
JOURNAL PAPER REVIEW: "A CORPUS DRIVEN STUDY OF THE POTENTIAL FOR VOCABULARY LEARNING THROUGH WATCHING MOVIES" – FROM INCIDENTAL VOCABULARY LEARNING TO SOCIAL DEVELOPMENT

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ABSTRACT

Through reviewing one of Webb's journal articles¹ on language acquisition (specifically, in the area of vocabulary learning), this review paper attempts to justify and investigate from a different perspective the postulate that there is potential for significant incidental vocabulary learning by watching movies regularly over time. As Webb compared the frequency of words that appear from the transcripts of 143 movies with Nation's (2004) 4th to 14th 1,000-word BNC lists in order to justify his argument, we cross-checked the movies with the relevant box office records, the UNESCO² film popularity scores, the corresponding frequency of cinema attendance per capita around the world as well as the socio-political environment of the countries where Webb's notion prevails. While Webb's paper claimed that movies may be a valuable resource for incidental vocabulary learning, our paper revealed that such a valuable and incidental learning experience could in fact be slowly fading away. This is especially true because as the newer generation's attention span shortens (Watson, 2015), forthcoming generations may no longer appreciate or become unaware of the very moments of those ad hoc, instant and intuitive learning experiences that were once known to the many past generations as incidental and natural. Those who would appreciate, on the contrary, generally come from less developed or developing countries where contact with the English-speaking world is still relatively limited.

Keywords: vocabulary learning, language acquisition, attention span, watching movies, cultural difference

About the journal paper-to-be-critiqued

The following is a critique of the journal paper written by Stuart Webb (2010) in the area of language acquisition (specifically, vocabulary learning) titled, 'A corpus driven study of the potential for vocabulary learning through watching movies.' The paper was published in 2010, in the *International Journal of Corpus Linguistics*, 15(4), pp. 497-519³. It attempted to justify the potential for significant incidental vocabulary learning by watching movies regularly over time through comparing frequency of words that appear from the transcripts of 143 movies with Nation's (2004) 4th to 14th 1,000-word BNC lists. The paper claimed that movies may be a valuable resource for incidental vocabulary learning.

The critique

Unless you have better home equipment, find 3-D experience a turn-off, hate to bump into those laugh-at-everything, text-along-the-movie rebellions, or human IMDBs⁴ who spew out spoilers and late comers who make noisy entrances, going to a movie for entertainment may not be a bad choice. However, how attentive cinema-goers can remain during the average one-and-a-half-hour movie can be a different issue – especially when it comes to incidental vocabulary learning. Built upon earlier psychology models⁵, contemporary cognition theories⁶ on attention (Treisman & Gelade, 1980; Wolfe, 1994) tell us that people become more attentive with tasks when there is more than one type of stimulus or modality, which explains why people get attracted and focused during movies. However, our attention (or cognitive load) varies not only with culture

¹ Webb, S. (2010). "A corpus driven study of the potential for vocabulary learning through watching movies." In *International Journal of Corpus Linguistics*, 15(4), pp.497-519, doi 10.1075/ijcl.15.4.03

² UNESCO, United Nations Education, Scientific and Culture Organization

³ Also available electronically, doi 10.1075/ijcl.15.4.03

⁴ IMDB, Internet Movie Database, see <http://www.imdb.com/>

⁵ See Wicken's (1984) Multiple Resource Theory (MRT) model.

⁶ Please refer to the highly influential Feature Integration Theory (1980) developed by Anne Treisman and Garry Gelade and the Guided Search Theory (1993) by Jeremy Wolfe

