Citation: Candarli, D. (2023). YouTube for incidental vocabulary learning. In B. L. Reynolds (Ed.), *Vocabulary learning in the wild* (pp. 221-240). Springer Nature.

YouTube for incidental vocabulary learning

Duygu Candarli

University of Southampton

d.candarli@soton.ac.uk

https://orcid.org/0000-0001-9965-7835

Abstract

This empirical study examines the potential of YouTube worldwide trending videos for incidental vocabulary learning for the purposes of academic lectures and seminars at universities in English-speaking countries. YouTube is a popular social media platform that hosts videos of a wide range of genres, including vlogs (video blogs), songs, and news. Although previous studies have examined the potential of movies and TV programmes for incidental vocabulary learning, movies and TV programmes do not capture the wide range of genres that people are exposed to. To date, very little attention has been paid to the potential of YouTube for incidental vocabulary learning for academic listening. In this study, the lexical demands of a bespoke corpus of the transcriptions of YouTube worldwide trending videos were identified. Then, encounters with academic spoken word families with different frequency cut-offs were explored in the corpus of YouTube worldwide trending videos. The results reveal that YouTube trending videos have great potential for incidental vocabulary learning, creating a path from informal learning to academic language development. The present study has significant implications for incidental vocabulary learning through watching YouTube trending videos for adolescent and adult English language learners at the global level. It is recommended that YouTube trending videos are incorporated into EFL/ESL

classes for adolescent and adult learners and that L2 learners watch these videos as part of their out-of-class learning activities to enhance their academic listening.

Keywords: YouTube, incidental vocabulary learning, lexical coverage, corpus linguistics.

1. Introduction

YouTube, which is a social media platform that hosts a number of different genres, including video blogs (vlogs), songs, and adverts, provides authentic audio-visual input that can be enriched with captions for L2 learners of English although videos may not necessarily be targeted at L2 learners specifically. In addition to providing audio-visual input, YouTube also offers an informal learning environment, contributing to students' digital literacy skills and enhancing their ability to analyse and evaluate content (Tan, 2013). YouTube is globally the most popular platform for online content among children and young people as part of their entertainment and/or leisure activities (Folkvord et al., 2019); however, its potential for incidental vocabulary learning, which is "learning words without deliberate decision to commit information to memory" (Laufer & Hulstijn, 2001, p. 11), is largely an unchartered territory. In an experimental study, Arndt and Woore (2018) found that vocabulary gains from watching video blogs were approximately equal to those from reading blog posts, suggesting the effectiveness of video blogs for incidental vocabulary learning. However, the authors used pseudo-words and created video blogs for their study rather than selecting authentic input from YouTube.

YouTube's role as an informal learning environment is acknowledged in the literature (e.g., Soyoof et al., 2021); however, it remains unknown whether it has the potential for incidental vocabulary learning for lectures and seminars at universities. One of the most popular video genres on YouTube is vlogs in which creators share their life experiences, review products, and share their perspectives on these products as well as personal and social

issues (Munnukka et al., 2019). On the other hand, the functions of academic lectures and seminars are interpreting and evaluating the content and interacting with members of the class (Deroey & Tavernies, 2011). Such functions show some similarities with those of vlogs and other YouTube videos, despite the differences in formality, genre, and topics between spoken academic genres and YouTube videos because both genres share perspectives with their audience. These functional similarities point to the need for empirical investigation of vocabulary in these genres to find whether watching YouTube videos can create a path from informal learning to the development of academic listening. Hence, this study aims to identify lexical coverage of the Youtube trending videos and explore encounters with the academic spoken word families (Dang et al., 2017) in the bespoke corpus of YouTube trending videos and argues for the role of watching YouTube videos as one of the ways to develop academic listening.

2. Literature review

2.1. Previous studies of lexical coverage of spoken discourse

Lexical coverage is concerned with vocabulary profiling of spoken and written texts in order to determine their difficulty of them or to identify vocabulary knowledge required to comprehend them for the purposes of teaching, assessment, and materials development (Nation & Webb, 2011). Empirical studies on lexical coverage of both written and spoken texts have increased since the 1980s, along with the development of corpus tools and methods (see Nurmukhamedov & Webb, 2019 for an extensive overview). In specialised spoken discourse, previous studies identified that L2 learners of English would need knowledge of the most frequent 3,000 word families plus proper nouns and marginal words (e.g. *ah*, *ouch*) to understand the listening sections of the internet-based Test of English as a Foreign Language (TOEFL iBT) (Kaneko, 2015), popular English podcasts (Nurmukhamedov & Shoaziz, 2021), popular songs (Tegge, 2017), movies (Webb &

