

Structures of Spoken Academic Clusters in Ted Talks

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Abstract

Academic clusters frame the thoughts between discourses. These clusters were extensively explored in a written discourse while few shed the light on spoken discourse. Therefore, this work aimed to explore the cluster list and analyze the structural patterns of spoken academic presentations in Ted Talk. The self-compiled corpus entitled 'Pop Ted Talks' included 183,275 running words retrieved from three popular playlists in Ted Talk official website. Word Smith Tool version 7.0 was used to generate the spoken academic cluster lists. For the structural analysis, the clusters were classified into three main different types based on Biber et al. (2004)'s taxonomy. The results revealed that there were 62 cluster types with some of the socio-cultural clusters in the Pop Ted Talks corpus. Structurally, the noun phrase and prepositional phrase fragments covered almost half of the corpus (45.54%), followed by 40.32% of verb phrase fragments and 16.13 % of dependent clause fragments, respectively. This study found that clusters in Ted Talk shared similar characteristics with academic lecture genre.

Keywords: academic discourse, presentation genre, spoken discourse, corpus analysis, Ted Talk

Introduction

Research in phraseology has contributed a great deal of knowledge to both first and second language for more than half of a century. It is widely known that clusters, also known in other terminologies such as lexical bundles (Biber & Barbieri, 2007; Biber, Johansson, Leech, Conrad & Finegan, 1999), formulaic sequence (Alison Wray, 2000, 2013) and multi-word cluster (Biber, Conrad & Cortes, 2004), shape and frame the discourse in a language. Such clusters facilities both speakers and listeners to convey the messages comprehensively (Wray, 2000). As Biber et al. (1999) defined, these clusters are an extended collocation that has no association with semantics but pragmatics, and they appear in incomplete grammatical forms. Additionally, many experts (e.g., Ellis, Simpson-Vlach & Maynard 2008; Simpson-Vlach & Ellis, 2010; Wray, 2000, 2006, 2013) proposed that not only L1 speakers but also L2 speakers need to master the clusters simply because such sequences occur in the everyday conversation (Biber et al., 2004; Conrad & Biber, 2005). Specifically, L2 speakers who master the cluster could increase their fluency in the linguistics productions and speak more naturally (Chen & Baker, 2010; Cortes, 2002, 2006; Greaves & Warren, 2020; Hyland, 2008a, 2008b; Hyland & Jiang, 2018). In the spoken discourse, it is widely acknowledged that the spoken clusters are seen as the key component to fame the discourse for the effective communication (McCarthy, 2001; O'keeffe; McCarthy & Carter, 2007).

The body of knowledge has been greatly developed over time. In the groundbreaking, Biber et al. (1999) explored the clusters in the spoken and written corpora to understand their characteristics both structurally and functionally. After that, clusters were also investigated in the different registers, and it is apparent that they vary from register to register (Biber et al., 2004; Kim, 2009). Apart from that,

the similar works further put forward this knowledge to academic written discourse in the different disciplines; for this reason, many corpus linguists (see Cortes, 2004; Hyland, 2008a, 2008b) confirmed the variation in the academic disciplines. As can be seen, the academic clusters received much attention and provided many diverse clusters in different disciplines such as medicine (Jalali & Moini, 2014; Mbodj-Diop, 2016; Panthong & Poonpon, 2020b), agriculture (Shi, 2010), applied linguistics (Al Fajri, Kirana & Kharisma Putri, 2020; Mirzai, Gaskaree, Richter & Doosty 2020; Ren, 2021), pharmacy (Grabowski, 2015), hard science (Salazar, 2014), law (Breeze, 2013), engineering (Chen, 2010). Based on this variation, Hyland (2008a) found the academic clusters related to sociocultural background i.e., '*in the Hong Kong*' (p.49); such clusters are believed that they reflect the discourse community for the effective communication. To date, the boundary of research is extended to several research areas such as clusters and move analysis (Al-Shujairi et al., 2020; Cortes, 2013; Hong, 2020; E. S. Kim & Lee, 2020; Mizumoto et al., 2017), clusters and language assessment (Staples et al., 2013), clusters and research paradigm (Candarli & Jones, 2019; Cao, 2021).

