intensifier *highly*, namely the gradability constraint (Quirk et al. 1985), the phonological constraint (Bolinger 1972), and the register constraint (Paradis 1997). In this section, we present some significant challenges that each of these restrictions pose.

First, when we think of the modification pattern *highly + adjectives*, a very serious issue is expected to arise regarding the gradability constraint, as has been briefly mentioned in Chapter 1. Since the intensifier *highly* is classified as the booster, the gradability constraint predicts it will modify all gradable adjectives. However, numerous open-ended adjectives cannot be intensified by *highly* (e.g., **highly happy / strange / funny*). Even though it obeys the gradability constraint, we mistake the adjectives that cannot be modified by *highly* for those that can be. Unlike general intensifiers, the application of the gradability constraint to *highly* is not at all sufficient to properly select the adjectives co-occurring with it. Thus, we must resort to other restrictions when we consider the adjectival intensification by *highly*.

Second, the phonological constraint, under which the intensifier *highly* phonologically favors polysyllables over monosyllables, has two problems. Considering various collocational patterns provided by Bolinger (1972:53) (= (4)), *highly* evades monosyllabic adjectives and prefers polysyllabic ones, so the phonological constraint seems to be valid. However, a closer look at other actual examples reveals that some monosyllabic adjectives can be modified by *highly* (e.g., *highly skilled / prized*). The existence of these seemingly exceptional adjectives is inconsistent with the phonological constraint. The other problem is that numerous polysyllabic adjectives cannot be modified by *highly* (e.g., **highly real / easy / happy*). The unacceptability of these collocates is contradictory to the phonological constraint as well. With these linguistic facts in mind, we can argue that the phonological constraint is not appropriate for correctly selecting the adjectives capable of co-occurring with *highly*, and that it must be revised.

Finally, we highlight the problem of the register constraint. This constraint is such that the intensifier *highly* tends to combine with formal adjectives given its nature and tendency to be used in formal contexts. However, not all formal adjectives are allowed to be modified by *highly*. The formal adjective *sage* is a good counterexample. As Bolinger (1972:53) noticed, the collocate **highly sage* is not grammatically accepted, even though *sage* is a purely formal adjective as both the authoritative dictionaries *Longman Dictionary of Contemporary English* (LDOCE) and *Oxford Advanced Learner's Dictionary* (OALD) regard it as *literary*. If the

collocate **highly sage* follows the register constraint, the very formal adjective *sage* will have to be easily intensified by *highly*. However, that collocational pattern is not found in *Corpus of Contemporary American English* (COCA) and seems to be unacceptable, as per the judgment in Bolinger (1972:53). This linguistic fact contradicts the register constraint, leading us to suggest that whether an adjective is formal or informal is not the sole factor determining whether the adjective is capable of being combined with *highly*. That constraint can indeed be one necessary limitation that is significant for choosing the appropriate adjectives intensified by *highly*, but it is not an absolute one and we need other collocational restrictions. Even if only the register constraint is applied to *highly*, we fail to pick out its adjectival collocates correctly.

In this section, we have seen some problems of the three constraints on the collocation of the intensifier *highly*. Considering the above problems, we can observe that each restriction does not function independently but is interrelated in some way, thereby enabling us to properly select adjectives co-occurring with *highly*. With the above issues in mind, in the next two chapters, we examine whether the two limitations—the phonological and register constraint—are felicitous collocational constraints on *highly*. Such examinations will provide us with some answers to the question of what types of adjectives *highly* can modify.

3. On the phonological constraint

As noted in Chapter 2, the phonological constraint has two critical problems. Even if the intensifier *highly* satisfies the phonological constraint, we cannot explain the following two linguistic facts that it can be compatible with several monosyllabic adjectives (e.g., *highly skilled/prized*) and that it cannot intensify some polysyllabic ones (e.g., **highly easy/happy*). These facts seem to critically conflict with the phonological constraint. If the adjectives contradictory to it are extremely few, however, we can conclude that the phonological constraint helps us enumerate the adjectival modifcands of *highly*. In contrast, if there are a great number of exceptions to the constraint, we need to rectify it so that it will suit actual language use.

In this chapter, to confirm whether the intensifier *highly* actually fulfills the phonological constraint when premodifying adjectives, we take a closer look at its collocational behavior in a corpus-based way. In Section 3.1., we offer an outline of the investigation into the phonological constraint. Then in Section 3.2., some findings on the research are provided.

3.1. Investigation

Through the research in this chapter, we aim to examine whether the phonological constraint does force the intensifier *highly* to avoid monosyllables and favor polysyllables. The methods and procedures of the study are as follows.

(7) Outline of investigation

(a) Purpose:

To verify whether the intensifier *highly* does have the phonological constraint on its collocation when it premodifies adjectives.

(b) Corpus used: Corpus of Contemporary American English (COCA)

(c) Word studied: Highly

(d) Procedures:

① The collocation <*highly* [j*]> is retrieved in COCA, and the top 100 collocates are extracted and listed.

② The number of syllables of each adjective collocating with *highly* is examined to

see if it really carries the phonological constraint.

The research on the phonological constraint is conducted in accordance with the methods and procedures summarized above. Now let us move on to the next section, in which we look at the survey results.

3.2. The results

In this section, we take a careful look at the collocational behavior of the intensifier *highly* which is obtained from COCA, and thereby confirm whether it does avoid monosyllabic adjectives and favor polysyllabic ones. Although the investigation is conducted on the top 100 adjectives co-occurring with *highly*, the list presented below is limited to the top 50 due to space limitations. In the presentation of the results, the total frequency refers to the number of times *highly* premodifies adjectives in the corpus, the number next to each adjective indicates how many times it collocates with *highly*, and the adjectives underlined represent monosyllables.