Rodgers, 2009a) and television programs (Webb & Rodgers, 2009b) for good comprehension that corresponds to 95% lexical coverage. Similarly, van Zeeland and Schmitt (2013) reported that 95% lexical coverage would be necessary for good listening comprehension, whereas this figure was found to be 98% for optimal comprehension. The more lexically demanding spoken genres were found to be academic spoken English (Dang & Webb, 2014) and TED Talks (Nurmukhamedov, 2017) whose 95% lexical coverage would necessitate the knowledge of the most frequent 4,000 word families plus proper nouns and marginal words. Although the lexical coverage of a number of specialised spoken genres has been investigated as seen above, relatively new social media genres, including YouTube trending videos have yet to be examined. Given that young people spend more time on YouTube rather than watching television (Burgess & Green, 2018), and that YouTube "has become the most preferred platform for viewing online content" (Folkvord et al., 2019, p. 2) for young people, it is important to gain insights into the lexical coverage of popular YouTube videos in order to identify lexical demands of YouTube videos for teaching and learning vocabulary, which would, in turn, inform L2 learners' extensive viewing practices and teachers' use of YouTube in English as a second/foreign language classes.

2.2. The potential of extensive viewing for incidental vocabulary learning

Previous research has examined the potential of extensive viewing for incidental vocabulary learning, using corpus methods (e.g., Dang, 2020; Green, 2020; Rodgers & Webb, 2011; Webb, 2010). Empirical research shows that learners can incidentally learn vocabulary from movies and TV programmes (see Nurmukhamedov & Webb, 2019 for an overview). Webb (2010) looked at the potential of learning low-frequency vocabulary by watching movies and concluded that L2 learners would encounter 23% of the word families that were classified as low-frequency by watching 70 movies, which would provide opportunities for incidental vocabulary learning.

More recent studies revealed the potential of extensive viewing for vocabulary learning for student reading and writing at secondary schools through watching movies and TV programs (Greene, 2020) and for specialised spoken academic vocabulary in the discipline of medicine through watching medical TV programs (Dang, 2020). These two studies are important in that they give evidence for the academic language development of L2 learners through watching movies and TV programmes, potentially creating a path from informal learning to academic language development (Dang, 2020). A common finding in these empirical studies is that the more episodes or TV programmes that L2 learners would watch, the more likely that L2 learners encounter more word families frequently in a wide range of contexts (dispersion).

The concepts of frequency and dispersion are pertinent to the premises of usage-based accounts of language learning, which posit that the more frequently vocabulary is encountered in a wide range of contexts, the more likely that L2 learners acquire and use vocabulary (e.g., Ellis & Wulff, 2015). Informed by usage-based accounts of language learning (e.g., Ellis & Wulff, 2015) and building on the previous empirical research (Dang, 2020; Green, 2020), this study aims to explore to what extent, if any, the same word families that occur in academic lectures and seminars can be encountered by watching YouTube trending videos. To the knowledge of the author, no study has examined Youtube videos' potential for incidental vocabulary learning for academic lectures and seminars; hence, the current study fills this gap, and the findings will have important implications for designing in-class activities for teachers and planning out-of-class extensive viewing activities for L2 learners of English.

3. The current study

This exploratory study aims to address the following research questions:

1. What are the lexical demands of YouTube worldwide trending videos, including video blogs (vlogs), in terms of Nation's (2018) British National Corpus (BNC)/Corpus of Contemporary American English (COCA) word family lists?

2. To what extent can L2 learners encounter words of the Academic Spoken Word List (ASWL), which occur in academic lectures and seminars, in YouTube worldwide trending videos at different levels of encounters?

3.1. The corpus of YouTube worldwide trending videos

A bespoke corpus of YouTube worldwide trending videos was created for this project. Once the author received ethical approval from the university's (University of Dundee) ethics committee (E2019-114), the transcripts of the top 10 worldwide trending videos, which were publicly available, were saved once every week for 45 weeks in 2020 and 2021. Apart from being in the top 10 worldwide trending videos, there were two main criteria for inclusion of the videos: (1) each video needed to be at least one minute long to allow for a text of at least 100 tokens for corpus analysis; (2) the video had to be in English. Only when these two criteria were not met within the top 10 worldwide trending videos, the videos were selected from further down the list. Out of 450 videos, the transcripts of 62 videos were provided by the creators. For the rest of the videos, Google's automatic speech-to-text service embedded within YouTube was used. As Coats (2020) reported, word error rate (WER) was found to be 5-6%, which was comparable to the error rate of human transcribers, and in another study, WER was only 3% (Proksch et al., 2019) for YouTube videos, achieving a very high accuracy rate of transcription. In the corpus of this study, five randomly selected videos were manually transcribed and compared with the transcriptions that were provided by YouTube. The WER was only 6%, and hence the transcription accuracy of YouTube videos was deemed reliable.