However, the relatively rare research underlines the cluster in a spoken discourse, especially in an academic discourse. Some research explores the clusters in the conversation (McCarthy, 2001; McCarthy & Handford, 2004; O'keeffe, McCarthy, Carter, 2007; Panthong & Poonpon, 2020a), discussion (Heng, Kashiha & Tan, 2014), and some classroom lectures (Kashiha & Heng, 2013, 2014b; Nesi & Basturkmen, 2006). Another boundary of this research attention is shifted to a presentation genre on which a few pieces of research focus. Liu and Chen (2020), for example, explored functional analysis and variation (in a discourse level), finding

that clusters in ted talk were contextualized in discourse organization. As can be seen, the research on the structural analysis of clusters is still relatively rare.

Ted Talk is recognised by one of the academic presentation given by the experts in each field in order to share their experience or their knowledge (Wingrove, 2022). According to Tsai (2015), Ted Talk is considered to be a successful presentation, and such presentation can motivate the listeners with the ‘high-energy talk(s)’ (Uicheng & Crabtree, 2018, p.4). Additionally, this talk grabs much attention of the research to explore the characteristics of the talk such as academic vocabulary to enhance listening skills (Wingrove, 2017), rhetorical move (Ratanakul, 2017), discourse markers (Crible et al., 2019; Hamdi, 2020; Uicheng & Crabtree, 2018), spoken academic in Ted Talk (Liu & Chen, 2019), lexical coverage (Nurmukhamedov, 2017).

To address these gaps, the purposes of this research are to explore the cluster list and analyze the structural patterns of a spoken academic presentation in Ted Talk. It is expected that the results of this research would be maximally useful for teachers, EFL students, and presenters as the list for their presentation preparation.

Research Objectives

1. To explore the spoken academic clusters in Ted Talks
2. To analyze structures of the spoken academic clusters in Ted Talks

Research Method

The study was situated in a corpus-based analysis. Hence, quantitative data were based on a frequency driven approach, and qualitative data were investigated by concordance lines.

Corpus Compilation

The Pop Ted Talk corpus is the self-compiled corpus with 183,275 running words. It was invented from the 60 pieces transcription of Ted Talks in three popular playlists in 2020 (composed and suggested by the official website). As Wingrove (2017) claimed, the popular playlist could potentially imply the representativeness of the Talks.

The process of data collection introduced two steps. First, the popular playlist was accessed through the official website and then it was transcribed. To ensure correctness, the inter-coder process was followed up. After that, those pieces of transcription were electronically transferred into .txt files separated by folders.

Data Analysis

Word Smith Tool

This computational software program *Word Smith Tool* version 7.0 (Scott, 2019) was chosen to explore the clusters in the corpus. This software, as Ari (2006) suggested, provide more accurate results than any other program while Ant Conc Anthony (2020) counted the contraction as two word units. Additionally, features such as cluster, wordlist and concordance allow the research to explore the cluster in this corpus.

Structural Taxonomy

To analyze the structure of clusters, this study adopted Biber et al. (2004). This extended taxonomy includes more types than this previous one (Biber et al., 1999). Indeed, it is purposively devised from a variety of registers such as classroom lectures, conversations, and textbooks. Consequently, this structural taxonomy consists of three types and 17 sub types as shown in Table 1.