(8) *Highly + adjectives* (Total frequency: 44983 times)
unlikely 1681 *effective* 1032 *successful* 1032 *skilled* 984 *competitive* 826 *visible* 727 *unusual* 666 *qualified* 658 *sensitive* 627 *significant* 577 *publicized* 557 *likely* 539 *educated* 510 *respected* 462 *intelligent* 446 *critical* 437 *complex* 389 *variable* 383 *anticipated* 379 *controversial* 369 *dependent* 348 *efficient* 348 *toxic* 348 *specialized* 346 *selective* 327 *sophisticated* 311 *personal* 300 *enriched* 297 *desirable* 293 *developed* 290 *profitable* 285 *technical* 284 *relevant* 266 *influential* 240 *specific* 240 *productive* 235 *questionable* 232 *contagious* 231 *accurate* 218 *detailed* 216 *motivated* 201 *probable* 198 *mobile* 197 *popular* 197 *improbable* 190 *vulnerable* 190 *active* 175 *classified* 174 *important* 172 *emotional* 169

The above list (8) displays the top 50 collocates of the collocation <*highly + adjectives*> extracted from COCA. The data shows us that in its top 50 collocates, the collocational pattern in which *highly* intensifies monosyllabic adjectives is only in the case of *highly skilled* (984 times). Considering the remaining 50 adjectives not listed in (8), it turns out that the only modification pattern in which *highly* premodifies monosyllables is *highly prized* 2 (108 times). Among its top 100 adjectival collocates, only the two adjectives *skilled* and *prized* are monosyllabic but can collocate with *highly*. The other 98 adjectives, except for these two words, are all composed of two or more syllables. This linguistic fact suggests that as Bolinger (1972) argues, *highly* actually has the phonological constraint on its collocation. The intensifier *highly*, in almost all its adjectival intensification, has a strong tendency to avoid collocating with monosyllables and favor combination with polysyllables.

However, considering the collocational behavior of *highly* in terms of frequencies rather than types of adjectives, we see things differently. In the top 100 collocates, *highly* premodifies monosyllabic adjectives no less than 1092 times, consisting of the collocates *highly skilled* (984 times) and *highly prized* (108 times). This means that while the types of monosyllabic adjectives that can be modified by *highly* are minimal, the frequencies with which it

² Bolinger (1972: 54) admits that the collocation *highly prized* is an exception to the phonological constraint on *highly*. According to his explanation, that collocation is acceptable because the “up” image that the adjective *prized* originally had, matches the original denotation of the intensifier *highly*, that is, “spatially high.”

is compatible with monosyllables are not so low. In addition, if the scope of research on the collocation *highly* + adjectives is extended to more than the top 100 cases, we can discover some other monosyllabic adjectives intensified by it such as *flawed* (39 times) and *skewed* (27 times). Although Bolinger (1972) considers *highly* to be normally incompatible with monosyllables, it does permit the combination with monosyllabic adjectives in actual language use. This prevents us from concluding that those monosyllabic adjectives are just exceptions to the restriction at issue.

Furthermore, as has been mentioned in Section 2.3., we find, through the present investigation, that the intensifier *highly* cannot premodify polysyllabic adjectives in some cases, which also conflicts with the claim of Bolinger (1972). For example, it does not usually collocate with some common polysyllabic adjectives such as *real*, *easy*, and *happy* (e.g., *highly real* / *easy* / *happy*), which are, of course, easily modified by other representative boosters like *very*, *quite*, and *so* (e.g., *very real*, *quite easy*, *so happy*). In fact, there are no modification patterns related to *highly real* / *easy* / *happy* in COCA. There are some adjectives that are polysyllabic but incompatible with *highly*, which run counter to the phonological constraint too.

So far in this section, looking at collocates of *highly* in terms of types, we have found that, in almost all its modification of adjectives, it co-occurs with polysyllables and evades monosyllables. Considering its collocational behavior in terms of frequency, however, we have realized that it does often premodify monosyllabic adjectives. We have also discovered that some polysyllabic adjectives cannot collocate with *highly*. These linguistic facts render it difficult to think of those counterexamples as mere exceptions to the phonological constraint. The above discussion allows us to argue that *highly* frequently violates the phonological constraint maintained in Bolinger (1972), and therefore its validity is not guaranteed with a high degree of certainty. Thus, we will have to revise the constraint in question so that it will comply with actual language data.

We now carefully examine the collocational patterns of *highly* presented in Bolinger (1972:53) (= (4)) and its 50 adjectival collocates obtained from COCA (= (8)). We make one significant observation; The adjectives modified by *highly* all consist of two or more morphemes, while those not collocating consist of one morpheme. *Highly* tends to intensify polymorphemic adjectives, namely the items consisting of their root and one or more affixes, such as *productive*, *successful*, *unusual*, *qualified*, or *toxic*, but dislikes co-occurring with monomorphemic adjectives, or the words comprised of only their base, like *clear*, *strange*, *good*, *bright*, or *real*. In other words, it will be not polysyllabic but polymorphemic adjectives that *highly* prefers to take as its modificands. Also, it will be not monosyllabic but monomorphemic adjectives that cannot collocate with *highly*. If this is the case, we can account for both modification patterns that seemingly violate the phonological constraint, namely, the pattern in which monosyllabic adjectives can be modified by *highly* (e.g., *highly skilled* / *prized* / *flawed* / *skewed*) and the pattern in which polysyllabic adjectives cannot be intensified by it (e.g., **highly real* / *easy* / *happy*). That is, all the adjectives *skilled*, *prized*, *flawed*, and *skewed* are monosyllabic, but looking at their internal structure, they all consist of two morphological elements (e.g., *skill+ed*, *priz(e)+d*, *flaw+ed*, *skew+ed*), which qualify them to combine with *highly*. In contrast, the adjectives *real*, *easy*, and *happy* are all polysyllabic, but their internal structure appears to be composed of just one morpheme, restricting combination with it.

Here, some scholars might maintain that the adjectives *easy* and *happy* are made up of two morphological parts because the affix “-y” is listed in dictionaries as a kind of suffix that converts some words into their corresponding adjectives. Certainly, such a point seems to be quite right, for there are plenty of adjectives with the suffix “-y” such as *rainy*, *yellowy*, *milky*,

dreamy, and *sugary*. We indeed think of these adjectives as composed of two pieces (e.g., *rain+y*, *yellow+y*, *milk+y*, *dream+y*, and *sugar+y*) because their root completely forms an independent unit so their internal components are quite easy to divide. However, in contrast, the adjectives *easy* and *happy* will be regarded as being comprised of just one element, for no one considers them to be polymorphemic just like “*eas+y*” and “*hap+(p)y*.” Technically, these two adjectives are made up of two morphological parts, but the connection between their base and the suffix “-y” is too strong to separate. That is why we should treat the adjectives whose internal composition is not easily separable like *easy* and *happy* as not polymorphemic but monomorphemic, even though they are, strictly speaking, made up of two morphemes.