Table 1. The corpus of YouTube worldwide trending videos

Genre	Number of texts	Mean text length	Mean video duration	Corpus size
Vlog	268	2392	14 min 15 sec.	641,151
Song	98	440	3 min 46 sec.	43,113
News	13	1625	10 min 2 sec.	21,125
Entertainment	12	2482	15 min 39 sec.	29,779
Advert	11	1621	16 min 45 sec.	17,828
Sports	7	1303	7 min 59 sec.	9,123
Trailer	7	1606	2 min 40 sec.	11,244
Science	7	324	14 min 26 sec.	2,271
Gaming	6	2197	14 min 16 sec.	13,179
Magazine	6	2016	12 min 57 sec.	12,098
Animation	4	1413	10 min.	5,653
Cartoon	4	924	6 min 5 sec.	3,696
Documentary	3	2132	22 min 8 sec.	6,396
Technology	3	3234	11 min 38 sec.	9,702
Recipe	1	NA	NA	2,289
Total	450	1841	11 min 35 sec.	828,647

Table 1 shows the characteristics of the corpus of YouTube worldwide trending videos. The mean video duration of YouTube worldwide trending video was 11 minutes 35 seconds, as seen in Table 1, and the mean video duration varied across the genres in the corpus. These videos were classified into a number of genres, including vlogs, songs, and news. In order to classify the videos into genres, the descriptions of the videos were read, and a short segment of each video was watched to identify the main communicative function of the video. As shown in Table 1, the majority of YouTube worldwide trending videos were vlogs (video blogs) in which creators shared snippets from their life, talked about personal and social issues or reviewed products (Munnukka et al., 2019), followed by songs. The vlog, a user-generated video, is regarded as a digital genre (see Burgess & Green, 2018). Each vlog was coded based on its subject content to reveal the content of the vlogs in the corpus of YouTube worldwide trending videos in this study. As seen in Table 2, the videos of *personal experiences*, in which video bloggers (vloggers) talked about their own daily life experiences,

such as their relationships, break-up and mental health challenges, were the most frequent category. The second most frequent category was *product review* in which vloggers reviewed and promoted products, such as make-up and technological products. *Challenge* videos, the most frequent third category, were videos in which vloggers and their friends did fun and challenging activities, such as eating increasingly spicy food while talking. *Challenge* videos were followed by *do-it-yourself* videos that involved making or building things themselves and encouraging their audience to do the same. The most frequent fifth category was social issues in which vloggers discussed social (in)justice issues, such as activism and racism, without focusing on their own experiences. The vlogs that did not fit into these categories were coded as *other*, as Table 2 shows.

Table 2. The subject content of the vlogs in the corpus of YouTube worldwide trending videos.

Number of vlogs	Subject content of the vlogs
99	Personal experiences
85	Product review
42	Challenge videos
19	Do-it-yourself videos
16	Social issues
7	Other

The other genres, including news, and adverts were much fewer in the corpus because representativeness was prioritised over balance in the corpus in order to capture trending genres on YouTube. However, since this relatively small corpus of 828,647 tokens could only represent a snapshot of worldwide trending videos published on YouTube for a short time, the representativeness of the corpus is limited (see McEnery & Hardie, 2012 for

representativeness), and the corpus of YouTube worldwide trending videos was used as a proxy for trending videos for a limited time frame.

3.2. Data analysis procedures

In this study, the unit of analysis was a word family based on the premise that L2 learners who know one of the members of a word family may recognise or understand other members of the word family (Webb & Nation, 2013). This assumption has been supported in previous empirical research on L2 vocabulary research (e.g. Laufer & Cobb, 2020; Sasao & Webb, 2017). Laufer and Cobb (2020, p. 996) note that for comprehension, "what is required is not knowledge of the entire word families of basewords, but the inflections of basewords and a limited number of the most common affixes that participate in the construction of some derived words".