Table 1

The structural taxonomy of Clusters by Biber et al. (2004)

No.	Types	Sub-types	Examples
1	Verb phrase fragments	1. 1 st / 2 nd person pronoun	<i>You don't have to</i>
		+verb phrase fragment	<i>I'm not going to</i>
		2. 3 rd person pronoun +verb	<i>It's going to</i>
		phrase fragment	<i>That's one of the</i>
		3. Discourse maker + pronoun	<i>I mean you know</i>
		+verb phrase fragment	<i>You know it was</i>
		4. Verb phrase (non passive verb)	<i>Is going to be</i> <i>Is one of the</i>
		5. Verb phrase (passive verb)	<i>Is based on</i> <i>Can be used to</i>
		6. Yes-no question fragments	<i>Are you going to</i> <i>Do you want to</i>

Table 1 (Continued)
The structural taxonomy of Clusters by Biber et al. (2004)

No.	Types	Sub-types	Examples
2	Dependent clause fragments	7. Wh- question fragments	<i>What do you think</i> <i>How many of you</i>
		1. 1st/ 2nd person pronoun	<i>I want you to</i>
		dependent clause fragments	<i>You might want to</i>
		2. Wh-clause fragments	<i>What I want to</i> <i>What's going to happen</i>
		3. If- clause fragments	<i>If we look at</i> <i>If you have a</i>
		4. To-clause fragments	<i>To be able to</i> <i>Want to do this</i>
		5. That-clause fragments	<i>That this is a</i> <i>That I want to</i>
		1. Noun phrase with of-phrase fragments	<i>One of the things</i> <i>The end of the</i>
		2. Noun phrase with other post-modifier fragments	<i>The way in which</i> <i>Those of you who</i>

Table 1 (Continued)

The structural taxonomy of Clusters by Biber et al. (2004)

No.	Types	Sub-types	Examples
		3. Other noun phrase expression	<i>A little bit more</i> <i>Or something like</i> <i>that</i>
		4. Prepositional phrase expression	<i>At the end of the</i> <i>Of the thing that</i>
		5. Comparative expression	<i>As well as the</i> <i>As far as the</i>

Operationalization

After the data collection, the analytical process also introduces two stages: the identification of clusters, and the structural analysis.

The first stage is to identify clusters and generate the list of clusters. All electronic files in .txt formats were transferred to the *Word Smith Tool* and generate the list of four-word clusters. The rationale for four-word clusters is that two and three word clusters are too numerous in the corpus while five- and six word clusters are extensively rare and some of them contain four-word clusters inside (Biber et al., 1999; Csomay, 2013). Also, the cut-off point criterion is based on Biber et al. (2004) who set criteria at least 40 times with minimum of five ranges for one million words corpus. However, the size of a corpus in this work is different, so the normalization was set at 8 times with minimum of five ranges. Because the clusters occur in the

corpus overwhelmingly, the cut-off point should be applied to ensure the probability of occurrence in the discourse. According to Biber et al. (2004), Biber (2006), and Biber and Barbieri (2007), clusters must occur at least 40 times per 1 million words with minimum 5 texts. This can ensure the variety of occurrences rather than the writer's preferences and generalize the chance of familiar chunks in the discourse (Biber et al., 1999; O'keeffe et al., 2007). Another criterion for cluster identification is the exclusion. This method allows the researcher to eliminate the overlapping clusters generated from the computational software and to avoid the inflation of cluster lists. As a result, this study adopted this approach from Chen and Baker (2010) to exclude five-word clusters. For example, 'it's going to be' and 'going to be a' are considered as the continuous phrase, so only the former part is counted as the cluster in this study.

Another stage is to analyze the structural types of clusters. Using Biber et al. (2004), this study classified the clusters into three different types of structures. It should be noted that the cluster appears in the fragments; consequently, the concordance lines of each cluster were observed in order to explore the structures line by line. After that, the number of occurrences of structural types was calculated.

Results

The Occurrence of Clusters

Research Question 1: *What are the spoken academic clusters in Ted Talks?*

The results revealed that there are 62 cluster types in Ted Talk corpus. As shown in the Table below, '*I want you to*' occur 30 times across 8 texts as the most common in this corpus. On the other hands, the cluster 'it turns out that' appear at 20 times with 10 texts.

Table 2.

