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**Towards a corpus-driven approach to audiovisual translation (AVT) reception: A case study of YouTube viewer comments**  
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**ABSTRACT**

Although reception studies on audiovisual translation (AVT) have embraced new research methods and tools, user-generated comments on video-streaming platforms are yet to be systematically examined by AVT scholars. The main objective of this paper is to establish the plausibility of a corpus-driven approach to audience reception. Using a popular YouTube channel *Dianxi Xiaoge* as an example case, we built a corpus of viewer comments and conducted collocation and concordance analyses. The findings revealed that (a) viewers posted many more comments requesting subtitles than acknowledging the provision of subtitles; (b) audience responses could be specifically grouped into ten themes (comprehension, integral viewing, linguistic quality, subtitle presentation, marked languages, emotional reactions, presumption, subtitle-evoked viewership, cultural pursuit, and language acquisition); (c) diachronically, each peak of comments about the presence of non-English subtitles was preceded by two to three peaks of comments about their absence, pointing to possible patterns between audience reception and subtitle production. To illustrate the heuristic values of these corpus findings, we discuss the audience insights vis-à-vis the scholarly interests of AVT researchers. We also discuss the advantages and limitations of a corpus-driven approach to AVT reception.

**KEYWORDS**

Subtitles, interlingual subtitles, audiovisual translation, audience reception, corpus, YouTube.

**1. Introduction**

Audiovisual content is increasingly consumed by viewers beyond traditional local and national boundaries. This raises some important questions about whether comprehension and experience differ among viewers with diverse language backgrounds; and if so, to what extent, in what ways and what may be the influencing factors in divergences observed. With such concerns in mind, scholars have collected empirical data to examine viewer reception of audiovisual translation (AVT). Typically, reception studies have explored viewers' cognitive processes, attitudes, perceptions, and relevant factors that might influence their viewing experience (Gambier 2003; Di Giovanni 2020). Over the past decades, audiovisual texts and viewers' consumption habits have changed substantially. As a quick example, binge-watching has

become a common, preferred practice (Jenner 2016; Orrego-Carmona 2018) enabled by the immediate access to video-streaming platforms. Similarly, reception studies have evolved to embrace new methods and tools brought by technological advancement (Chaume 2018; Orrego-Carmona 2019). These new market and research trends motivate the current paper. Specifically, we attempt to demonstrate the plausibility of a new approach that draws on sizable user-generated comments and corpus analytical techniques, or what we call a corpus-driven approach to audience reception. The approach is corpus-driven because it is “guided by what emerges from the observation of corpus data” (Bruti 2020: 382), as opposed to a corpus-based approach that is “used to verify or exemplify theoretical claims and hypotheses” (Bruti 2020: 383). As our primary goal is to establish methodological plausibility, we have chosen the reception of interlingual subtitling as our focus, because this is a widely studied AVT mode (Di Giovanni 2020) and allows us to relate our findings to others obtained from different research methods. In the following sections, we will first review empirical methods to investigate subtitle reception to make a case for a corpus-driven approach. Then, we will report on the application of this approach to a case study of viewer comments on the YouTube channel *Dianxi Xiaoge*. We will discuss the findings in relation to other reception studies and comment on the advantages and limitations of a corpus-driven approach.

## **2. Empirical approaches to audience reception of subtitles**

Since the 1980s, audience-oriented research on subtitling has continued to draw scholarly attention and established itself as a flourishing area within AVT (Di Giovanni 2020). In recent decades, an array of empirical methods and tools have been adopted to understand audience reception. Among them, questionnaires and eye tracking are most common, while interviews and direct observations are occasionally used (Orrego-Carmona 2019). In what follows, we will review the advantages and limitations of these methods to contextualise our proposal for a corpus-driven approach.

A questionnaire is a powerful and cost-effective tool to obtain large amounts of responses within a short period of time (Perego 2016; Mellinger and Hanson 2020). It allows researchers to collect different answers to the same questions, which can be systematically analysed and compared. For example, Wu (2017) asked 375 respondents to rank the important factors that influenced their habits of consuming overseas audiovisual content. More recently, Aleksandrowicz (2019) surveyed 209 viewers to investigate their perception of subtitled song lyrics in films. Although questionnaires are time-efficient for collecting a large number of audience responses, the

self-reported data might be unreliable (Orrego-Carmona 2019) as participants might provide answers that they wish were true (Iwaniec 2020) or expected of them (the Hawthorne effect, Saldanha and O'Brien 2014). Moreover, questionnaires are deceptively easy to design and administer, but in fact require much more careful consideration of an array of factors, such as validity and reliability (see Mellinger and Hanson 2020; Saldanha and O'Brien 2014 for detailed discussion). Finally, questionnaires "are not the best instruments for collecting explanatory data" (Saldanha and O'Brien 2014: 152) because participants' responses tend not to be detailed or elaborate (Iwaniec 2020).

To obtain an in-depth understanding of participants' thoughts and attitudes, interviews are a necessary choice. For instance, Božović (2019) conducted interviews to solicit viewers' opinions about whether and why they preferred domestication or foreignisation strategies to render cultural elements in AVT. While generating rich data about viewers' preferences and needs, such data can be time-consuming to collect, transcribe, and analyse. Therefore, interviews are usually conducted with a small number of participants, thus limiting the representativeness and generalisability of a study (Saldanha and O'Brien 2014). Furthermore, both questionnaires and interviews tend to collect data *after* the viewing experience (Kruger and Doherty 2018). This retrospective insight, although certainly useful, can only capture part of the audience reception. There is also a need to understand how the viewing experience unfolds moment by moment in order to develop a comprehensive picture of audience reception. This is where direct observation and eye tracking come in.