A freely available corpus tool, AntWordProfiler (Anthony, 2021), was used to analyse lexical coverage of the corpus of YouTube trending videos and to examine the potential of incidental vocabulary learning for academic lectures and seminars through watching YouTube trending videos. In order to address the first research question, Nation's (2018) British National Corpus (BNC)/Corpus of Contemporary American English (COCA) word family lists were used. These lists include 25,000 word families that were created based on the frequency and range of word families in the BNC and the COCA. Nation's (2018) BNC/COCA word family lists are the most recent and largest lists of word families of the general English, and they have been used in a number of lexical coverage studies (e.g. Dang, 2020; Nurmukhamedov & Shoaziz, 2021). Apart from the 25,000 word families, Nation's lists also include the lists of proper nouns, marginal words (e.g. *wow*, *sh*), compounds, and acronyms. The list of proper nouns was edited to add proper nouns (e.g. *Dua Lipa*) that occurred in the corpus of YouTube trending videos, and several acronyms (e.g. COVID, COVID-19) were added to the list of acronyms. Both 95% and 98% lexical coverage of the

corpus of YouTube trending videos was reported since van Zeeland and Schmitt (2013) noted that 95% lexical coverage would be necessary for good listening comprehension. For optimal comprehension, this figure was reported to be 98% (van Zeeland & Schmitt, 2013). In addition to the whole corpus of YouTube worldwide trending videos, the lexical coverage of vlogs, which constituted 60% (n = 268 out of 450 videos) of the corpus, was explored separately because it is much more likely for L2 learners to encounter the vlog genre than the other genres when they watch popular YouTube videos (see Burgess & Green, 2018).

In order to answer the second research question, the word families within the first three levels of the Academic Spoken Word list (ASWL) (Dang et al., 2017) were used to examine the number of encounters with the academic spoken word families of L2 learners, by watching YouTube trending videos. The ASWL is the most recent and comprehensive list of 1,741 word families that were created on the basis of frequency, range, and dispersion of word families in lectures, seminars, labs and tutorials at universities in English-speaking countries (see Dang et al., 2017 for the sources of the academic spoken corpora). As for the number of encounters, this study used a number of different cut-offs, including 1 or more, 5 or more, 10 or more, and 15 or more. Previous empirical research suggested that between 6 to 20 encounters were needed to acquire vocabulary incidentally through reading (Webb & Nation, 2013). Nation (2014, p. 3) noted that "the moderately safe goal of 12 repetitions is taken as the minimum" for incidental vocabulary acquisition through reading input. In listening, van Zeeland and Schmitt (2013) reported that at least 15 encounters may be needed to incidentally learn vocabulary. Such frequency thresholds may be arbitrary and context-specific; however, it is clear from recent studies on vocabulary learning from viewing that the more frequently words are encountered, the more likely that they will be acquired (e.g. Peters et al., 2016; Peters & Webb, 2018). Hence, following Dang (2020), the number of encounters with different frequency cut-offs was explored in this study. Also, the number of encounters

with words in the ASWL was identified in the whole corpus (450 videos) and a randomly selected 10, 40, and 120 videos out of the whole corpus to explore the degree of exposure to academic spoken words in fewer YouTube trending videos because it may not be possible for L2 learners to watch 450 videos on YouTube. The findings of the first research question on the lexical coverage of YouTube trending videos and vlogs informed the approach to the second question since there was only a slight difference between the whole corpus and vlogs in terms of 98% lexical coverage, which may be due to the smaller size of the vlog subcorpus. Hence, rather than analysing vlogs separately, the analysis of encounters with the words in the ASWL involved the whole corpus and randomly selected 10, 40, and 120 videos.

4. Findings and discussion

This section first reports the lexical demands of YouTube worldwide trending videos and then explores the potential of YouTube worldwide trending videos for incidental vocabulary learning for academic lectures and seminars.

4.1. Lexical demands of YouTube worldwide trending videos

Based on the lexical coverage analysis of YouTube worldwide trending videos, the vocabulary size that was needed to reach 95% coverage of YouTube worldwide trending videos was the most frequent 3,000 word families with proper nouns and marginal words, as seen in Table 3. Learners would need knowledge of the most frequent 6,000 word families when proper nouns and marginal words were excluded. In L2 vocabulary research, proper nouns and marginal words are associated with a low-level learning burden, and thus included in the lexical coverage figures (Webb & Rogers, 2009a). Although many learners may understand familiar proper nouns that they recognise through exposure to popular culture, it is possible that learners may not recognise unfamiliar or infrequent proper nouns (see Brown,

2010; Klassen, 2021). Therefore, cumulative coverage figures were provided both including and excluding proper nouns and marginal words, as shown in Table 3. Learners would need to have a grasp of the most frequent 9,000 word families with proper nouns and marginal words to reach 98% coverage of the YouTube worldwide trending videos.