(Correa-Chavez & Rogoff, 2011) but can also be selective⁷ (Eriksen & Hoffman, 1972; Eriksen & St James, 1986) and change as we age (Lavie, Hirst, de Fockert & Viding, 2004). Younger people are able to process multiple stimuli but find it more difficult to differentiate between relevant and irrelevant information whereas older people find it easier to identify what is relevant yet they become less capable of processing multiple stimuli (ibid, p.341). In terms of incidental vocabulary learning through watching movie, such concept would translate into the notion that younger people may fail to identify the 'relevant' moments for learning vocabularies because they are more likely to be distracted by their better perception toward other stimuli, e.g. actions on the screen, background music, special effects etc., whereas older people may well be concentrating on the 'relevant' development as well as the underlying message and philosophy of the film, hence bypassing the opportunity to learn a new term (or vocabulary). In other words, the claim that the potential of incidental vocabulary learning can be realized by comparing the movie transcripts and Nation's (2004) BNC word lists, in terms of cognitive theories, is somewhat questionable, especially that the attention span for the younger generation has recently been found to have dropped from 12 seconds (in 2002) to a mere 8 seconds (in 2013), one second shorter than the goldfish (Watson, 2015). This does not even include the fact that most of the usual components of 'incidental learning' (for adults, in this case), e.g. task accomplishment, interpersonal interaction, sense of the organized environment and trial-and-error experience (Marsick & Watkins, 2001, p.25), are simply missing as well. Yet it cannot be denied that there are literature supporting the notion that there is significant incidental vocabulary learning with adequate coverage of lexicon (Webb & Rodgers, 2009) in watching television programs (not necessarily movies in this case) for native language (i.e. L1) (Oetting, Rice, & Swank, 1995) and the second language (i.e. L2) (d'Ydewalle & Pavakanun, 1997) learners as well as watching short movies or videos, again, for both learners of L1 (Rice & Woodsmall, 1998) and L2 (Neuman & Koskinen, 1992). And, when it comes to English learners in Hong Kong (Chapple & Curtis, 2000), Chinese students studying in the UK (Gieve & Clark, 2005) and Chinese ESL⁸ students in Australia (Colwell & Ipinche Braschi, 2006), they, too, all prefer movies to conventional reading.

So even if the methodology had stood the challenge, the criteria in which these movies were chosen would still have compromised the research's internal validity. A check of the 143 movies studied in the paper (listed in Appendix A) against the top 10 films⁹ with the highest gross revenues of each decade (in Table 1) as well as those with the highest UNESCO film popularity scores¹⁰ (see Figure 1) reveals that the author's choice of movies were neither commercially geared toward the box office, nor statistically favored in terms of the actual admission headcounts¹¹, let alone preferentially selected for analyzing the effects of any particular movie sequel or trans-media production¹². While journal paper attributed such a choice to the 'availability of movie scripts' (Webb, 2010, p. 504), it is, given that text-formatted subtitles can now be easily extracted from any DVDs or downloaded instantly from online subtitle databases¹³, obviously ungrounded. And, adding to the fact that some of these movies date back to as early as the 1930s¹⁴, one may question on the generalizability of the word-level matching methodology (and hence, the actual learning outcome) when we know that the use of a language, its pragmatics (Cheng, 2015a), its way of thinking and the corresponding thoughts developed (Cheng & Macapagal, 2016) as well as the coordinated messages (if any) these movies subconsciously convey (Cheng, 2015b) all change over time.

⁷ For details on selective attention, see the Spotlight model (Eriksen & Hoffman, 1972) and the Zoom-lens model (Eriksen & St James, 1986).

⁸ ESL, English Second Language

⁹ See the all-time box office hits (by decade and year) at <http://www.filmsite.org/boxoffice2.html>

¹⁰ According to United Nations Education, Scientific and Culture Organization (UNESCO), film popularity is the measure of cinema admissions (UNESCO, 2012).

¹¹ Because cinema ticket prices vary across countries, the box office record should not be presumed to be an accurate reflection of the admission headcount. In addition, according to a research paper (Saptadi, 2009) published by The Nippon Foundation, blockbusters from Hollywood now account for at least 75% of the European market, 96% of box office receipts in Taiwan, approximately 78% in Thailand, 65% in Japan, and more than 60% in mainland China (Jensen, 2012)... etc. In fact, Asia is Hollywood's fastest growing regional market and it is predicted that within 20 years Asia could be responsible for as much as 60 percent of Hollywood's box-office revenue. In short, we do need to look at the box office because people are going to those movies!

¹² Movie sequels and trans-media films (i.e. characters, settings and storylines developed across print, film and web-based media) are much more popular than just the average movie (UNESCO, 2012).

¹³ There are websites that allow the general public to download movie subtitles in a variety of languages free of charge, for instance, the Open Subtitles website at <http://www.opensubtitles.org/>

¹⁴ Out of the 143 movies selected for Webb's (2010) journal paper, 36 of them, i.e. over 25% of all movies, were released before the 1970s. See Appendix A.