As is discussed above, supposing that it is not the phonological but the morphological constraint that the intensifier *highly* has on its collocation, we can reasonably explain why it can occasionally co-occur with monosyllabic adjectives (e.g., *highly skilled / prized / flawed / skewed*) and why it is not allowed to collocate with some polysyllabic ones (e.g., **highly real / easy / happy*), both of which cannot be accounted for by the traditional phonological constraint offered in Bolinger (1972). We should therefore postulate that the collocation of *highly* is not phonologically but morphologically restricted. The morphological constraint on *highly* provided in this chapter is summarized below.

(9) Morphological constraint

The intensifier *highly* prefers modifying polymorphemic adjectives to monomorphemic ones.

In this chapter, we have discussed a corpus-based study to confirm whether the intensifier *highly* does have the phonological constraint when it premodifies adjectives. The survey results seen above have elucidated that the phonological constraint is not valid for properly listing the adjectival collocates of *highly* because fails to explain most counterexamples. Therefore, we have rejected the conventional phonological constraint provided in Bolinger (1972), and instead adopted the new morphological constraint (= (9)). In the next chapter, we confirm whether *highly* does prefer modifying formal adjectives to casual or colloquial ones, in line with Paradis (1997).

4. The register constraint

The register constraint is the restriction under which the intensifier *highly* requires its modifiands to be formal because it is a particularly formal booster. As discussed in Chapter 2, however, that restriction has one crucial problem: even if *highly* obeys the register constraint, we cannot provide the proper explanation for the linguistic fact that its intensification of formal adjectives is sometimes unacceptable (e.g., **highly sage*). This point clashes with the register constraint and casts doubt on its validity.

In this chapter, we attempt to confirm whether *highly* does satisfy the register constraint by examining the formality of adjectives collocating with it using the COCA corpus. In Section 4.1., the methods and procedures of the study in this chapter are outlined. Then in Section 4.2., we examine some findings of the survey.

4.1. Investigation

By conducting the investigation in this chapter, we aim to clarify whether the intensifier *highly* does favor formal adjectives over casual or colloquial ones. The methods and procedures of the study are summarized below.

(10) Outline of investigation

(a) Purpose:

To verify whether the intensifier *highly* does have the register constraint on its collocation when it premodifies adjectives.

(b) Corpus used: Corpus of Contemporary American English (COCA)

(c) Word studied: Highly

(d) Procedures:

① To find out the genres in which the collocation <highly [j*]> tends to be used, its frequency and percentages by section (register) are examined in COCA.

② A chart of the frequency and percentages of the collocation <highly [j*]> by section is made to see if the adjectives collocating with *highly* are formal or not.

The research on the register constraint is conducted in accordance with the methods and procedures summarized above. In the next section, we closely look at the survey results.

4.2. The results

In this section, we focus on the frequency and percentages of the collocation <highly [j*]> by genre in COCA, and thereby verify whether *highly* actually tends to combine with formal items rather than casual or colloquial ones in its adjectival intensification. The following table represents the results of the present research. In the table, the percentages are rounded off to the second decimal place, and ACAD refers to academic journals, MAG magazines, WEB websites, BLOG weblogs, NEWS newspapers, SPOK spoken words, TV/M televisions and movies, and FIC fictional novels.

(11) Frequency and percentages of <highly [j*]> by section

Section	ALL	ACAD	MAG	WEB	BLOG	NEWS
Frequency (times)	44983	13092	7553	6826	6185	4994
Percentage (%)		29.1	16.8	15.2	13.7	11.1
	SPOK	TV/M	FIC			
	2991	1693	1649			
	6.64	3.76	3.67			

What is most outstanding in table (11) is that the collocation *highly + adjectives* is used in academic journals at a high rate of about 30%. This percentage is remarkably high, compared to that of other common intensifiers: *very* is used in academic journals at the rate of 6.0% (=40940 / 687591 times), *extremely* 13.4% (=5976 / 44512 times), *completely* 6.6% (=2649 / 40133 times), *quite* 12.8% (=9108 / 71216 times), and *deeply* 13.7% (=1590 / 11615 times). On the contrary, the collocation *highly + adjectives* occurs in spoken words, television shows / movies, and fictional novels, all of which are usually considered to be casual or colloquial sections, at a low rate of about 7%, 4%, and 4%, respectively. We can discover from these data that the collocation <highly [j*]> is preferred in genres that do not involve the expression of personal feelings like academic journals, which report only facts and research findings and exclude individual remarks. In contrast, the fact that the collocation is not favored in sections such as spoken words, TVs / movies, and fictional novels indicates that people do not like to use it in genres that contain a significant expression of personal emotions. It is natural to make use of formal expressions in formal sections like academic papers or written languages and to utilize informal expressions in casual, colloquial scenes as in daily conversations. The survey

results also enhance the validity of Paradis (1997: 85), who claims that *highly* is a formal degree word used in more matter-of-fact and less evaluative contexts.

Some readers might note that if we add the percentage in websites and in blogs, the percentage of the collocation *highly* + *adjectives* occurring in those casual sections almost amounts to the rate of 30%, which is nearly equal to the percentage in academic journals, and therefore might maintain that it is unreasonable to conclude that *highly* is a formal intensifier. Looking at their breakdown, however, we can see that in the websites, 3199 out of 6826 occurrences, (and in the blogs) 3641 out of 6185 occurrences, are related to the topic “argument,” which is a kind of discussion based on a set of data, reasons, or facts, generally considered to be classified as a formal theme. Indeed, websites and blogs themselves will be categorized as relatively informal sections, but even if *highly* occurs in those casual genres, it can be used with ease when they contain formal topics like an argument. We need to note, however, that it can sometimes occur in informal scenes. In fact, although the percentage is comparatively low, it can be used in spoken words or television shows / movies as displayed in Table (11). *Highly* does prefer to collocate with formal adjectives, but that does not mean that it never combines with informal ones. To summarize our discussion so far, we can argue that *highly* has the register constraint when premodifying adjectives, but that restriction is not as absolute and strong as the gradability or the morphological constraint.