Table 3. Coverage for the whole corpus of YouTube worldwide trending videos (%)

Word list	Coverage at each 1,000-word level	Cumulative coverage without proper nouns & marginal words	Cumulative coverage with proper nouns & marginal words
1,000	86.62	86.62	88.93
2,000	4.55	91.17	93.48
3,000	1.8	92.97	95.28*
4,000	0.98	93.95	96.26
5,000	0.66	94.61	96.92
6,000	0.45	95.06*	97.37
7,000	0.27	95.33	97.64
8,000	0.23	95.56	97.87
9,000	0.2	95.76	98.07**
10,000	0.11	95.87	98.18
11,000	0.1	95.97	98.28
12,000	0.09	96.06	98.37
13,000	0.05	96.11	98.42
14,000	0.04	96.15	98.46
15,000	0.03	96.18	98.49
16,000	0.05	96.23	98.54
17,000	0.04	96.27	98.58
18,000	0.03	96.3	98.61
19,000	0.01	96.31	98.62
20,000	0.02	96.33	98.64
21,000	0.01	96.34	98.65
22,000	0.01	96.35	98.66
23,000	0.01	96.36	98.67
24,000	0	96.36	98.67
25,000	0	96.36	98.67
Proper nouns	1.23		
Marginal words	1.08		
Compounds	0.34		
Acronyms	0.1		
Off list	0.9		

*reaching 95% coverage, **reaching 98% coverage

The whole corpus of YouTube worldwide trending videos included a number of genres, including vlogs and songs. Since vlogs constituted the largest genre group of the corpus, the lexical coverage of vlogs was examined separately to find whether it was similar to the whole corpus. As Table 4 shows, knowledge of the most frequent 3,000 word families with proper nouns and marginal words would be required to reach 95% coverage of the subcorpus of YouTube worldwide trending vlogs, which was the same figure as that of the whole corpus. In order to reach 98% coverage of vlogs, knowledge of the most frequent 8,000 word families with proper nouns and marginal words would be necessary. This suggests that lexical demands of vlogs were lower than the whole corpus of YouTube worldwide trending videos in terms of 98% lexical coverage. The slightly lower demands of vlogs for 98% coverage may be associated with the smaller size of the subcorpus of vlogs in comparison to the whole corpus as well as the repetition of personal pronouns in the subcorpus of vlogs since the vlogs' content mainly included personal experiences of vloggers, such as their lifestyles and relationships with friends and family members. However, the trending vlogs in the corpus of this study did not just represent personal matters. There were also trending vlogs that focused on social (in)justice issues, including racism and the movement for Black Lives Matter, and do-it-yourself videos (please see Table 2 for the subject content of vlogs).

Table 4. Coverage for the subcorpus of YouTube worldwide trending vlogs (%)

Word list	Coverage at each 1,000-word level	Cumulative coverage without proper nouns & marginal words	Cumulative coverage with proper nouns & marginal words
1,000	86.93	86.93	89.19
2,000	4.53	91.46	93.72
3,000	1.71	93.17	95.43*
4,000	0.98	94.15	96.41
5,000	0.65	94.8	97.06
6,000	0.45	95.25*	97.51
7,000	0.26	95.51	97.77

8,000	0.23	95.74	98**
9,000	0.2	95.94	98.2
10,000	0.11	96.05	98.31
11,000	0.11	96.16	98.42
12,000	0.1	96.26	98.52
13,000	0.05	96.31	98.57
14,000	0.05	96.36	98.62
15,000	0.03	96.39	98.65
16,000	0.06	96.45	98.71
17,000	0.03	96.48	98.74
18,000	0.03	96.51	98.77
19,000	0.01	96.52	98.78
20,000	0.02	96.54	98.8
21,000	0	96.54	98.8
22,000	0.01	96.55	98.81
23,000	0	96.55	98.81
24,000	0	96.55	98.81
25,000	0	96.55	98.81
Proper nouns	1.15		
Marginal words	1.11		
Compounds	0.33		
Acronyms	0.09		
Off list	0.77		

*reaching 95% coverage, **reaching 98% coverage

The lexical profile of YouTube worldwide trending videos showed similarities with that of a number of other spoken genres in previous lexical coverage studies (e.g. Kaneko, 2015; Nurmukhamedov & Shoaziz, 2021; Tegge, 2017; Webb & Rodgers, 2009a, 2009b). With regard to 95% lexical coverage, the lexical demands of the whole corpus of YouTube trending videos and vlogs were quantitatively the same as those of the listening section of the TOEFL iBT (Kaneko, 2015), popular English podcasts (Nurmukhamedov & Shoaziz, 2021), popular songs (Tegge, 2017), movies (Webb & Rodgers, 2009a) and television programs (Webb & Rodgers, 2009b). However, the whole corpus of YouTube trending videos and vlogs was lexically more demanding in terms of 98% coverage in comparison to the abovementioned spoken genres. In order to reach 98% coverage of the whole corpus of YouTube trending videos and vlogs, the knowledge of the most frequent 9,000 and 8,000

word families was needed respectively. In this aspect, the academic spoken English (Dang & Webb, 2014) and TED talks (Nurmukhamedov, 2017), both of which required a grasp of the most frequent 8,000 word families, were more similar to the corpus of YouTube trending videos and vlogs in terms of lexical demands. It should be noted that English as a foreign language (EFL) learners may not gain the knowledge of the most frequent 9,000 word families before or at university since the opportunities to be exposed to English may be more limited in EFL contexts than in English as a second language (ESL) contexts. In ESL contexts, English is one of the official languages while this is not the case in EFL contexts which limit exposure to English for L2 learners. Nation (2014, p. 13) argues that "a mixed written and spoken corpus provides better opportunities" to learn the most frequent 9,000 word families than the written or spoken input alone. This suggests that listening input is as important as reading input.