Direct observation relies on researchers' observation of viewers' behaviours and reactions to AVT. For example, Fuentes Luque (2003) took note of participants' reactions to translated humour in a film—whether they smiled, laughed, appeared puzzled, or made no reaction. Direct observation is not frequently used because it heavily relies on researchers' subjectivity (Orrego-Carmona 2019). Additionally, it can only capture explicitly observable elements (e.g. facial expression and posture), without offering insights into tacit online cognitive processes. One solution is to use eye-tracking technologies to record gaze patterns, since these can "serve as a window on the mind of the user, revealing perceptual and cognitive processes" (Holsanova 2014: 293). Eye-tracking technologies have been increasingly adopted to understand how AVT variables impact the viewers' cognitive processes (see Kruger and Doherty 2018 for a recent review). For example, Szarkowska and Gerber-Morón (2018) examined the gaze patterns of participants and found that they were able to keep up with the subtitles presented at rapid speed. More recently, Liao *et al.* (2020) used

eye-tracking data to conclude that bilingual subtitles and monolingual subtitles were comparable in terms of cognitive load.

While we review these methods and tools in separate paragraphs, AVT researchers seldom use them in isolation, since mixed methodologies can yield “higher quality and more comprehensive data” (Orrego-Carmona 2019: 369). Although a triangulated design can afford a fuller account of audience reception, it is still prone to the limitations inherent in each discrete approach. One potential issue is ecological validity, i.e. “the extent to which the same or similar results can be applied to *real-life* settings” (Gile 2016: 221, *our emphasis*). Viewers typically consume AVT content at home, in a movie theatre, or in an en-route subway, but seldom in a lab fitted with eye-trackers or with an expectation to take an interview or a survey afterwards. We acknowledge that there is always a trade-off between experimental validity and ecological validity. The previous studies might want to enhance experimental validity and control for confounding or irrelevant variables. Such treatments, however, also reduced the naturalness of the viewing experience.

To collect natural, real-life data from viewers, a favourable methodological choice is to build a corpus, as it is by definition “a collection of naturally-occurring language texts” that are stored and accessed electronically (Sinclair 1991: 172). As a methodological tool, corpora were introduced to Translation Studies by Baker (1993). Since then, different types of corpora have been built to study patterns of translated texts (e.g. translation universals, Laviosa 2002; linguistic features, Malamatidou 2018) and translators (e.g. translators’ ideology, Olohan 2004; style, Hu 2016). Similarly, in the field of AVT, corpora have been used to examine translation strategies, speech acts, register shifts, and linguistic features in translated films (see Bruti 2020 and Pavesi 2019 for two recent reviews). In AVT and other translational domains, corpora have tended to focus on the author (source texts) and the translator (target texts), but not the audience. Thus far, relatively less attention has been paid to using corpus techniques to understand audience reception of translated texts in general, and interlingual subtitles in particular. As video-streaming platforms, such as YouTube, usually provide a section for viewers to post their comments, this creates a valuable research opportunity for building a corpus of reactions based on viewers’ natural viewing experience. In fact, user-generated comments on social media have been used to describe, compare, and theorise audience reception of various phenomenon, such as emotional responses in psychology (Miller 2018), “crowdsourced and crowd-shared” viewing experience in Shakespearean studies (Fazel 2021: 190) and knowledge transfer in science communication (Boy *et al.* 2020). These

studies have shown the possibility of obtaining audience insights from user-generated comments, but they have not relied on corpus techniques to identify patterned audience responses. Instead, our application of corpus-driven analysis to a corpus of audience reception texts offers a complementary contribution to existing Translation Studies focusing on texts created by authors and translators. To demonstrate the plausibility of such an approach, we conducted a case study, guided by the following questions:

1. What aspects of subtitles matter to the viewers?
2. What possible patterns can be observed between audience reception and subtitle production?

### **3. Research design**

#### **3.1. The corpus of subtitle reception**

We focused on the YouTube channel *Dianxi Xiaoge*, featuring the local cuisine and lifestyles of Yunnan Province (southwestern China). The rationale for choosing this case was threefold: subtitles, viewers, and language choice.

First, the videos were released with subtitles encoded into the audiovisual content, known as “hard sub” (Barra 2009; Wu 2017), as well as optional subtitles, “soft sub”. The channel initially offered “hard sub” in standard Mandarin Chinese for viewers to understand the vlogger’s dialogues in her local Yunnan dialect. However, many viewers made frequent requests for subtitles in languages other than Chinese. Subsequently, more languages were made available as “soft sub” when new videos were released (although there was a short time lag). In this way, the evolution from absence to presence of interlingual subtitles makes it an interesting case to examine how viewers respond to the lack or provision of subtitles.

Second, the YouTube channel had attracted about 6.8 million subscribers by January 2021 (when we collected the data), suggesting a very large base of viewership. When a new video was published, viewers from around the world posted a large number of comments, including their response to the audiovisual content and their reception of the subtitles. Thus, it is an ideal source of naturally-occurring data of reception that cuts across a wide range of audience types.

Third, viewers of this channel come from diverse geographical and language backgrounds (e.g. Thai, Indonesian, Korean, Egyptian and Algerian). We

noticed that they were proactive in asking for non-English subtitles by posting English comments to ensure that the vlogger (and her team) would attend to their requests. Tracing how non-English subtitles were commented affords us insights into “underrepresented and underserved language communities” in AVT reception studies (Dwyer 2017: 181).