Now let us examine the relationship between language register and the number of syllables or morphemes of words to gain an important perspective. As is probably well-known, the English vocabulary system has a three-layer structure, which is literally composed of three tiers; in the lower layer is Old English, the middle layer French-derived English, and the upper layer Latin-derived English (Hotta 2016: 114-115). Old English, which occupies the lower level, is poor in form, has warm and nostalgic sounds, and prefers to be used in casual scenes such as a daily conversation. Latin-derived English, taking up the upper layer, is rich in form, has stern and authoritative sounds, and prefers to be used in formal genres like academic papers or written language. French-derived English is in between the upper and lower layer, so some of its forms are rich while others are poor, sometimes its sounds are warm but sometimes stern, and people use it both in the casual and formal register depending on the situation.

The three-layer structure of English vocabulary is illustrated well by three synonymous words like *ask-question-interrogate*. In the lower layer is the verb *ask*, which is derived from Old English, is poor in form, gives warmth to people, and so is seen as a comparatively colloquial expression. In the middle layer is the French-derived verbal item *question*, which is longer in form than *ask*, and is used both in informal and formal sections. In the upper layer is the Latin-derived verb *interrogate*, which is more complex in form than the preceding two items, has a stern sound, and occurs mainly in the formal register. The above examples are perfectly consistent with the three-layer structure in English. Of course, there are many counterexamples in which words derived from Old English are longer or richer in form than French- or Latin-derived English. For example, words like *time-age-epoch* or *help-aid-assistance*. However, that structure prevails in the English vocabulary system and many English synonymous words tend to be compatible with it. Here, let us return to the discussion of the intensifier *highly*. As has been confirmed in this chapter, *highly* should be viewed as a very formal intensifying item, compared to other typical ones such as *extremely*, *quite*, and *deeply*. It will therefore hold greater opportunity to modify French- or Latin-derived long adjectives, most of which are not colloquial and tend to occur in the formal register, whereas there are fewer opportunities to modify short adjectives derived from Old English, most of which are casual expressions and prefer to be used in colloquial sections. Provided that this supposition is the

case, it may well be that *highly* likes to co-occur with adjectives composed of complex morphemes more than adjectives composed of a simplex morpheme. In short, there is likely to be a very close relationship between the formality of *highly* and the number of syllables or morphemes of its collocating adjectives. Thus, we must consider such a relationship when thinking of its idiosyncratic collocational behavior.

In this chapter, we have taken a closer look at the register constraint on the intensifier *highly* to verify whether that the restriction is valid for explaining its unusual collocational behavior. The data extracted from COCA have revealed that it, in many cases, fulfills the register constraint presented in Paradis (1997) but that it sometimes occurs in informal genres such as spoken words or fictional novels. Therefore, we should think that the register constraint is applicable to *highly* but that it is not as strong as the gradability and the morphological constraint. Based on the discussion so far, the next chapter offers exactly the kinds of restrictions the intensifier *highly* has on its collocation.

5. Collocational constraints on *highly*

In this chapter, we focus on the collocational constraints on the intensifier *highly*, under which we can list the appropriate adjectives that are capable of collocating. Considering the discussion in the preceding chapters, it seems to have the following collocational limitations.

(12) Collocational constraints

a. Gradability constraint (= (3)) (Applied to all intensifiers)

The intensifier *highly* is categorized as the booster, so it modifies open-ended adjectives.

b. Morphological constraint (= (9)) (Only applied to *highly*)

The intensifier *highly* prefers modifying polymorphemic adjectives to monomorphemic ones.

b'. Phonological constraint (= (5)) (Applied to *highly* ad hoc)

The intensifier *highly* prefers modifying polysyllabic adjectives to monosyllabic ones.

c. Register constraint (= (6)) (Only applied to *highly*)

The intensifier *highly* prefers modifying formal adjectives to casual or colloquial ones.

Firstly, the gradability constraint is applied to *highly* as a matter of course because it is the primary and essential restriction when we think of the modification of intensifiers. As is already mentioned, the scalarity, or gradability, of an intensifier needs to be consistent with that of its adjectival modificands for its intensification to be acceptable. This primary rule of modification of intensifiers is what we call in this paper the gradability constraint and it seems to be applicable to all intensifying items. Thus, above all, we must apply that restriction to *highly*. It is one of the intensifiers subdivided into the class of booster, so that the application of the constraint at issue leads to a modification of all open-ended adjectives. In fact, with *highly* obeying the gradability constraint, we can select some of its adjectival modificands properly (e.g., *highly likely / respected / toxic / sophisticated / active*). All these words are gradable and are thus perfectly suitable for the collocational partners of *highly*. However, there are many cases in which it cannot modify open-ended adjectives, as stated in Chapter 2. For example, none of the collocates **highly clear / queer / lovely / childish* is acceptable although these adjectives are all open-ended. To get rid of the adjectives contradictory to the gradability constraint, we need to take up other collocational limitations.