Vocabularies that were once fashionable and stylish may no longer be used or could become totally forgotten in time. How many of us would still sign off our emails with the phrase, ‘Yours affectionately’ or ‘Yours cordially?’

Table 1. Top 10 movies of the decade, 1980-2010 (in terms of gross revenue)

PERIOD / DECADE	TOP 10 MOVIES
1980-1989	Star Wars: The Empire Strikes Back (1980) Raiders of the Lost Ark (1981) E.T.: The Extra-Terrestrial (1982) Star Wars: Return of the Jedi (1983) Ghostbusters (1984) Indiana Jones and the Temple of Doom (1984) Beverly Hills Cop (1984) Back to the Future (1985) Batman (1989) Indiana Jones and the Last Crusade (1989)
1990-1999	Home Alone (1990) Jurassic Park (1993) Forrest Gump (1994) The Lion King (1994) Independence Day (1996) Titanic (1997) Men in Black (1997) Star Wars: Episode I - The Phantom Menace (1999) The Sixth Sense (1999) Toy Story 2 (1999)
2000-2009	Spider-Man (2002) The Lord of the Rings: The Return of the King (2003) Shrek 2 (2004) Spider-Man 2 (2004) The Passion of the Christ (2004) Star Wars: Episode III - Revenge of the Sith (2005) Pirates of the Caribbean: Dead Man's Chest (2006) The Dark Knight (2008) Avatar (2009) Transformers: Revenge of the Fallen (2009)

Figure 1. Popularity scores¹⁵ of top 20 featured films 2007-2009

¹⁵ Source: UNESCO Institute for Statistics, January 2012. Note that the data-splits for each of the years are characterized by their respective color dotted lines. Last access February 21, 2017 from <http://www.uis.unesco.org/culture/Documents/ib8-analysis-cinema-production-2012-en2.pdf>