4.2. The potential of YouTube worldwide trending videos for incidental vocabulary learning for academic lectures and seminars

Table 5 shows the encounters with ASWL level 1 word families in YouTube trending videos with different frequency cut-offs for randomly selected 10, 40, 120 videos and the whole corpus. Accordingly, by watching just 10 videos, it would be possible for L2 learners to encounter 314 ASWL word families out of 830 five times or more. The number of ASWL word families that L2 learners would frequently encounter increases as more videos are watched, providing greater potential for incidental vocabulary learning. As the frequency of vocabulary in the input was found to be associated with learning and later use (e.g. Ellis & Wulff, 2015), it would be unlikely for word families that only occur between one to four times in YouTube trending videos to be acquired incidentally. On the other hand, when 120 YouTube trending videos are watched, it would be possible to learn the majority of the ASWL level 1 word families incidentally though retention of such vocabulary would depend

on a number of other factors, including learner characteristics (see Montero Perez, 2020; Reynolds, 2020).

Table 5. Encounters with the ASWL level 1 word families (*n*= 830) in YouTube trending videos

Number of encounters	N of word families encountered	Mean of encounters (frequencies)	SD of encounters (frequencies)
1 or more			
10 videos	612	23.32	77.45
40 videos	792	60.31	232.08
120 videos	824	171.66	659.28
450 videos	830	701.26	2705.5
5 or more			
10 videos	314	43.56	104.23
40 videos	580	81.44	268.16
120 videos	772	183.03	679.65
450 videos	827	703.79	2710.10
10 or more			
10 videos	198	65.24	126.41
40 videos	423	109.16	309.54
120 videos	679	207.15	721.42
450 videos	818	711.46	2723.99
15 or more			
10 videos	138	88.49	145.54
40 videos	322	139.72	349.34
120 videos	596	234.37	766.14
450 videos	803	724.52	2747.66

The learning opportunities for ASWL level 2 word families would be reduced when only 10 or 40 videos are watched since only 23 out of 454 word families are repeated 10 or more times when 40 videos are watched, and such encounters further decrease when only 10 videos are watched. As Table 6 shows, watching 120 videos would provide exposure to more than half the ASWL level 2 word families (*n* = 268) five times or more. Although this figure would be proportionately less than the ASWL level 1 word families, YouTube trending

videos could still be considered as fruitful supplementary learning resources for frequent academic words in lectures and seminars.

Table 6. Encounters with the ASWL level 2 word families (*n*= 454) in YouTube trending videos

Number of encounters	N of word families encountered	Mean of encounters (frequencies)	SD of encounters (frequencies)
1 or more			
10 videos	167	2.29	2.34
40 videos	317	4.03	5.03
120 videos	418	9.44	10.42
450 videos	450	36.91	39.10
5 or more			
10 videos	16	7.94	3.79
40 videos	87	9.20	7.25
120 videos	268	13.41	11.16
450 videos	424	39	39.32
10 or more			
10 videos	5	12.4	3.58
40 videos	23	17.65	9.93
120 videos	142	19.32	12.63
450 videos	369	43.73	40.06
15 or more			
10 videos	1	18	NA
40 videos	14	21.36	11.30
120 videos	73	26.40	14.36
450 videos	325	48.02	40.84

YouTube trending videos would provide much less exposure to ASWL level 3 word families, in comparison to the ASWL level 1 and 2 word families. In order to encounter the majority of the ASLW level 3 word families five or more than five times, 450 videos would need to be watched. When 120 videos are watched, L2 learners would only encounter 105 ASWL level 3 word families out of 380 word families five times or more, as Table 7 shows. Nevertheless, for L2 learners who would have the habit of watching YouTube trending videos for extensive viewing in their free time, YouTube trending videos would constitute

one of the input resources for academic spoken words. Considering that ASWL level 3 word families are less frequent in general English than the first two levels of word families, at least 15 (see van Zeeland & Schmitt, 2013) might be needed for incidental vocabulary learning.