We built a corpus of publicly available user-generated comments from 205 videos between September 2018 and December 2020, which represents the timeframe from which the first videos were available until the present. The initial corpus consisted of a total of 284,219 comments in various languages, but we were only interested in the English comments for this study. We used a Python module *Langdetect* (Nakatani 2010) to automatically identify the languages of the comments, followed by a manual check of the language labels. While we found no false positives, we corrected 11.8% of false-negative comments. The resulting corpus consisted of 155,921 English comments, amounting to 1,770,189 words. Although only English comments were analysed, we reasoned that the reception reflected in the English comments was fairly representative of the channel’s viewers in three aspects: frequency, dispersion, and source. Frequency and dispersion are what Miller and Biber (2015: 430) have called “distributional properties”. The English comments had the highest frequency (accounting for 54.9% of all viewer comments) and were dispersed across all the 205 videos in the corpus. In terms of source, the English comments were made by viewers from diverse backgrounds (see the “Locale” collocates, Table 2), contributing to the representativeness of the data (Leech 2007).

### 3.2. Analytical procedure

To address the research questions about audience reception of subtitles, we conducted collocation and concordance analyses, using the corpus analysis tool, *AntConc* 3.5.9 (Anthony 2020). Collocation analysis was more quantitatively oriented because it first identified words (and by extension, concepts) that most frequently co-occurred with interlingual subtitling and then were grouped into coherent categories. Concordance analysis was more qualitatively oriented because it required close readings of the data for thematic patterns of perceptions regarding interlingual subtitling (Partington *et al.* 2013) before counting the frequencies of these themes.

For the purpose of collocation analysis, a combined search term “sub |subs |subtitl|translat”<sup>1</sup> was used with the regular expression function activated in *AntConc*. In this way, all possible subtitling-related words were included: *sub*, *subs*, *subtitle(s)*, *subtitling*, *subtitler(s)*, *translate*, *translation*, *translator(s)*, *translating*, and *translated*. In line with Brookes and McEnery

(2020), the word span was set as five words to the left and right of the search term. The collocates were ranked by log-likelihood scores, indicating the confidence level of whether a collocate typically co-occurred with the search term. As this study did not focus on grammatical patterns, all function words were excluded based on Nation's (2013) list. Next, the top 100 content collocates were grouped into coherent themes, which allowed us to understand what kinds of thematic content tended to co-occur with interlingual subtitles.

For the purpose of concordance analysis, a concordance corpus was built (Partington 2015; Wu 2020). The same combined term "sub |subs |subtitl|translat" was used in AntConc to search concordance lines (with an extended co-text of 200 words). A total of 3,926 concordance lines were returned and treated as the concordance corpus for annotation. During manual annotation, 158 lines were excluded because (a) the word "sub" in the concordances referred to "subscription" or "subscribers" rather than "subtitles" or (b) the meanings were rather opaque due to misspelling or heavy use of non-standard English. The subsequent concordance analysis was based on 3,768 concordance lines.

As a corpus-driven approach, we developed the annotation scheme based on our bottom-up analysis. We did not presuppose any top-down framework before coding the data. Instead, we used a recursive, inductive process as follows. First, we randomly chose and inspected 200 concordance lines to get a general picture of the data. We grouped similar concordance lines and drafted an initial coding protocol (eight codes) to describe different themes. After that, we randomly selected another 100 concordance lines and independently annotated them, using the initial coding protocol. We discussed our coding inconsistencies and made necessary changes by expanding eight codes into twelve codes to better reflect the diversity of audience reception. We also expanded the protocol into two tiers depending on presence/absence of subtitles and reception themes (detailed below). Using this updated coding protocol, the second author annotated all the concordance lines. Then, the first author randomly selected 400 concordance lines (about 10% of the concordance corpus) and independently coded them. The inter-coder agreement was measured using Cohen's kappa (Mellinger and Hanson 2017). The values for the coding categories were all above 0.92, suggesting very good inter-coder reliability.

Table 1 presents our coding protocol and corresponding verbatim examples from the concordance corpus. In the first tier, we annotated whether the comments were made when subtitles were present or absent. In the second tier, we distinguished twelve themes of audience reception. Among them,



two themes (*requests* and *acknowledgement*) were phrased in very brief comments, either requesting subtitles because of their absence or acknowledging their presence and expressing gratitude. Ten other themes contained more specific responses/reactions to the presence or absence of subtitles, categorised as follows:

- *Comprehension* refers to the viewer's understanding of the audiovisual content with the aid of target subtitles.
- *Integral viewing* means that the viewer regards subtitles as an essential part of an audiovisual product. The availability of subtitles substantially contributes to the viewing experience.
- *Linguistic quality* is about the viewer's opinion on whether the target subtitles are good (e.g. semantically clear) or undesirable (e.g. erroneous or unidiomatic renditions).
- *Subtitle presentation* concerns the viewer's response to the way the subtitles are presented, such as the presentation rate and font size.
- *Marked languages* are non-English languages requested or appreciated by viewers as choices for subtitles.
- *Emotional reactions* are the viewer's feelings evoked by the subtitles, such as joy, disappointment, and surprise.
- *Prosumption* refers to the case where the viewer volunteers to produce the subtitles. Thus, the viewer is not only a consumer, but also acts as a prosumer of AVT (Dwyer 2019; Jiménez-Crespo 2017).
- *Subtitle-evoked viewership* indicates how the availability of target subtitles, especially on streaming platforms, can potentially make a video more accessible to diverse viewers and thus expand the viewer base and subscription.
- *Cultural pursuit* is about the viewer's intentions to follow particular cultural or subcultural practices featured in the videos, which may include preparing a culturally distinctive dish and pursuing a lifestyle.
- *Language acquisition* refers to the audience's objective to improve their language proficiency with the help of subtitles (Caimi 2013).