Secondly, the morphological and register constraint are applied to *highly* at the same time. The former is the constraint under which it prefers modifying morphologically complex adjectives to simple ones. The latter is the constraint under which it prefers modifying formal adjectives to casual or colloquial ones. The application of these two constraints is conducted simultaneously because whichever constraint is applied first, the adjectives that are ultimately selected remain the same. By applying them to *highly*, we can list virtually all open-ended adjectives that can be modified by it. Let us consider the unacceptable collocational patterns **highly clear / queer / lovely / childish* here. The words *clear* and *queer* are the ones which can be freely used in formal sections; The adjective *clear* occurs in academic journals, which we regard as a representative formal genre, at the rate of 14.5% (23319 / 161105 times), and *queer* 26.4% (1236 / 4681 times). Thus, they fulfill the register constraint so they remain the collocational candidates of *highly*. However, these two adjectival items are eliminated by the morphological constraint because they are composed of just one morpheme and they violate it. As the result, the adjectives *clear* and *queer* drop out of the potential collocates of *highly*. In contrast, the remaining candidates *lovely* and *childish* are made up of two morphemes (e.g., *love+ly*, *child+ish*), so the morphological constraint cannot omit these two items. But they are ruled out by applying the register constraint to *highly* because they are primarily used in colloquial sections and they rarely occur in the formal register. In fact, the adjectives *lovely* and *childish* are used in academic journals at the rate of 0.01% (420 / 29099 times) and 0.04% (160 / 3909 times), respectively. Consequently, they are also excluded from the potential collocates of *highly*. This is how we can filter its unqualified modificands.

Now, we must note that an ad hoc limitation, namely the phonological constraint, will further be needed only if the morphological constraint fails to select proper adjectives collocating with *highly*. That constraint demands that it take polysyllabic adjectives as its modificands and avoid co-occurring with monosyllabic ones. As stated above, the morphological constraint allows us to choose almost all the adjectives that can be modified by *highly*. However, some exceptional adjectives are comprised of one morpheme yet permitted for combination. The adjectives *human* and *potent* are nice examples of it. The two words both do not have any prefixes or suffixes, so we have no choice but to conceive them as being composed of one morpheme. Thus, they violate the morphological constraint, and the modifications like *highly human / potent* will be rejected. Nevertheless, the collocates *highly human / potent* are, as we can find them in the corpus, both grammatical, contrary to our expectation. The application of the morphological constraint leads to incorrect predictions in this case; thus, we must rely on the ad hoc restriction, that is, the phonological constraint, which requires a combination with adjectives consisting of two or more syllables. Both the adjectives *human* and *potent* are made up of two phonological parts. Applying the phonological constraint to *highly*, therefore, enables it to take those two monomorphemic adjectives as its modificands. Just in case that the morphological constraint malfunctions, we need to have this nonce restraint as the last resort.

Summarizing the discussion so far, we can argue that by applying the three collocational restrictions, or the gradability, morphological, and register constraint, to *highly*, open-ended, polymorphemic adjectives which can also be freely used in the formal register are picked out as its modificands. Only if the morphological constraint fails to select its adjectival collocates appropriately, should we resort to the phonological constraint instead. The application of those collocational constraints to *highly* enables us to enumerate almost all the adjectives collocating with it. In fact, those restrictions can rationally explain most of its top 50 collocates listed in (8) and the acceptability of its intensification of synonymous adjectives provided in Bolinger

(1972: 53) (= (4)), so they seem to be truly valid for choosing its adjectival collocational partners felicitously.

Further investigation of other modificands of *highly* in the actual linguistic data reveals that there are some counterexamples to the collocational constraints, including the ad hoc phonological constraint. They are not necessarily applicable to all the adjectival modifications by *highly*. For example, we can find acceptable modifications like *highly dense / prone / rich / odd* in COCA, though the frequencies of these modifications are very small. All these adjectives consist of just one morpheme and one syllable, but in fact, they are compatible with *highly*, disobeying both the morphological and even phonological constraint. Furthermore, an even more crucial counterexample is found in some books, which is the collocation *highly cool*. See the following examples.

(13) a. Some ads feature famous and highly cool people such as soccer players from Barcelona's two teams, Fútbol Club Barcelona and Espanyol.
[Doerr, Neriko Musha (2009) The Native Speaker Concept -Ethnographic Investigations of Native Speaker Effects-]

b. Kerouac's choice to compose in a nonlinear manner by following associations in place of reasoning or traditional narrative exposition grants the reader a highly cool reading experience (and it grants Kerouac a cool writing experience as well).
[Rice, Jeff (2007) The Rhetoric of Cool Composition Studies and New Media]

c. This audience speaks a vernacular language in a highly cool rhetorical style most of us cannot understand.
[Bennett, Audrey and Andrea Bennett (2006) Design Studies -Theory and Research in Graphic Design-]

The adjective *cool* is monomorphemic and monosyllabic so it violates both the morphological and phonological constraint just as the preceding four adjectives *dense / prone / rich / odd*. We will therefore be able to suppose that it cannot be modified by *highly* at this point. Also, according to the two reliable dictionaries LDOCE and OALD, the adjective *cool* is an “informal” expression when it means approval for something, as seen in a sentence like “You look pretty cool with that new haircut.” Thus, we also expect that it does not satisfy the register constraint and that its combination with *highly* is not allowed. However, the collocation *highly cool* is, as the data in (13) shows, occasionally accepted somehow, even though each of the phrases *highly cool* in (13a)–(13c) is no doubt considered to be informally used to mean approval. These are some of the actual examples that do not accord with the collocational constraints presented in this thesis.

Considering the linguistic facts mentioned above, we might be able to regard adjectives contradictory to the collocational constraints as mere exceptions because the number of times they are modified by *highly* is quite small. Even so, we might attribute the existence of those seemingly exceptional adjectives to a result of “delexicalization” of *highly*. Delexicalization, or sometimes called desemanticization, is a linguistic process in which the independent lexical content of a word fades away due to repeated use. The process of delexicalization is clearly illustrated by the most prevailing intensifier *very*. It is derived from a Latin word *verus*, denoting “to be true,” so it originally had a modal meaning of “tru(ly), truthful(ly).” As people used it over and over to vouch for the certainty of a proposition, however, its truth-averring denotation gradually weakened, and eventually, it lost almost all its original meaning and most of its present-day functions have been restricted to hyperbolization of other parts of speech. In other words, the intensifier *very* has traced the delexicalization process.

Drawing on the fact that the original denotation of *very* has been nearly fully delexicalized, Partington (1993: 183) notes that there is a correlation between the delexicalization of an intensifier and its collocational behavior; the more delexicalized an intensifier is, the more widely it collocates. In fact, now that the delexicalization process of *very* is, as has been discussed above, almost finished, it is capable of collocating with virtually all the open-ended adjectives, regardless of whether they are positive, negative, or neutral (e.g., *very good / bad / long*).