Table 7. Encounters with the ASWL level 3 word families (*n*= 380) in YouTube trending videos

Number of encounters	N of word families encountered	Mean of encounters (frequencies)	SD of encounters (frequencies)
1 or more			
10 videos	58	1.81	1.46
40 videos	171	2.89	3.66
120 videos	290	5.09	7.58
450 videos	363	17.11	31.35
5 or more			
10 videos	4	6	1.41
40 videos	23	9.43	6.65
120 videos	105	10.59	10.49
450 videos	278	21.63	34.59
10 or more			
10 videos	-	-	-
40 videos	8	15.38	8.63
120 videos	38	17.82	14.89
450 videos	194	28.05	39.73
15 or more			
10 videos	-	-	-
40 videos	2	26.5	13.44
120 videos	17	25.12	20.16
450 videos	134	35.19	46.09

YouTube trending videos are found to provide relatively frequent encounters to the majority of ASWL level 1 and level 2 words even when 120 videos are watched, creating opportunities for incidental vocabulary learning for L2 learners. This finding is in line with previous research that identified movies and television programmes as vocabulary input sources for student reading and writing at the secondary school level (Green, 2020) and medical television programmes as sources of discipline-specific vocabulary in lectures and

seminars in the field of medicine (Dang, 2020). The findings of this study are promising given that there are notable differences in the topics and genres between YouTube trending videos and academic lectures and seminars at universities. It should be acknowledged that ASWL level 1 and level 2 words contain general high-frequency words because the creators of ASWL included general high-frequency words that occur frequently in academic spoken texts with a wide range in the ASWL (see Dang et al., 2017). Dang et al. (2017) argue that we should not assume that all L2 learners would know such general high-frequency words before encountering academic words in lectures and seminars (Dang et al., 2017). In the literature, the extent of the academic nature of words in the academic word lists has been a matter of discussion (Brezina & Gablasova, 2015; Coxhead, 2011; Dang et al., 2017; Hyland & Tse, 2007). For example, Hyland and Tse (2007) argue that academic words may have different meanings, functions, and collocational patterns across the subjects. In a similar vein, Brezina and Gablasova (2015) note that some frequently occurring *academic* words could be categorised as general vocabulary rather than as academic vocabulary in the Academic Wordlist (Coxhead, 2000). It is very likely that there would be an overlap between general and academic words in academic wordlists (Coxhead, 2011; Dang et al., 2017) when the criteria of *frequency* and *range* in academic spoken or written texts are used when creating wordlists. Therefore, it is important to take into account the operationalisation and criteria of academic wordlists in lexical coverage studies.

The usage-based accounts of language learning emphasise the frequency of occurrence and dispersion in language acquisition, among many other factors (e.g., Ellis & Wulff, 2015). When we take into account the usage-based accounts of language learning and the necessity of 15 or more encounters for incidental vocabulary acquisition through listening (van Zeeland & Schmitt, 2013), the majority of ASWL level 1 word families can potentially be learned by watching 120 YouTube trending videos, as the findings of this study show (see

Table 5). In order for learners to encounter most of the ASWL level 2 word families, watching 450 YouTube trending videos would be recommended, as can be inferred from the findings of this study (see Table 6). Hence, it is useful for L2 learners to watch YouTube trending videos as an out-of-class activity that would lead to cumulative encounters of the academic spoken word families in the long run, which would potentially result in academic spoken vocabulary learning.

6. Conclusion and implications

This study provided new insights into YouTube worldwide trending videos' lexical coverage and their potential as sources of incidental vocabulary learning for L2 learners. First, YouTube trending videos required knowledge of the most frequent 3,000 word families to reach 95% coverage. Second, YouTube trending videos constituted potential sources of incidental vocabulary learning for academic lectures and seminars at universities in English-speaking countries, providing relatively frequent encounters to the level 1 and level 2 word families for L2 learners. This is an encouraging finding given that YouTube trending videos and academic lectures and seminars are different in terms of formality, topics, and genre.

The findings of this study have significant implications for incidental vocabulary learning for L2 adolescent and adult learners globally. The lexical demands of YouTube trending videos were similar to those of other spoken genres, including popular English podcasts (Nurmukhamedov & Shoaziz, 2021), movies (Webb & Rodgers, 2009a) and television programs (Webb & Rodgers, 2009a) for good comprehension (95% coverage). Therefore, YouTube videos could be good alternatives to these genres to use for vocabulary activities, since YouTube trending videos potentially attract students' interest more due to their popularity among adolescents and adults, increasing their motivation for watching them. In order for students to better comprehend YouTube trending videos, frequent and/or key

proper nouns and marginal words could be introduced first before watching the videos (Brown, 2010; Klassen, 2021) since such words may be unfamiliar to EFL learners. YouTube also provides additional affordances, such as captions and playback speed. For lower-proficiency learners, teachers could use captions and reduce playback speed to enhance learners' comprehension though the use of captions may not always be beneficial for lower-proficiency L2 learners due to their limited working memory capacity (see Moreno Perez, 2020). Hence, YouTube trending videos may arguably be more useful for intermediate and advanced learners of English, English for academic or specific purposes learners who prepare for their university studies.