<b>Tier-1 coding: Subtitling status</b>	<b>Tier-2 coding: Reception themes</b>	<b>Examples of verbatim comments</b>
Presence / Absence	Requests	<i>I wish there were subtitles.</i>
	Acknowledgement	<i>Thanks for the subtitles!</i>
	Comprehension	<i>Please add English subtitle so that we can understand easily.</i>

	Integral viewing	<i>It would make it an even better watching experience if you could sub title in English.</i>
	Linguistic quality	<i>So many times the subtitles are just gibberish.</i>
	Subtitle presentation	<i>Your subtitles are too quick to read. Please leave them on the screen longer.</i>
	Marked languages	<i>Thank you for Indonesian subtitle, as Indonesian I feel honoured as I'm sure all my Indonesian friends do.</i>
	Emotional reactions	<i>I'm stoked to see with subtitles!</i>
	Prosumption	<i>If you prepare English subtitles, I can help you to translate it to Turkish.</i>
	Subtitle-evoked viewership	<i>Please translate. I'm sorry, otherwise I unsubscribe from your channel.</i>
	Cultural pursuit	<i>I hope this translation can help others grow to love and appreciate cultures like these, and cook too :)</i>
	Language acquisition	<i>May be you can translate to Indonesia, so i can learn Chinese language also.</i>

**Table 1. Annotation scheme and examples of concordance lines**

## 4. Results

### 4.1. Collocation analysis

The analysis of words co-occurring with subtitling-related terms provides a general overview of the viewers' responses to subtitles. The top 100 content collocates are summarised in Table 2<sup>2</sup>. While some categories are generic (e.g. "Audience" and "Audiovisual contents") and do not reveal much about audience reception, some others are more indicative of the audience's responses and attitudes to the subtitles. Four points are noteworthy. First, the languages requested by the viewers were quite diverse (see the "Locales" collocates in Table 2). Despite the lingua franca status of English (Jenkins 2007), the viewers requested a variety of non-English languages,

mostly spoken in Asia but also in Europe, South America, and the Middle East. Second, the viewers' reception of the subtitles appeared to be positive (see "Evaluation" collocates). They tended to *love*, *like*, and be *happy* about the subtitles and they considered the subtitles as *good* and *nice*. One prominent reason for this positive evaluation was that subtitles enabled them to *better understand* what the vlogger was *saying* ("Comprehension"). Third, some collocates revealed consumption and prosumption behaviours associated with the video-streaming platform ("Consumption" and "Production"). For instance, some viewers might *wait* for the subtitles and *watch* the video again, while others volunteered to *help* and *translate* the subtitles. Fourth, requests for subtitles were more frequent than acknowledgements of the subtitles. Words like *please* were more often mentioned than words like *thank*, indicating that the absence of subtitles, rather than their presence, was more saliently felt by the viewers. This trend is further validated by the results from the concordance analysis below.

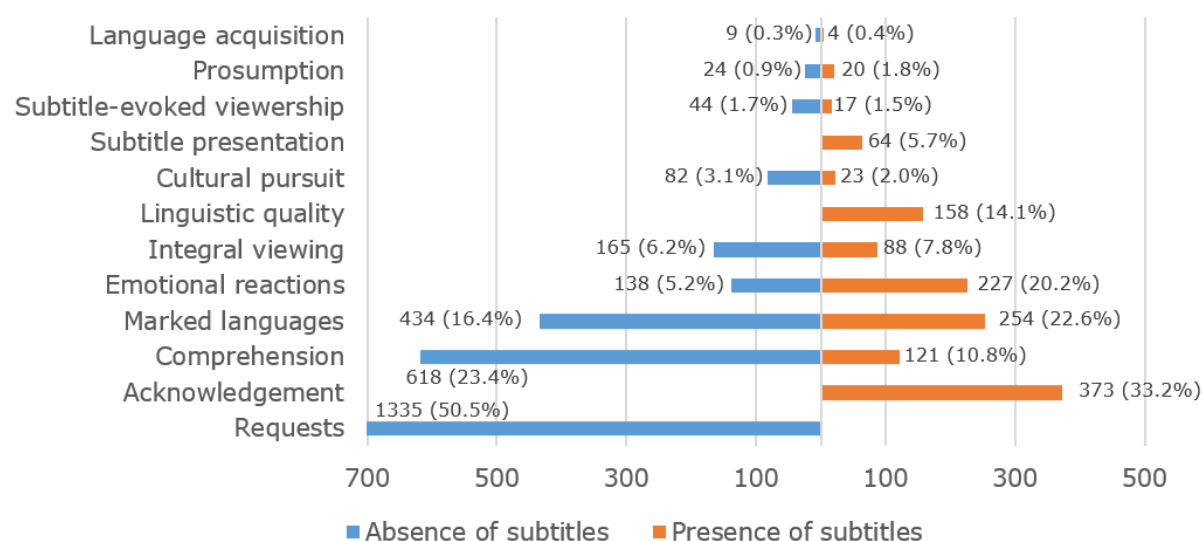
Categories	Collocates (frequency)
Audience	<i>anyone</i> (22), <i>people</i> (20), <i>fan</i> (19), <i>fans</i> (17)
Audiovisual contents	<i>videos</i> (235), <i>video</i> (221), <i>title</i> (123), <i>ingredients</i> (76), <i>titles</i> (53), <i>channel</i> (48), <i>dianxi</i> (42), <i>cooking</i> (35), <i>sis</i> (19), <i>sister</i> (29)
Locales	<i>English</i> (2,383), <i>Indonesia</i> (319), <i>Indonesian</i> (149), <i>Thai</i> (102), <i>Eng</i> (81), <i>language</i> (97), <i>Chinese</i> (60), <i>Spanish</i> (53), <i>India</i> (51), <i>Korean</i> (43), <i>Russian</i> (33), <i>Vietnamese</i> (33), <i>Indo</i> (28), <i>Arabic</i> (26), <i>Portuguese</i> (21), <i>Philippines</i> (19), <i>speak</i> (16), <i>Tamil</i> (15), <i>Hindi</i> (13), <i>Turkish</i> (11)
Evaluation	<i>love</i> (296), <i>like</i> (102), <i>good</i> (76), <i>really</i> (71), <i>nice</i> (64), <i>great</i> (39), <i>beautiful</i> (33), <i>wow</i> (28), <i>happy</i> (27), <i>appreciate</i> (18), <i>appreciated</i> (12), <i>glad</i> (15)
Comprehension	<i>understand</i> (143), <i>know</i> (68), <i>name</i> (36), <i>better</i> (35), <i>saying</i> (15), <i>understanding</i> (14), <i>say</i> (17)
Consumption	<i>watching</i> (42), <i>see</i> (37), <i>watch</i> (35), <i>enjoy</i> (28), <i>turn</i> (18), <i>wait</i> (16)
Production	<i>add</i> (314), <i>put</i> (226), <i>give</i> (205), <i>make</i> (119), <i>provide</i> (46), <i>keep</i> (42), <i>adding</i> (33), <i>help</i> (28), <i>upload</i> (26), <i>possible</i> (25), <i>subtitles</i> (24), <i>try</i> (24), <i>subtitle</i> (19), <i>translate</i> (16), <i>using</i> (16), <i>google</i> (15), <i>include</i> (15), <i>putting</i> (14), <i>tittle</i> (12)
Request	<i>please</i> (1,345), <i>plz</i> (237), <i>pls</i> (206), <i>need</i> (122), <i>wish</i> (81), <i>want</i> (77), <i>use</i> (74), <i>hope</i> (73), <i>time</i> (34), <i>kindly</i>