The top twenty frequency of clusters in a Pop Ted Talk corpus

No.	Clusters	F	R	No.	Clusters	F	R
1	I want you to	30	8	11	at the same time	15	14
2	in the United States	25	14	12	a lot of people	15	11
3	to be able to	23	17	13	one of the things	15	10
4	going to have to	21	10	14	I don't want to	13	7
5	one of the most	20	16	15	going to show you	13	7
6	of the United States	20	12	16	when it comes to	13	8
7	is going to be	19	9	17	president of the United	13	8
8	the end of the	18	13	18	to make sure that	12	8
9	and I think that	16	6	19	so that we can	12	5
10	thank you so much	16	9	20	it turns out that	12	10

*F=frequency, **R=Range

Furthermore, three academic clusters are embedded with the socio-cultural background; that is, they reflect the discourse communities of the speakers (Chen & Baker, 2016). The clusters '*in the United States*' with 25 times and 14 texts, and '*of the United states*' with 20 times and 12 texts reflect the location of the discourse in the target place (see Example 1 and 2). However, '*president of the United*' was used to refer to the person as seen in Example 3.

Example 1 - *in the United States*

- This study tracked 30,000 adults *in the United States* for eight years, and they started ... (P1.S7)

Example 2 - *of the United States*

- People of color makeup around 40 percent *of the United States* population.
So why is it a University of Michigan study found ... (P2.S10)

Example 3 - *president of the United*

- You know? You can be anything. You could be the *President of the United States*, or the inventor (P1.S14)

Structural Types

Research Question 2: *What are the structures of the spoken academic clusters in Ted Talks?*

After analyzing the clusters based on Biber et al. (2004), this study found there are 45.54 % of noun phrase and prepositional phrase fragments, followed by verb phrase fragment (40.32%) and dependent clause fragments (16.13%) as shown in Figure 1.

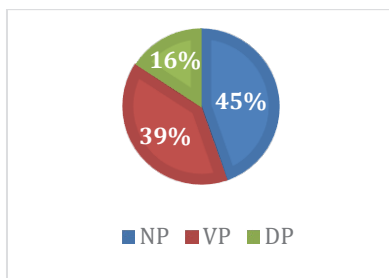


Figure 1: The distribution of structural types of academic spoken clusters.

The following sessions reported the results of subcategories of each structural type and show how clusters were used in the contexts.

1. *Noun phrase and prepositional phrase fragments*

This corpus provides the largest proportion of noun phrase and prepositional phrase fragments. The total number of noun phrase is 27 cluster types, and only three structural types including noun phrase with of-phrase fragments, other noun phrase expressions, and prepositional phrase expressions are found in this corpus. Example 4 show the context of how the cluster entitled ‘*at the same time*’ was used to show the contrast in the context, and ‘*the end of the*’ as the noun phrase with of-phrase fragments refers to the time in the discourse (see Example 5).

Example 4 – *at the same time*

- you have chopsticks influences the food that you can cook. But at the same time, chopsticks reflect the communal nature of eating food. (P3.13)

Example 5 – *one of the reasons*

- ... here's what we project out through the end of the century: more than 33 million people.... (P3.18)

2. *Verb phrase fragments*

The number of clusters with verb phrase fragments is 25 types. The result revealed that there are clusters embedded with 1st / 2nd person pronoun +verb phrase fragment, 3rd person pronoun +verb phrase fragment, verb phrase (non-passive verb), verb phrase (passive verb), yes-no question fragments. Nevertheless, two structural types which are discourse maker + pronoun +verb phrase fragment and Wh- question fragments were not found in this corpus. As displayed in Example 6, the 1st / 2nd person pronoun +verb phrase fragments titled ‘*I’m going to show*’ was used to

introduce the new topic. Similarly, '*is going to be*' regarded as the verb phrase (non-passive verb) refers to the results in the discourse.