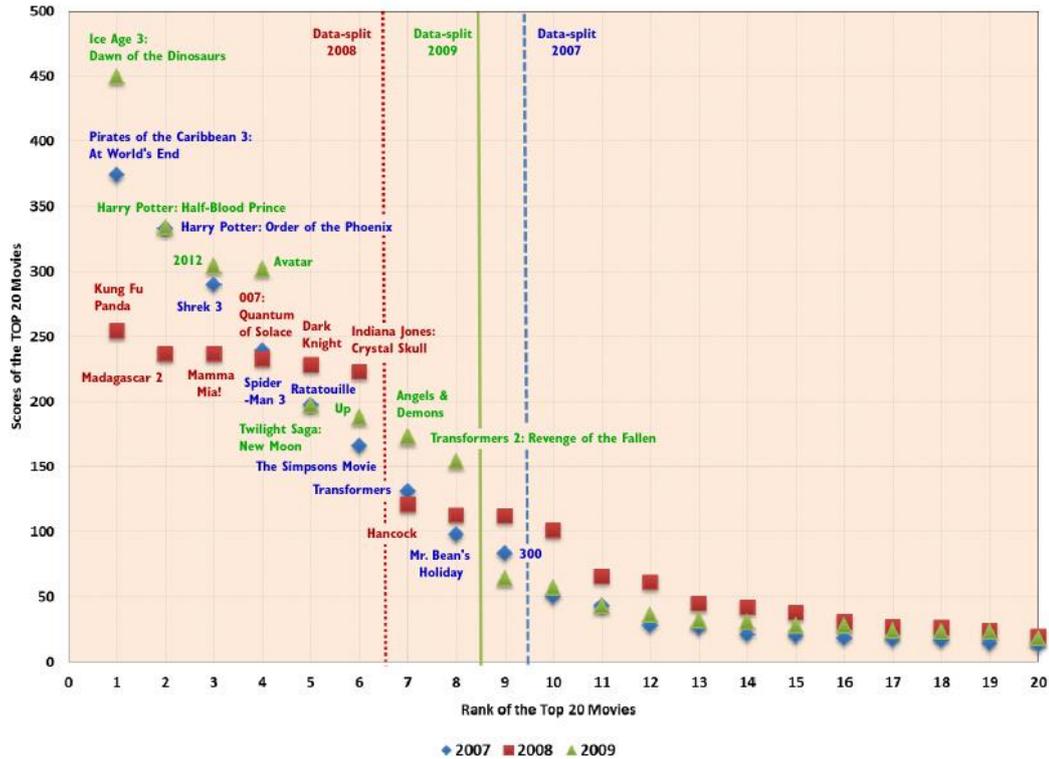


Figure 2. Frequency of attendance per capita¹⁶, 2006-2009

Rank	2006		2009	
1	Iceland	5.6	Iceland	5.8
2	Ireland*	5.5	United States	5.2
3	United States	5.4	Australia	4.6
4	Australia	4.4	Singapore	4.2
5	India	3.9	France	3.6
6	Singapore	3.8	Republic of Korea	3.5
7	Republic of Korea	3.5	China, Hong Kong SAR	3.2
8	France	3.5	UK	3.2
9	Spain	3.1	Norway	3.0
10	Luxembourg	3.0	Luxembourg	2.9

Speaking of change and notwithstanding the above-mentioned issues in terms of research design and many other equally controversial glitches that could have taken up a dozen more pages of this critique (e.g. the skewness of dataset as a result of the less-than-wonderful selection of movies and non-removal of possible outliers¹⁷, unrealistic expectation toward the number of movies viewed per year¹⁸, ambiguity in terms of how movies were viewed, i.e. with or without subtitles, subtitles in L1 or L2, possibility of involving human subjects in pre-tests, post-tests, or the presence of a control group etc.), Webb’s research (2010) does help bring about some much deeper and profound questions into the foreground. For instance, will our next generation’s natural attentiveness be even more overloaded with far too much of unnecessary multimodal stimuli during their critical learning period as entertainment technology rapidly advances (e.g. 3-D and digital cinemas, online and interactive TVs with motion detectors, etc.)? And while human’s cognitive load can be instilled to become not only

¹⁶ Population aged 5 to 79 years old. Source: UNESCO Institute for Statistics, January 2012.

¹⁷ See Appendix B

¹⁸ The Webb (2010) journal paper presumed that learners would view some 8 to 16 movies within a single semester and some 36 to 70 movies over one year yet, according to UNESCO (2012) statistics, the average frequency per capita of going to a cinema is merely 5.6 in 2006 and 5.8 in 2009 – values that are much lower than what the paper had wishfully anticipated. See Figure 2 above.

selective but also biased, could our never-ending thirst for and capricious adhesion to more and more entertainment stimulation be effectively blinding our youngsters' natural ability to quietly concentrate, to swiftly focus and hence phenomenally resulting in a delay of their cognitive transitions as they sadly miss out on the best timing of their lives to learn what is relevant and irrelevant, good and evil, right and wrong? What kind and quality of incidental learning¹⁹ could there possibly be when people simply cannot see the relevant need, are disoriented with unfocused motivation and are too occupied with low-level sensory stimuli even when given golden opportunities to learn a new vocabulary, not to mention a much higher or advanced idea or philosophy?

Figure 3. Cumulative coverage, including proper nouns and marginal words²⁰, for each set of movies and a random movie from that set, taken from Webb's paper (2010, p.508).²¹

	Set of 8 'Western'		Set of 13 'Horror'		Set of 16 'Animated'		Set of 36 'Classic'		Set of 70 'Drama'	
Word list	All		All		All		All		All	
1,000	89.83	90.84	90.48	92.07	87.27	89.82	90.25	88.58	90.46	92.72
2,000	94.36	95.60*	94.56	95.92*	91.70	93.66	94.43	92.89	94.52	96.17*
3,000	96.13*	97.39	96.37*	97.24	94.24	95.80*	96.23*	94.59	96.10*	97.50
4,000	97.21	98.04**	97.66	98.38**	95.55*	96.87	97.27	96.08*	97.38	98.22**
5,000	97.87	98.67	98.17**	98.70	96.51	97.60	97.89	97.04	98.00**	98.68
6,000	98.20**	98.99	98.48	98.88	97.07	98.12**	98.36**	98.28**	98.39	98.83
7,000	98.38	99.17	98.69	99.02	97.40	98.32	98.58	98.43	98.60	99.01
8,000	98.62	99.30	98.86	99.18	97.65	98.49	98.75	98.58	98.78	99.16
9,000	98.75	99.37	99.01	99.27	97.84	98.65	98.93	98.98	98.93	99.20
10,000	98.86	99.48	99.19	99.34	98.03**	98.76	99.06	99.21	99.04	99.26
11,000	98.94	99.53	99.27	99.38	98.15	98.83	99.15	99.24	99.12	99.28
12,000	99.01	99.57	99.36	99.50	98.25	98.90	99.23	99.30	99.19	99.35
13,000	99.12	99.62	99.43	99.57	98.37	98.91	99.28	99.36	99.26	99.38
14,000	99.15	99.62	99.46	99.57	98.41	98.91	99.32	99.44	99.30	99.38
Proper nouns	1.91	4.17	2.23	1.63	2.32	3.84	2.92	2.97	2.83	2.04
Marginal words	0.16	0.02	0.43	0.09	1.73	0.73	0.63	0.17	0.57	0.39
Tokens	53,201	5,543	69,848	5,690	112,504	8,042	341,660	14,342	690,023	10,325