Lorenz (2002: 144) also claims that the collocates of an intensifier and the contexts of occurrence will change in relation to its own semantic change; the more grammaticalized, or delexicalized, an intensifier is, the more it loosens its collocational restrictions and increases in frequency. Both previous studies argue that the more an intensifier is used, the more its lexical meaning is bleached, and as a result, the width of its collocation is expanded. In summary, the extent of delexicalization of an intensifier determines its collocational behavior. We now return our focus to the intensifier *highly*. It goes without saying that the word *highly* is derived from a physical expression *high*, so it originally conveyed a purely spatial meaning of “height.” However, as people used it more often, its denotational meaning progressively changed from “physically high” to “metaphorically high,” and finally it came to solely serve as a mere intensifier (Partington 1993: 184).

If the delexicalization of an intensifier does have a great deal to do with the width of its collocation, the gradual loss of the propositional meaning of *highly* leads to the expansion of the types of its collocation. This means that the delexicalization of *highly* mitigates its idiosyncratic collocational restrictions and allows the modifications seemingly contradictory to them such as *highly prone / odd / cool* to occur in actual language use. It seems that *highly* continues to be delexicalized bit by bit even today, so the types of its collocates will keep on increasing accordingly in the future. We can speculate from this that the more *highly* loses its literal “height” meaning, the weaker its collocational constraints will get, and eventually, it will become a fully delexicalized intensifier and be able to co-occur with all gradable adjectives, regardless of how many syllables or morphemes its collocates are made up of or the formality of its collocates (just as in the case of *very*).

In this chapter, we have seen the peculiar collocational constraints on the intensifier *highly*, that is the gradability, morphological, and register constraints, and ascertained that *highly* satisfying them enables us to list almost all its collocates appropriately. Only if the morphological constraint fails to select its proper collocates, will we rely on the nonce phonological constraint. Although some modifications appear to be inconsistent with the collocational constraints such as *highly dense / rich / cool*, those seemingly exceptional collocates could be explained by the close relationship between the delexicalization of *highly* and the expansion of the types of its modificands; the further *highly* diverges from its original denotational meaning, the more adjectives it co-occurs with. If the delexicalization process of *highly* continues to make progress, the range of its adjectival modifications will expand more, and ultimately it will be able to intensify all open-ended adjectives. In the next chapter, we consider what drives *highly* to have such collocational constraints, especially the most unusual one, the morphological constraint.

6. What causes *highly* to experience the morphological constraint?

In this chapter, we attempt to examine what causes the intensifier *highly* to have collocational constraints, especially the most peculiar one, the morphological constraint. There are three possible reasons for this acquisition. One possibility is that the number of syllables or morphemes of *highly* has a considerable influence on that of its modificands. In other words, *highly* is made up of two morphological elements; thus, it demands that it combine with the adjectives

also composed of two or more morphemes. Another possibility is that the subclass of *highly* as an intensifier, that is, the booster, compels it to modify almost solely polymorphemic adjectives. This is the possibility that if an intensifier is subdivided into the booster, the intensifier will tend to intensify the adjectives consisting of two or more morphemes. The other possibility is that an intensifier that prefers to be used in formal genres tends to co-occur with polymorphemic adjectives. This refers to the possibility that there is a correlation between the register in which an intensifier frequently occurs and how many morphemes its adjectival collocates are comprised of. In the following sections, we see whether these three likelihoods are correct or not.

6.1. The number of syllables / morphemes of an intensifier

In this section, we investigate whether there are any relationships between the number of syllables or morphemes of an intensifier and that of its modificands. To test it, we examine the adjectival collocates of one-morphemic intensifier *so*, two-syllabic *very*, and three-morphemic *terribly*. If these intensifying items can co-occur with both the monomorphemic and polymorphemic adjectives, the likelihood will be rejected that the number of phonological or morphological components of an intensifier greatly influence that of its modificands. The top 30 collocates of each intensifier *so*, *very*, and *terribly*, obtained from COCA, are provided below. In the presentation of results, the total frequency refers to the number of times each intensifier premodifies adjectives in the corpus, the number next to each adjective indicates how many times it co-occurs with each intensifier, and the adjectives underlined represent monosyllables or monomorphemes.

- (14) *So* + adjectives (Total frequency: 473127 times)

good 18058 sorry 16249 bad 13261 hard 9124 happy 8785 important 7897 glad 7716 great 7685 sure 6366 easy 5864 long 5660 excited 5864 beautiful 4891 proud 4852 nice 4589 different 4120 close 3838 big 3758 funny 3750 high 3674 sad 3660 strong 3335 sweet 3295 cute 3175 small 3148 cool 3088 hot 3008 young 2905 tired 2809 stupid 2791
- (15) *Very* + adjectives (Total frequency: 687591 times)

good 42979 important 23022 different 18094 difficult 15540 nice 11901 hard 10090 interesting 9862 close 9421 small 9071 high 8608 clear 8528 strong 8400 happy 7929 long 7702 large 6903 bad 6075 serious 6067 low 5724 similar 5683 big 5372 special 5301 simple 5178 real 4933 young 4930 proud 4619 easy 4236 funny 4128 dangerous 3848 careful 3839 short 3644
- (16) *Terribly* + adjectives (Total frequency: 7781 times)

wrong 812 sorry 706 important 365 difficult 157 sad 151 hard 96 good 94 disappointed 93 concerned 89 interested 81 expensive 72 afraid 70 bad 67 interesting 64 unfair 61 surprised 58 different 56 surprising 53 painful 48 exciting 46 effective 43 serious 42 dangerous 41 happy 41 bright 40 complicated 38 worried 38 sick 37 lonely 35 useful 35

As the data (14)–(16) show, all the intensifying items *so*, *very*, and *terribly* can premodify both the monosyllabic or monomorphemic adjectives and the polysyllabic or polymorphemic ones, which indicates that typical intensifiers are capable of collocating with various kinds of adjectives regardless of how many internal parts their modificands are composed of. In other words, the number of syllables or morphemes of an intensifier is unrelated to its collocational partners. This means the fact that *highly* is composed of two syllables and two morphemes is not the

reason for the strong tendency to combine with morphologically complex adjectives. Thus, we can argue that the possibility is not felicitous that the morphological constraint stems from the number of syllables or morphemes of *highly*.