Example 6 – *I'm going to show*

- *I'm going to* show you Dominique Strauss-Kahn with Obama who's chattering with his fingertips. (P1.11)

Example 7 – *is going to be*

- ... I can't, sitting in this position of comfort and safety, say anything that I think *is going to be* accurate and appropriate to that... (P2.10)

3. *Dependent clause fragments*

Ten cluster types were identified as dependent clause fragments. There are four subtypes e.g., 1st/ 2nd person pronoun dependent clause fragments, wh-clause fragments, to-clause fragments, and that-clause fragments while no if-clause fragments existed in this corpus. To-infinitive clause fragments '*to make sure that*' was used to show the purposes in the academic presentation as can be seen in Example 8. In addition to that, '*when it comes to*' (wh-clause fragments) was explored to the transition of the topic in Example 9.

Example 8 – *to make sure that*

- These are the steps that we're going to have to take *to make sure that* we have a democracy and the democracy endures. (P2.2)

Example 9 – *when it comes to*

- it is the world's loss. Because *when it comes to* creativity and to leadership, we need introverts doing what they do best (P1.14)

Discussions

The research of this study found two major findings. The first finding is the results of the socio-cultural clusters, and another finding is the structural types that share similar characteristics with the academic lecture genre. Hence, these two points were discussed in the following sessions.

First, the corpus in this present study provides 62 cluster types with three cluster types of the socio-cultural clusters. This result is in an agreement with the previous research. Hyland (2008a, 2008b) undertook the research of academic written discourse, finding ‘*in Hong Kong bank*’ used to contextualize the location. Similarly, Biber et al. (2004) also found lexical bundles embedded with this such background ‘*in the United States*’ in the written discourse. Therefore, this could be explained by the fact that the socio-cultural clusters or bundles are likely to occur in both academic spoken and written discourses by reflecting the discourse community.

Apart from the first result, this study found that noun phrase and prepositional phrase fragments are common in Ted Talk. This result is partially different with the previous research (i.e., Biber et al., 1999, 2004; Conrad & Biber, 2005; Kashiha & Heng, 2014a; Kim, 2009) postulating that the prevalent structural type in spoken discourse is verb phrase fragments while the noun phrase and prepositional fragments are common in a written discourse. Unlike previous research, this Ted Talks is related to an academic discourse; henceforth, it is likely to share similar characteristics with the classroom lectures found in past works (see Kashiha & Heng, 2013, 2014b; Nesi & Basturkmen, 2006). For this reason, it could be potentially concluded that structures of clusters in Ted Talk genre are the same as

those in lectures while Liu and Chen (2020) claimed that the functions of clusters in lectures and Ted talk are different. As a result, this result informs the body of knowledge in a genre study that structural clusters between Ted Talk and lectures share the similar characteristics.

Recommendations

Once again, this present study aims to explore and analyze the spoken academic clusters in self-compiled corpus entitled 'Pop Ted Talks', finding that 62 bundles and most of them appear in Noun phrase and prepositional phrase fragments forms while the least frequent structure type is dependent clause fragments. For this result, it can add one aspect into the body knowledge of formulaic sequence that clusters in Ted Talks are similar to those in the academic lectures.

This study is likely to rebound the maximal benefits for those who would like to encourage the fluency of speaking skills especially in the presentation mode. The clusters, once again, can enhance the fluency of productive skills and even reduce the mental processing for the learners (Hyland, 2008a). In addition to that, Additionally, it should be noted that these clusters could be useful as the linguistic resources in the pre-task session during the speaking class to shift their fluency of linguistics production (Ellis et al., 2008; Simpson-Vlach & Ellis, 2010).

Still, this research has many limitations, so further research may fill the gap with the following suggestions. First, the corpus size of this study is relatively small, so further research shows a wide range of disciplines in order to increase the balanced elements for a corpus. Additionally, these clusters are considered as the structure; consequently, another school of thought such as rhetorical moves should be bridged to explore how each cluster is used in each presentation step.

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