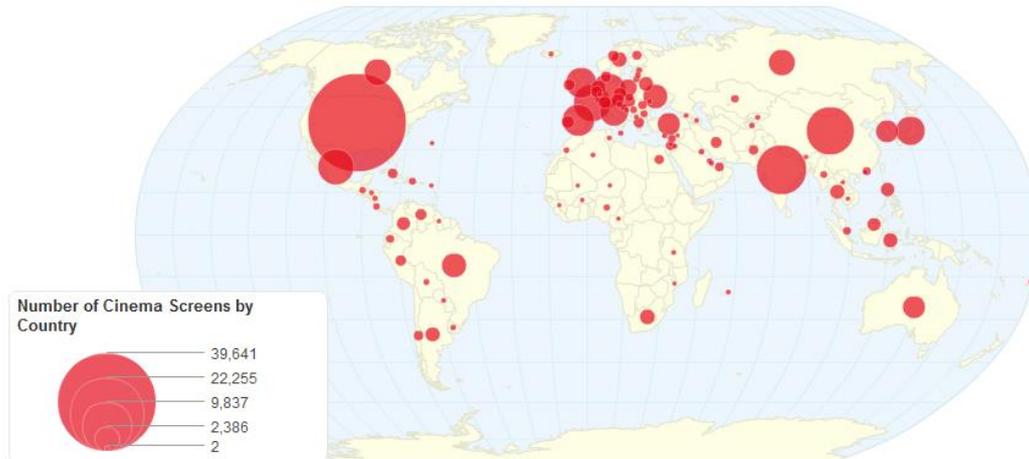
Note. *reaching 95% coverage; **reaching 98% coverage

¹⁹ Informal and incidental learning take place wherever people 'have the need, motivation, and opportunity for learning' (Marsick & Watkins, 2001, p.28).

²⁰ Notice that (a) the sci-fi category is missing from the table, and (b) how the "Animated" set of 16 movies shows a cumulative coverage of 98.03% merely at the 100,000-word level – a possible sign of non-removal of one or more possible outlier(s) (i.e. movies with extraordinarily high number of difficult vocabulary).

²¹ According to Webb in an email communication, Webb stated clearly that his 'corpus-driven studies of incidental vocabulary learning provide an indication of how the occurrence of vocabulary in a text type might affect learning. Thus, they indicate what might happen in empirical studies and suggest that the research is followed up with empirical studies doing this.' In Webb's study, 'it is not about the specific movies that were analyzed. These sets of movies provide an indication of the likely distribution of vocabulary occurrence in a certain amount of viewing time. Thus, if we replaced one set with a completely different set, we may find a similar distribution of words according to frequency.'

Figure 4b. Number of cinema screens by country (UNESCO, 2007)



It sounds like at this point the whole discussion has changed and is no longer about vocabulary learning but something much bigger and more profound that has to do with the socio-political environment as well as the development of the societies concerned. In fact, it is true that given time, watching movies, regardless of genre, could mean not only exposing oneself to incidental vocabulary learning opportunities but subconscious training of the mind to believe (actively biased, actually) in a certain way of thinking and can, in extreme cases, alter one's voting and political preferences (Cheng, 2015b; Cheng & Macapagal, 2016). And as time passes by, such a gradual shift of belief would become phenomenal and appear as cultural shift in societies – one that could even lead to socio-political unrest among the younger and less experienced generations (Cheng, Yau, & Ho, 2016). But no matter how complicated this might get, the thirst for knowledge, the quest for freedom (and hence self-expressiveness), as well as better well-being are still the common-to-all constituents of almost any person, which probably explains why Kim Jong-un, the Supreme Leader of North Korea, quickly authorized his 'personal' Disney show just a little over 6 months after he took over his father's place as supreme leader of DPRK in December 2011 (see Figure 5 below) – the seed is there in every person, it is just a matter of time when it will germinate.