	(23), <i>request</i> (21), <i>next</i> (16), <i>plis</i> (15), <i>plzz</i> (15), <i>pliss</i> (14), <i>plzzz</i> (12)
Acknowledgement	<i>thank</i> (402), <i>thanks</i> (275), <i>finally</i> (32)
Others	<i>because</i> (51), <i>just</i> (37), <i>well</i> (20)

**Table 2. Top 100 content collocates of subtitling-related words**

## 4.2. Concordance analysis

Figure 1 presents the distribution of 3,768 annotated comments in two dimensions across 12 themes. Overall, 2,645 comments were made when subtitles were unavailable, as compared to 1,123 comments when subtitles were available. Among them, there were 1,335 comments showing viewers' *requests* for subtitles but only 373 comments indicating their *acknowledgement* of the subtitles. The larger number of comments when subtitles were absent and the predominance of *requests* over *acknowledgement* reflect the role of subtitling analogous to "the goalkeeper in football" (Kuscu-Ozbudak 2021: 12). Goalkeepers seldom receive appreciation when they save a goal but are often singled out when they don't. Similarly, subtitlers tend to stay invisible until their translations fail viewers' expectations.



**Figure 1. Frequencies and percentages of different themes of subtitle reception**

The percentages in Figure 1 were calculated as follows: the frequency of a theme divided by the number of comment concordance lines when subtitles were absent or present. As one comment might contain one or more themes, the percentages added up to more than 100%. For instance, 2,645

comments were made when subtitles were unavailable. Of these, 618 were about *comprehension*, representing 23.4%.

When subtitles were absent, the top concern of the viewers were *comprehension*. They explicitly voiced a need to understand what the vlogger was doing and talking about. The second most frequently articulated concern was about *marked languages*. Many comments (16.4%) indicated the demand for non-English subtitles, challenging the current dominance of English. Attention was also paid to *integral viewing* experience (6.2%) and *emotional reactions* (5.2%). The viewers believed that target subtitles were an integral part of a satisfying viewing experience and thus felt disturbed or disappointed by the absence of subtitles. A smaller proportion (3.1%) of viewers hoped to kick start their *cultural pursuit* with the aid of target subtitles. Other reception responses, including *subtitle-evoked viewership* (1.7%), *prosumption* (0.9%), and *language acquisition* (0.3%), were seldom mentioned or expected by the viewers.

When subtitles were present, *comprehension* (10.8%) was no longer the top concern. Instead, the dominant attention was shifted to the recognition of *marked languages* (22.6%), closely followed by *emotional reactions* (20.2%). This suggests that viewers were more keenly aware of their sense of belonging and feelings triggered by the subtitles. Additionally, with access to subtitles, the viewers were more concerned about the *linguistic quality* (14.1%) than *subtitle presentation* (5.7%). Some viewers (7.8%) recognised that the provision of subtitles made the videos more enjoyable, emphasising the role of subtitles in an *integral viewing* experience. However, there were only a small fraction of comments concerning *cultural pursuit* (2.0%), *prosumption* (1.8%), *subtitle-evoked viewership* (1.5%), and *language acquisition* (0.4%).