It is probable that some YouTube trending videos may not be suitable to use for teaching English to adolescent learners or any learners in some contexts due to their inappropriate content or the presence of taboo words in such videos. In this case, teachers can use a free third party application, such as Edpuzzle (see Mischel, 2019) to edit a video in order to make it more appropriate for their learners. Teachers may also incorporate intentional vocabulary learning activities, such as focus-on-form and meaning-focused activities for discourse markers (e.g., *well*) and multi-word sequences (e.g., *keep in mind*), vocabulary journals for newly encountered words for their learners to supplement potential incidental vocabulary gains. In addition to reading, it is useful for the class to watch a diverse range of genres of YouTube videos regularly since cumulative encounters with ASWL word families will increase as the number of videos are watched, and a diverse range of genres is more likely to include a wider range of word families than a collection of videos of one genre (see Nation, 2014). It may be more feasible for L2 learners of English to watch YouTube trending videos in an out-of-classroom context rather than in ESL/EFL classes.

The present study also has important implications for L2 learners for their out-of-class learning activities. Given that YouTube trending videos provide relatively frequent

encounters to academic spoken word families used in academic lectures and seminars at universities, it is recommended that ESL/EFL learners watch YouTube trending videos weekly as part of their preparation for university classes. When L2 learners watch 120 trending videos, it would be possible to encounter the majority of the ASWL word families five or more than five times, providing opportunities for incidental learning. L2 learners could be encouraged to pay attention to lexical realisations of sharing perspectives on personal and social issues, interpreting content, and interacting with audience members since such functions also exist in university lectures and seminars (see Deroey & Taverniers, 2011). In this way, L2 learners, who watch YouTube videos as part of their entertainment or leisure activities, are likely to be on the path from informal language learning to the development of academic listening.

Lexical coverage analysis of YouTube videos may not reveal the true nature of spoken language since spoken language includes multi-word sequences to a greater extent than written language (e.g. Biber et al., 2004). Puimège and Peters (2020) found that watching a documentary (audio-visual input) was effective to acquire multi-word sequences incidentally for L2 learners of English who had upper-intermediate proficiency in English. This suggests that it is possible to learn multi-word sequences incidentally by watching YouTube videos though empirical evidence is needed for learners of different proficiency levels. Although it can be argued that many ASWL word families can be learned through reading as well, comparing the encounters of ASWL word families through reading versus listening is beyond the focus of this paper.

Finally, several limitations to this study need to be acknowledged in terms of methodology and analysis. The analysis in this study was limited to lexical coverage of YouTube trending videos and their potential for incidental vocabulary learning for academic lectures and seminars. It is possible that the word error rate (6%) might have influenced the

results of lexical coverage of YouTube trending videos. Although this study found that it is possible to learn academic spoken vocabulary incidentally from YouTube trending videos, it does not necessarily argue that this would be the case for all L2 learners. Incidental vocabulary acquisition was found to be context-specific, depending on a number of L2 learner characteristics, including working memory and L2 proficiency and other external factors (see Montero Perez, 2020; Reynolds, 2020). Additionally, the corpus of YouTube trending videos was small, representing a certain period of time in 2020 and 2021. It should also be acknowledged that YouTube is blocked in several countries, including China although users may still access the site using a virtual private network service.

This corpus-based analysis did not address the polysemous nature of vocabulary (see Deignan et al., 2022), and it remains unknown to what extent multiple meanings of vocabulary can potentially be acquired from extensive viewing. Future studies should test to what extent L2 learners can incidentally learn vocabulary by watching YouTube trending videos within a longitudinal experimental design with learners of different proficiency levels. Further research is necessary to examine to what extent YouTube trending videos can provide encounters with multi-word sequences in empirically derived lists (e.g., a phrasal expression list in Martinez & Schmitt, 2012; an academic formulas list in Simpson-Vlach & Ellis, 2010; and the academic collocation list in Ackermann & Chen, 2013) and to what extent learners can incidentally acquire such multi-word sequences through exposure to audio-visual input. This will be a promising direction given the highly phrasal nature of spoken language.

Citation: Candarli, D. (2023). YouTube for incidental vocabulary learning. In B. L. Reynolds (Ed.), *Vocabulary learning in the wild* (pp. 221-240). Springer Nature.

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