Figure 5. North Korea TV showing Disney characters without permission²³



²³ See the article, 'North Korea TV showed Disney characters without permission.' Huffington Post, dated July 9, 2012. Source: <http://www.disneybymark.com/2012/07/09/north-korea-tv-shows-disney-characters-permission2/>

Conclusion

This paper started off as a paper critique by looking at Webb's (2010) research on language acquisition, in the area of incidental vocabulary learning, through watching movies over time. While research designs do fail or become obsolete for obvious or even very trivial reasons, there is really no point in attacking dedicated researchers like Webb for his good and dedicated work. But when reasons are inferred from the changing patterns of human behavior or the socio-political environment of the countries in which the research subjects live, it might be time we all as researchers re-assess why such a change had occurred (be it socio-political or phenomenal) before it is too late, just as the forthcoming generations, with their 'shorter-than-goldfish' attention spans, may no longer appreciate or could become totally unaware of the very moments of those ad hoc, instant and intuitive learning experiences that were once known to the many past generations as incidental, natural, and fun. Or, maybe it is just high time we all focused on various other ways of learning English (or any other foreign languages), not by watching movies, but through role-playing games, smartphone apps etc., just as Huang and Yang (2012) from Singapore, Kim & Chang (2012) from South Korea, Randi & de Carvalho (2013) from Brazil and many others around the world have all started.

Appendix A

LIST OF 143 MOVIES STUDIED BY WEBB, S. (2010)	
1935 - The 39 Steps	1995 - Quick and the Dead
1937 - Snow White and the Seven Dwarfs	1995 - Toy Story
1939 - Mr Smith goes to Washington	1996 - Jerry Maguire
1940 - Pinocchio	1996 - Shine
1941 - Dumbo	1997 - Absolute Power
1941 - The Maltese Falcon	1997 - Boogie Nights
1946 - Its a Wonderful Life	1997 - Midnight in the Garden of Good & Evil
1948 - Key Largo	1997 - One Eight Seven
1949 - Sands of Iwo Jima	1997 - Nightwatch
1950 - Harvey	1997 - Hercules
1952 - The Quiet Man	1998 - Happiness
1953 - From Here to Eternity	1998 - Primary Colors
1954 - Sabrina	1998 - The Unbearable Lightness of Being
1954 - Rear Window	1999 - Eyes Wide Shut
1954 - Caine Mutiny	1999 - Jakob the Liar
1955 - East of Eden	1999 - Magnolia
1955 - The Desperate Hours	1999 - October Sky
1955 - The Seven Year Itch	1999 - The Hurricane
1955 - Lady and the Tramp	1999 - Varsity Blues
1955 - Rebel without a Cause	1999 - Wild Wild West
1956 - Giant	2000 - All the Pretty Horses
1957 - Bridge on the River Kwai	2000 - Almost Famous
1959 - North By Northwest	2000 - American Psycho
1959 - Journey to the Center of the Earth	2000 - Erin Brockovich
1960 - Magnificent Seven	2000 - Thirteen Days
1961 - Raisin in the Sun	2000 - Chicken Run
1961 - 101 Dalmations	2001 - Monsters Inc.
1962 - To Kill a Mockingbird	2001 - Shrek
1962 - Lawrence of Arabia	2001 - Ali
1963 - The Great Escape	2001 - Monsters Ball
1964 - Goldfinger	2001 - Tailor of Panama
1965 - Von Ryan's Express	2001 - Kate And Leopold
1967 - The Graduate	2002 - Queen of the Damned
1967 - Wait Until Dark	2002 - Resident Evil
1968 - Funny Girl	2002 - Abandon
1969 - Take the Money and Run	2002 - Killing Me Softly
1970 - Five Easy Pieces	2002 - Panic Room
1972 - Jeremiah Johnson	2002 - The Quiet American
1973 - High Plains Drifter	2002 - Ice Age
1974 - Odessa File	2002 - Lilo and Stitch
1975 - One Flew over the Cuckoos Nest	2003 - Rugrats Go Wild
1976 - The Omen	2003 - Big Fish
1977 - Many Adventures of Winnie the Pooh	2003 - Girl with a Pearl Earring
1978 - Interiors	2003 - Monster
1980 - Raging Bull	2003 - Open Range
1983 - War Games	2004 - Dawn of the Dead
1984 - Once Upon a Time in America	2004 - Saw
1984 - The Karate Kid	2004 - Van Helsing
1986 - 9 and a half weeks	2004 - Eternal Sunshine of the Spotless Mind
1987 - Hellraiser	2004 - Million Dollar Baby
1988 - Poltergeist III	2004 - Ray
1988 - Rain Man	2005 - Just Like Heaven
1989 - Field of Dreams	2004 - The Aviator
1990 - Misery	2004 - The Village
1990 - Night of the Living Dead	2004 - Undertow
1990 - Rocky V	2004 - Harry Potter & the Prisoner of Azkaban
1991 - Jungle Fever	2004 - Polar Express
1991 - The Indian Runner	2004 - Spongebob Squarepants Movie
1992 - One False Move	2005 - Corpse Bride
1993 - Indecent Proposal	2005 - Madagascar