To examine whether the magnitude of attention to various factors differed significantly, we aggregated the frequencies of the ten coded categories that indicated specific responses/reactions when subtitles were absent and present. As each comment could be coded with multiple categories, we converted the coding into dichotomous codes (1 or 0). Then, we conducted the Cochran's *Q* test to examine whether these coded categories differed significantly in terms of frequency. Significant differences were indeed found ( $Q = 2696.475$ ,  $p < .001$ ). As post hoc tests, McNemar tests were conducted for adjacent pairs at different frequency ranks (e.g. Rank 1 and Rank 2; Rank 2 and Rank 3; see Table 3). It should be noted that *subtitle presentation* (Rank 7) and *subtitle-evoked viewership* (Rank 8) did not differ significantly, neither did *subtitle-evoked viewership* (Rank 8) and *prosumption* (Rank 9). As such, the McNemar test was also conducted for

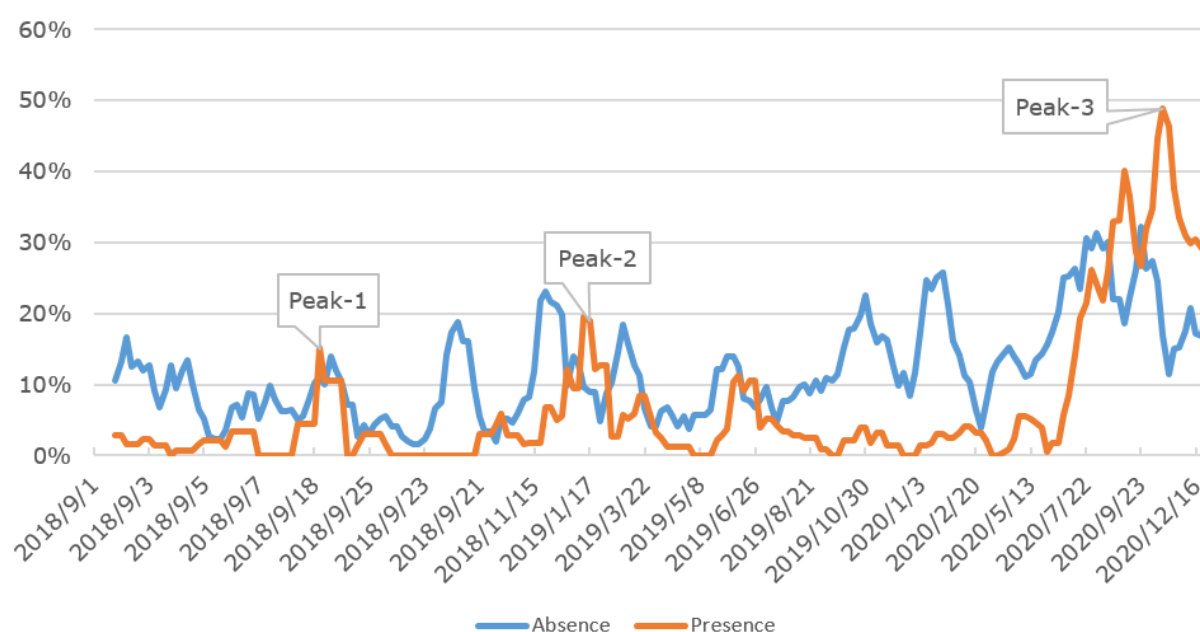
*subtitle presentation* (Rank 7) and *prosumption* (Rank 9) as a non-adjacent pairwise comparison, which yielded a non-significant result ( $p = .068$ ). Therefore, the statistical test results for comment type frequency can be presented as follows (in descending order): *comprehension* and *marked languages* > *emotional reactions* > *integral viewing* > *linguistic quality* > *cultural pursuit* > *subtitle presentation*, *subtitle-evoked viewership* and *prosumption* > *language acquisition*. Clearly, *comprehension* and *marked languages* were the top concerns for the viewers of *Dianxi Xiaoge* videos. They were less concerned about *subtitle presentation*, *subtitle-evoked viewership*, and *prosumption*; and even less about *language acquisition*. These trends suggest that the viewers of this YouTube channel: (a) were from very diverse backgrounds and relied on subtitles to understand the videos (echoing findings in the collocation analysis); (b) were eager to share their feelings and experiences; and (c) consumed the videos primarily for entertainment, but seldom for language learning.

Frequency Rank	Categories	Combined frequency	McNemar test results (adjacent pair)
1	Comprehension	739	--
2	Marked Languages	688	$p = .174$
3	Emotional Reactions	365	$p < .001$
4	Integral Viewing	253	$p < .001$
5	Linguistic Quality	158	$p < .001$
6	Cultural Pursuit	105	$p = .001$
7	Subtitle Presentation	64	$p = .002$
8	Subtitle-evoked Viewership	61	$p = .857$
9	Prosumption	44	$p = .111$
10	Language Acquisition	13	$p < .001$

**Table 3. Frequencies and McNemar tests for 10 factors**

To address the second research question about the possible patterns between reception and production, we focused on the marked language choices for the subtitles. Figure 2 presents the diachronic development of comments about the absence and presence of marked language subtitles (as percentages). To show this trend, the data were smoothed with moving averages over a window size of five (Chan 2019). In other words, the first average was calculated with data points 1 to 5 (Video 1 to Video 5), and the second average was calculated with data points 2 to 6, and so on. Two patterns can be observed in Figure 2. First, the comments about the absence and presence of marked language subtitles fluctuated over time.

This suggests that different requests for non-English subtitles were made along the way. When the demands for one set of non-English languages were met, new demands for other ones were made. Second, there were three peaks of comments on the presence of marked languages (indicated by the red line). Interestingly, each of the three red peaks was preceded by two to three blue peaks (indicating absence of marked languages). As such, two hypotheses could be formulated. First, the viewers' demands might have prompted the vlogger (and her team) to offer more language options. Second, the producers might need two or three prompts to accommodate the audience's subtitling needs.



**Figure 2. Diachronic percentages of comments about marked language subtitles**

## 5. Discussion

### 5.1. (Dis)connects between viewers' and researchers' attention to subtitles

Our case study has attempted to understand what aspects of subtitles matter to the viewers of the focal YouTube channel, based on the corpus of their comments. When the results are compared to the focus on AVT in previous research, we are able to identify some (dis)connects between viewers' and researchers' attention to subtitles. Before we discuss the (dis)connects, some caveats are in order. First, the corpus findings are limited to a single YouTube channel and could not be generalised to all other social media platforms. Second, we are aware that not every viewer would comment after watching the videos, thus potentially limiting the

representativeness of the findings (but see the next subsection for more detailed discussion of this issue). Therefore, we do not intend to present the (dis)connects as definite or absolute. Rather, we present them for illustrative purposes: to show how a corpus-driven approach can potentially contribute to AVT studies (e.g. identifying under-researched topics that matter to viewers). Due to space limitations, we will focus on six factors to illustrate the potential heuristic values of the corpus findings.