6.2. The subclass as an intensifier

In this section, we see if the likelihood is correct or not that the subtype of an intensifier, namely the maximizer or booster, determines the number of morphemes of its modicands. To confirm, we compare the adjectival collocates of some maximizers, namely, *completely* and *absolutely*, with those of some boosters, namely, *so*, *very*, and *terribly*. If both subtypes, the maximizer and the booster, do not display any phonological or morphological preference on their collocation, the type of intensifier is irrelevant to whether it tends to collocate with polymorphemic adjectives.

As for the collocational behavior of boosters, we have already seen in the previous section that the intensifiers *so*, *very*, and *terribly*, which are all classified as the subtype at issue, do not exhibit any phonological or morphological preference on their collocation. In other words, they can modify open-ended adjectives regardless of how many syllables or morphemes their adjectival collocates consist of. The intensifier *highly* is also sorted into the booster, but it normally co-occurs with polymorphemic adjectives. *So*, *very*, and *terribly* do not have the morphological constraint on their collocation and only *highly* has it, though all of them belong to the same subclass of boosters. This fact tells us that it is not because *highly* is sorted into the booster that it requires polymorphemic adjectives as its modicands.

Concerning the adjectival collocates of maximizers, we take *completely* and *absolutely* as examples. The top 30 collocates of each intensifier extracted from COCA are as follows. Just as in the previous section, the adjectives underlined are words consisting of one syllable or one morpheme.

- (17) *Completely* + adjectives (Total frequency: 40133 times)

different 6123 new 1210 wrong 911 free 577 honest 565 normal 381 unrelated 339
false 336 irrelevant 312 unaware 298 safe 273 insane 264 independent 249 empty
248 naked 247 innocent 243 dependent 241 useless 241 unacceptable 240 true 237
dark 222 ridiculous 222 unnecessary 218 alone 217 inappropriate 216 dry 212 clear
210 sure 209 comfortable 206 open 203
- (18) *Absolutely* + adjectives (Total frequency: 27431 times)

right 3552 necessary 1236 true 925 sure 877 correct 815 certain 720 essential 683
amazing 490 wrong 476 beautiful 457 clear 428 perfect 411 critical 384 ridiculous
351 convinced 334 wonderful 317 gorgeous 301 stunning 262 fantastic 254 brilliant
253 incredible 244 free 229 fine 224 crazy 215 false 211 delicious 191 impossible
189 crucial 184 horrible 177 vital 170

From the data (17)-(18), we can see that the maximizers *completely* and *absolutely* can collocate with both monomorphemic and polymorphemic adjectives if their modicands are closed-ended, or ungradable, and they do not display any phonological or morphological preference on their collocation. This allows us to claim that the classification of an intensifier as the maximizer, just like the booster, is irrelevant to the selection of its adjectival collocates. Alternatively, no matter which subtype an intensifier is classified as, the morphological constraint on its collocation does not arise. Considering the above discussion, the likelihood is also rejected that the subclass of *highly* as the booster demands that it combine with adjectives consisting of two or more morphological components.

6.3. The language register

In this section, we consider the possibility that the register in which an intensifier tends to occur affects the number of morphemes of the adjectives modified by it. As stated in Chapter 4, whereas in colloquial situations short adjectives that provide a sense of familiarity to other people are favored, in the formal register, long adjectives which sound dependable or authoritative are usually preferred. Thus, if an intensifier occurs mainly in a formal situation, it should have more opportunities to combine with long, polymorphemic adjectives that also tend to occur in the formal register, and accordingly, there is a higher possibility that nearly all of its collocates will be composed of multiple morphemes. The intensifier *highly*, which is normally used very formally, does have such a strong tendency to modify long, polymorphemic adjectives and this possibility seems to be more probable than the other two potential motivations introduced in the preceding sections. However, an examination of the collocational patterns of a few formal intensifiers other than *highly*, namely, *especially*, *particularly*, both of which prefer to be used in formal genres and do not usually occur in casual or colloquial sections³, will show us that the likelihood in question is invalid. We look at the top 30 adjectival collocates of the two formal intensifiers below. Monosyllabic or monomorphemic adjectives are underscored.

(19) *Especially + adjectives* (Total frequency: 29021 times)

important 1963 *true* 1879 *good* 678 *useful* 492 *difficult* 481 *vulnerable* 476 *young* 365 *hard* 360 *helpful* 350 *interested* 315 *interesting* 289 *high* 277 *effective* 274 *strong* 252 *popular* 241 *relevant* 223 *bad* 220 *concerned* 207 *critical* 200 *sensitive* 199 *valuable* 183 *significant* 177 *evident* 168 *large* 168 *dangerous* 166 *likely* 163 *fond* 157 *problematic* 157 *proud* 150 *attractive* 141

(20) *Particularly + adjectives* (Total frequency: 38868 times)

important 1810 *useful* 1329 *good* 1098 *interested* 930 *true* 913 *interesting* 724 *difficult* 667 *vulnerable* 629 *strong* 579 *relevant* 469 *concerned* 448 *effective* 436 *bad* 414 *helpful* 378 *high* 370 *hard* 356 *sensitive* 351 *significant* 253 *dangerous* 241 *popular* 235 *fond* 234 *large* 232 *acute* 219 *evident* 217 *attractive* 216 *problematic* 199 *susceptible* 187 *noteworthy* 181 *nasty* 177 *happy* 170

Probably because both intensifiers originally had almost the same meaning, the types of their adjectival collocates are also similar. We can find from the data (19)–(20) that they can readily modify adjectives consisting of one syllable or one morpheme, even though they are frequently used in formal sections just as *highly*. This linguistic fact indicates that even intensifiers that tend to occur primarily in the formal register do not always combine with long, polymorphemic adjectives. In other words, the register in which a particular intensifier often occurs