1993 - The Joy Luck Club 1993 - The Pelican Brief 1993 - What's Eating Gilbert Grape 1993 - Jason Goes to Hell 1994 - Interview with the Vampire 1994 - Legends of the Fall 1994 - Maverick 1994 - Disclosure 1994 - Quiz Show 1995 - Apollo 13 1995 - Leaving Las Vegas 1995 - To Die For	2005 - Robots 2005 - Valiant 2005 - Curse of the Were Rabbit 2005 - Ballad of Jack and Rose 2005 - Cinderella Man 2005 - Good Night and Good Luck 2005 - North Country 2005 - The Constant Gardener 2005 - The Weather Man 2005 - Upside of Anger 2005 - Walk the Line
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Appendix B

The following shows the cumulative coverage (%), including proper nouns and marginal words, for each set of movies and a random movie from that set, taken from Webb’s journal paper (2010, p.508). Notice how the ‘Animated’ set of 16 movies shows a cumulative coverage of 98.03% merely at the 100,000-word level – a possible sign of either non-removal of one or more possible outlier(s) (i.e. movies with extraordinarily high number of difficult vocabularies), or that such animated movies contain more difficult vocabularies than the other sets – which is somewhat strange as these movies are supposed to be made for youngsters or kids. Or, are they not?

	Set of 8 <i>'Western'</i>		Set of 13 <i>'Horror'</i>		Set of 16 <i>'Animated'</i>		Set of 36 <i>'Classic'</i>		Set of 70 <i>'Drama'</i>	
Word list	All		All		All		All		All	
1,000	89.83	90.84	90.48	92.07	87.27	89.82	90.25	88.58	90.46	92.72
2,000	94.36	95.60*	94.56	95.92*	91.70	93.66	94.43	92.89	94.52	96.17*
3,000	96.13*	97.39	96.37*	97.24	94.24	95.80*	96.23*	94.59	96.10*	97.50
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7,000	98.38	99.17	98.69	99.02	97.40	98.32	98.58	98.43	98.60	99.01
8,000	98.62	99.30	98.86	99.18	97.65	98.49	98.75	98.58	98.78	99.16
9,000	98.75	99.37	99.01	99.27	97.84	98.65	98.93	98.98	98.93	99.20
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12,000	99.01	99.57	99.36	99.50	98.25	98.90	99.23	99.30	99.19	99.35
13,000	99.12	99.62	99.43	99.57	98.37	98.91	99.28	99.36	99.26	99.38
14,000	99.15	99.62	99.46	99.57	98.41	98.91	99.32	99.44	99.30	99.38
Proper nouns	1.91	4.17	2.23	1.63	2.32	3.84	2.92	2.97	2.83	2.04
Marginal words	0.16	0.02	0.43	0.09	1.73	0.73	0.63	0.17	0.57	0.39
Tokens	53,201	5,543	69,848	5,690	112,504	8,042	341,660	14,342	690,023	10,325

Note: *reaching 95% coverage; **reaching 98% coverage

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