As shown in Table 3, *comprehension* and *marked languages* were the top concerns of the viewers. Interestingly, comprehension of video contents aided by subtitles has been an important performance measure in AVT studies (Desilla 2014; Lee *et al.* 2013; Liao *et al.* 2020). As Kruger and Doherty (2018: 91) pointed out, “Much of the recent research on AVT has focused on the examination of (...) performance measures [such as] comprehension”. This suggests that both viewers and researchers seem to pay a great deal of attention to video comprehension enabled by subtitles. However, discrepancy is found for *marked languages*. Although an obvious concern of viewers, AVT research has largely centred on a limited set of languages (e.g. English, Polish, Spanish and Italian). By contrast, the YouTube audience came from arguably more diverse language backgrounds (see Table 2). This discrepancy lends further support to recent calls for more AVT research on under-represented languages (De Ridder and Eithne O’Connell 2019; Fernández-Costales 2018).

The next most frequent concerns for the viewers were *emotional reactions* and *integral viewing* experiences. These two factors have not received much scholarly attention (Koskinen 2020; Tuominen 2018). Existing studies have tended to focus on a relatively narrow range of emotions and viewing experiences, such as humorous effects of subtitles (Fuentes Luque 2003; Schauffler 2012) or the enjoyment of subtitled videos (Perego *et al.* 2015; Szarkowska and Gerber-Morón 2018). Yet, as Tuominen (2018: 83) aptly highlights, “reception is rarely a matter of only cognitive developments, or of understanding something. It is equally important to feel or experience something.” Therefore, AVT researchers may consider a wider range of emotions to obtain a fuller understanding of how interlingual subtitles can contribute to or detract from diverse viewing experiences.

*Subtitle presentation* has received much scholarly attention but did not figure prominently in our corpus of comments. AVT researchers have great interests in such subtitle variables as presentation rate (Szarkowska and Gerber-Morón 2018; Szarkowska and Bogucka 2019), number of lines (d’Ydewalle and De Bruycker 2007; Szarkowska and Gerber-Morón 2019), fonts (Mangiron 2016) and positioning of subtitles on screen (Black 2020;



Fox 2018). However, these factors were not frequently mentioned by the audience of the focal YouTube channel. In line with the observation made by Díaz Cintas and Remael (2021), YouTube allows viewers to pause or use playback speed to customise their viewing experience. Thus, they might be less sensitive to the presentation variables than participants in previous AVT studies, who were usually exposed to linear, one-off viewing.

*Language acquisition* has been well researched in AVT studies for more than forty years (Caimi 2013). Research shows that subtitles contribute to the development of listening skills (Ghoneam 2015), writing skills (Talaván and Rodríguez Arancón 2014), pragmatic awareness (Lertola and Mariotti 2017), retention of vocabulary (Marzban and Zamanian 2015) and grammatical rules (Van Lommel *et al.* 2006). However, our study showed that *language acquisition* was the least mentioned factor by the viewers (see Table 3). Although it was possible that viewers might not comment when subtitles served their purposes, it should be noted that *language acquisition* was still the least mentioned factor when subtitles were absent (see Figure 1). We conjecture that the mismatch between viewers' and researchers' attention to *language acquisition* might be due to the viewers using social media as platforms primarily for entertainment (Fuchs 2014). Taken together, the viewers' scant attention to *subtitle presentation* and *language acquisition* reminds us that consumption and reception on social media might be different from traditional media. More work can be done to understand the AVT needs and preferences of new audiences on new media (Fernández-Costales 2018; Orrego-Carmona 2018).

## 5.2. Advantages and limitations of a corpus-driven approach

Previous research has discussed the benefits (e.g. reducing subjectivity) and risks (e.g. decontextualised analysis) of Translation Studies drawing on corpus data (Calzada Pérez and Laviosa 2021; Hu 2016; Saldanha and O'Brien 2014). Mindful of these insights, we discuss the advantages and limitations of a corpus-driven approach more specific to AVT reception. We want to highlight three advantages: ecological validity, analytical versatility and cost-effectiveness of diachronic analysis.

Compared with other empirical methods, a corpus-driven approach tends not to "design" or "pre-select" a viewing experience for participants. In our case, the viewers chose to watch the YouTube videos and posted comments of their own free will. This is perhaps the scenario closest to a natural viewing experience. In other words, a corpus-driven approach allows us to collect a wealth of naturally-occurring data about audience reception, thus enhancing the ecological validity when we make claims (Baker 2020;

Brookes and McEnery 2020) about their perceptions and attitudes. As online streaming platforms and social networking sites are increasingly popular, users watch and comment on AVT products almost anytime anywhere. This creates large bodies of authentic audience reception texts, which are treasure troves for AVT scholars (Orrego-Carmona 2019) to explore a fuller range of variability in audience insights (e.g. marked languages, emotions, and viewing experiences as discussed previously). In this way, we can examine reception in diverse genres and settings, which in turn allow us to test the “general applicability” (Bateman 2014: 238) of AVT theories and assumptions.