³ The collocation *especially + adjectives* occur in academic journals at the rate of 24.6% (=7132 / 29021 times), TVs / movies 2% (=668 / 29021 times), spoken words 6% (=1811 / 29021 times), and fictional novels 6% (=1700 / 29021 times). The collocation *particularly + adjectives* is used in academic journals at the rate of 26% (=10113 / 38868 times), TVs / movies 2% (=848 / 38868 times), spoken words 8% (=3166 / 38868 times), and fictional novels 7% (=2710 / 38868 times). The data shows us that both the intensifiers *especially* and *particularly* often occur in formal sections but are not used in the casual or colloquial register very much. The characteristic collocational behavior of *especially* and *particularly* is similar to that of *highly* in that all of them are frequently used in the formal register and avoided in casual situations. Thus, they can be regarded as formal intensifiers, like *highly*.

does not directly determine the number of morphemes of adjectives modified by it. We should therefore rule out the most seemingly valid possibility that *highly* is an intensifier that tends to be used in formal contexts; thus, it always takes lengthy, complex adjectives as its collocates.

In this chapter, we have considered three potential motivations for the intensifier *highly* to have the morphological constraint, which seems to be the oddest of its other collocational restrictions. We found that none of the three possibilities, (1) the number of syllables or morphemes of *highly* itself, (2) its classification as the booster, and (3) the register in which it tends to occur, forces it to collocate with polymorphemic adjectives. In this chapter, we can cross out the three possible motivations for the morphological constraint to emerge, but it remains to be clarified what directly makes *highly* suitable. Thus, figuring out the direct cause of *highly* acquiring the morphological constraint will be a significant future task.

7. Conclusion

Intensifiers modify other parts of speech depending on their own subtype (Quirk et al. 1985: 469); maximizers are ungradable, so they combine with closed-ended words, while boosters are gradable, so they combine with open-ended words. This principle is what we term the gradability constraint, which is generally applied to all intensifiers. However, one intensifying item, *highly*, apparently violates this primary collocational constraint in some of its adjectival modification patterns. *Highly* is sorted as a booster, so that for the satisfaction of the gradability constraint, it should be able to modify all open-ended adjectives. In fact, the collocates of *highly* are gradable adjectives (e.g., *highly unlikely / personal / complex*), but some kinds of open-ended adjectives cannot co-occur with it. For example, its intensifications of gradable adjectives such as **highly good / mad / lovely / sage / clear* are all unacceptable. The linguistic fact that *highly* does not combine with all open-ended adjectives suggests that other collocational restrictions than the gradability constraint are necessary for us to appropriately enumerate its adjectival collocates. Therefore, this thesis has attempted to find out exactly what kinds of constraints *highly* has on its collocation and what makes it exhibit an idiosyncratic collocational behavior.

The examination of adjectival collocates of *highly* in a corpus-based way has elucidated that its obeying three collocational constraints (and one ad-hoc restriction) enables us to select its modificands properly. The constraints on the collocation of *highly* are again summarized below.

(21) Collocational constraints

a. Gradability constraint (Applied to all intensifiers)

The intensifier *highly* is categorized as the booster, so it modifies open-ended adjectives.

b. Morphological constraint (Only applied to *highly*)

The intensifier *highly* prefers modifying polymorphemic adjectives to monomorphemic ones.

b'. Phonological constraint (Applied to *highly* ad hoc)

The intensifier *highly* prefers modifying polysyllabic adjectives to monosyllabic ones.

c. Register constraint (Only applied to *highly*)

The intensifier *highly* prefers modifying formal adjectives to casual or colloquial ones.

By applying the three constraints (21a-c) to *highly*, open-ended, polymorphemic adjectives that are also freely used in the formal register are selected as its potential collocational partners. Only if the morphological constraint fails to choose the proper collocates of *highly*, will we resort to the ad hoc limitation, that is, the phonological constraint (21b'), under which open-ended, polysyllabic adjectives that tend to occur in formal sections are selected instead. Retrieving the adjectival collocates of *highly* in COCA, we can see that virtually all of them satisfy the collocational constraints proposed in this thesis.

As for the question of what motivates *highly* to have the collocational constraints, especially the most distinctive one, the morphological constraint, we have rejected three possibilities. One possibility is that the number of phonological or morphological elements of an intensifier directly affects that of its modificands. The second possible motivation is that the subclass of an intensifier, namely, the maximizer or booster, leads to the morphological constraint. The third possibility is that the language register in which an intensifier tends to occur correlates with the number of morphemes of its modificands. Examining these three possibilities by comparing the collocational behavior of *highly* with that of other typical intensifiers such as *so*, *very*, *terribly*, *completely*, *absolutely*, *especially*, and *particularly*, revealed that none of them reflect a correct prediction. In other words, none of the three possibilities, (1) the number of syllables or morphemes of *highly*, (2) its classification as a booster, and (3) the register in which people prefer to use it, namely, the formal register, directly drives it to co-occur with almost solely polymorphemic adjectives.

Although we have found out that the intensifier *highly* has the three special constraints on its collocation and that the morphological constraint does not come from the number of syllables or morphemes it is composed of, its classification as the booster, or the formal register in which it tends to occur, consists of two future tasks. One is that some adjectives are contradictory to the collocational constraints on *highly*. For example, the gradable adjectives *dense* and *rich* are both comprised of one morphological part, so they seemingly violate the morphological or even phonological constraint. However, in fact, the modifications *highly dense* / *rich* are occasionally accepted somehow. The adjectival item *cool* is another good counterexample. It is an adjective consisting of one morpheme, and in addition, when it conveys approval for something, it is used very informally (OALD / LDOCE). Thus, it seems that *cool* conflicts with both the morphological and register constraints. However, the modification *highly cool* is also accepted in some cases. We have not been able to clearly account for why the violation of the collocational constraints is permitted in some adjectival modifications by *highly*, which is one future task. The other task is to figure out what directly forces *highly* to have the morphological constraint. In this paper, we have ruled out the three possibilities, but have not been able to present the direct motivation for *highly* to display the bizarre restrictions after all. Thus, these two issues must be dealt with in the future.

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