Another advantage of a corpus-driven approach is its analytical versatility. It does not privilege quantitative analysis over qualitative analysis, or vice versa. Thus, it is not limited to analysts’ manual annotation or statistics produced by corpus software (Partington *et al.* 2013; Malamatidou 2018). As illustrated in our study, collocation analysis is more quantitatively oriented, while concordance analysis is more qualitatively oriented. However, both types of analysis require statistics generated by the software program in addition to close readings, extensive annotation, and inter-subjective judgements by analysts, although with a varying amount of combination. A corpus-driven approach also encourages “‘quantitizing’ and ‘qualitizing’ data, that is, deriving quantitative data from qualitative data and vice-versa” (Saldanha and O’Brien 2014: 23), such as the statistical tests of the frequencies of coded categories of viewer comments (see Section 4.2). In this way, we can avoid relying solely on intuition (which is prone to interpretive bias) or solely on de-contextualised statistics (Brookes and McEnery 2020; Calzada Pérez and Laviosa 2021). The triangulated quantitative and qualitative investigations of corpus data (Malamatidou 2018) allow us to identify general patterns and tease out rich details about audience reception.

A third advantage that distinguishes a corpus-driven approach from other empirical approaches is the cost-effectiveness of diachronic analysis. Methods like eye tracking and questionnaires are usually one-off, focusing on viewers’ immediate responses at a given time point. Although it is possible to use experiments, questionnaires or interviews to track responses over time, it is prohibitively arduous and time-consuming. By contrast, corpora of audience reception texts usually come with metadata, such as the time of posting. This information can provide diachronic insights into viewers’ perception. As shown in Section 4.2, we could chart the developmental trajectories of audience comments on the presence and absence of marked language subtitles over years. By doing so, we hypothesised that audience needed to give the production team two to three

prompts (represented by percentage peaks of comments) before their requests were met. This diachronic analysis revealed and untangled the dynamic relationship between AVT reception and production, which is seldom featured in existing studies.

Despite the advantages outlined above, a corpus-driven approach to audience reception is not without its limitations. One potential issue is that viewers may not feel motivated enough to comment when their subtitling needs are met. This potentially limits the generalisability of the corpus findings. This limitation could be addressed in two ways. First, as suggested by Miller (2015), we could choose widely popular videos (as measured by the numbers of views and/or comments) to enhance the diversity of samples. Compared with the “exclusive recourse to university students” as convenience samples in AVT studies (Di Giovanni 2020: 408), the samples on social media are arguably much more diverse (see Miller 2015, 2018; Reis and Gosling 2010 for similar arguments). Second, while absences are elusive by nature, we could resort to comparison as “an impressive [method] for uncovering absences” (Duguid and Partington 2018: 55). For instance, viewers’ subtitling needs might be met in one YouTube channel but not in others. The comparison of multiple corpora of viewers’ comments may allow us to know what needs are foregrounded or backgrounded across these channels. In a similar vein, viewers’ needs might be met at some time points but not at others. The comparison of diachronic sub-corpora could enable us to expose and examine absences of audience reception.

Another limitation is that corpus analysis is largely frequency-based (Baker and McEnery 2015), so it typically reveals *what* the patterns are and *how* the patterns differ. However, it is less revealing about *why* the patterns are as they are (Hu 2016). For instance, the YouTube audience in our corpus did not care much about the variables of subtitle presentation, and it is possible that this is a result of the technological affordances that enable better control and customisation of the viewing experience. This interpretation needs substantiation from other research methods (e.g. surveys and interviews). Therefore, we do not intend a corpus-driven approach to replace other research methods, but rather complement them and mutually inform each other (Laviosa 2002; Malamatidou 2018; Orrego-Carmona 2019). Corpora are a typical research tool in Descriptive Translation Studies (Chaume 2018) with a view to revealing patterns and norms. However, corpus findings can also be given “a thrust beyond descriptivism” (Di Giovanni and Gambier 2018: x) and inform the design of studies using other research methods (Neumann *et al.* 2022). For example, it will be interesting to test and explain some of the patterns observed in this study: how do viewing habits on online streaming platforms differ from

those on more conventional platforms? Which variables of subtitle presentation matter on the streaming and conventional platforms? Why does the production team decide to include non-English subtitles on a rolling basis? These questions can be addressed with an optimal mix of eye tracking, questionnaires, and interviews. In this way, we capitalise on the “role of technology (...) in the evolution of AVT” studies (Chaume 2018: 57) in terms of collecting sizable data, observing underlying patterns, and formulating hypotheses for subsequent empirical studies to untangle the complexity of audience reception.

## 6. Conclusion

This paper has demonstrated the plausibility of a corpus-driven approach to AVT reception studies. Although our case study was limited to YouTube comments on interlingual subtitles and two corpus techniques (collocation and concordance), we were able to identify a wide range of reception patterns prompted by the absence and presence of target subtitles and explore possible patterns between audience reception and subtitle production. We have also mapped out ten factors relevant to viewers’ reception of interlingual subtitles, thus demonstrating the heuristic values of corpus-driven audience insights vis-à-vis scholarly interests in AVT studies. Clearly, a corpus-driven approach can be applied to viewers’ comments on other video-streaming platforms (e.g. Netflix and Bilibili) and social networking sites (e.g. Twitter, Facebook, and Quora). More corpus techniques can also be employed to examine comments beyond interlingual subtitling, such as using keyword analysis to find out what words/concepts are over- or under-represented in a set of comments (e.g. about English subtitles) as compared to another set (e.g. about English dubbing). On this note, a corpus-driven approach holds great methodological potentials for AVT reception studies.

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### Data availability statement

The data that support the findings of this study are available at <https://osf.io/eb3dj/>.

### Biography

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## Notes

<sup>1</sup> A space was deliberately set after “sub” and “subs” to exclude words unrelated to subtitling, such as *subscribe* and *subscription*.

<sup>2</sup> Non-standard spellings are reported as they are in the comments.