

**Personalised Headnotes -
Investigating Comprehension
and Appreciation of Humour in
Subtitled Chinese Comedies**

Jing Wang

BA, MSc

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School of Applied Language and Intercultural Studies

Dublin City University

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Supervisors:

Prof. Sharon O'Brien

Dr. Ryoko Sasamoto

Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Humour travels, but it sometimes gets a bit car sick.

- Archer, (1994)

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List of Abbreviations

- AD: Audio Description
ANOVA: Analysis of Variance
AOI: Area of Interest
AVT: Audiovisual Translation
BFI-S: Big Five Personality Inventory Metrics
CHS: Coping Humour Scale
CPS: Characters Per Second
CQ: Cultural Intelligence
CQS: Cultural Intelligence Scales
CSI: Culture-Specific Item
EDA: Electrodermal Activity
EEG: Electroencephalography
HCI: Human-Computer Interaction
MA: Media Accessibility
PHNs: Personalised Headnotes
RQ: Research Question
SBS: Subtitles at the Bottom of the Screen
SDH: Subtitling for Deaf and Hard of Hearing
SHQ: Sense of Humour Questionnaire
SHRQ: Situational Humour Response Questionnaire
SHS: Sense of Humour Scale
SL: Source Language
ST: Source Text
TA: Thematic Analysis
TEntTs: Translation Environment Tools
TL: Target Language
TS: Translation Studies
TT: Target Text
UCT: User-Centred Translation

Abstract

Personalised Headnotes - Investigating Comprehension and Appreciation of Humour in Subtitled Chinese Comedies

Jing Wang

This study investigates the impact of integrating Personalised Headnotes (PHNs) into the translated subtitling of Chinese comedies to enhance the viewing experience for English-speaking audiences, employing relevance theory and the concept of personalisation as the foundational theoretical frameworks.

A mixed-methods approach, combining eye-tracking technology, questionnaires, and semi-structured interviews, was used to gather comprehensive data on how viewers perceive and comprehend PHNs. This research design enabled a detailed examination of participants' responses to PHNs, based on comprehension tests, attitude surveys, and qualitative interviews with a valid sample of 34 participants.

The findings indicate that the use of PHNs can enhance the comprehension of cultural references, although their impact on humour appreciation varies by the type of PHNs employed. Specifically, PHN1, which was constructed using a domestication strategy, is favoured by the audience for entertainment purposes. Conversely, PHN2, which employs a foreignisation strategy, is preferred for educational purposes as it facilitates a deeper understanding of cultural content. This highlights the importance of tailoring the applications of PHNs to align with viewer intentions. This study highlights a complicated interplay between PHNs design and viewer reception, emphasising the potential for PHNs to enrich the viewing experience across diverse audience segments. It challenges the one-size-fits-all approach in subtitling, advocating for a more viewer-centric strategy in media localisation. Additionally, the study underscores the importance of considering individual viewer preferences and cultural backgrounds in the translation and subtitling process, which could offer some guidance for future practices in AVT and media design.

Chapter 1

Motivation for the Research

1.1 Research background

Previous studies in Audiovisual Translation (AVT) have developed various taxonomies to classify reception studies and translation practices in subtitling. These studies have explored multiple aspects, such as subtitling speeds, reading processes, and Subtitles for the Deaf and Hard-of-Hearing (SDH), media accessibility (MA), and audio description (AD) for diverse target audiences. Despite their valuable contributions, three main shortcomings relevant to this thesis are identified.

First, the concept of headnotes and personalised headnotes (PHNs) in AVT is still underexplored. Headnotes refer to additional explanatory text appearing at the top of the screen (Pérez-González, 2007) to provide context for cultural references, humour, or other elements that may be challenging for the target audience to understand (Díaz Cintas and Remael, 2007/2014). Traditionally used in fansubbing, headnotes offer supplementary information that enhances the viewer's comprehension beyond what standard subtitles provide. PHNs go a step further by tailoring these explanations to different viewer characteristics, such as cultural familiarity or personality traits, to ensure optimal relevance and engagement.

While several investigations have focused on translation of humour in European contexts (e.g., Filizzola, 2017), translating humour between culturally distant contexts, such as Chinese into English, has received less attention. This challenge is prevalent not only in translated texts but also in TV shows, where humour often relies on body language or facial expressions as part of the diegetic context. The

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effectiveness of PHNs (see Section 4.4) combined with standard subtitles in enhancing viewers' understanding of both verbal and non-verbal humour remains an open question, warranting further investigation. Although some attention has been given to fansubbing for Chinese audiences (e.g., Cai, 2015), there is still an opportunity to enhance cross-cultural communication and understanding by improving the translation of intended humour and cultural references from Chinese into English. Addressing this issue could lead to more accurate and enjoyable viewing experiences for international audiences, thereby promoting cultural exchange and appreciation. Consequently, targeted research on humour translation between these culturally distant languages is essential to advance subtitling practices and enrich the global consumption of Chinese media content.

Second, previous AVT studies typically address either intra- or inter-lingual subtitles, showing only source language (SL) or target language (TL) subtitles on the screen (e.g., Chiaro, 2010; Filizzola, 2017). In contrast, this study examines both standard subtitles and PHNs in English, translated from Chinese. The complexity and inconsistent formats of audiovisual products present challenges for translators and researchers due to the lack of previous studies. This research aims to explore audience perceptions of both subtitles and PHNs, hoping to establish foundational guidelines for media service providers to enhance comprehension and appreciation of translated video content.

Third, although some AVT reception studies, such as those focused on SDH, explicitly acknowledge the diversity among audience members (e.g., differences in visual and hearing abilities in Jankowska *et al.*, 2017), many still tend to treat audiences as relatively homogeneous groups with shared interests and needs. However, audiences are composed of individuals with diverse characteristics, interests, and requirements. Factors such as reading speed, personality, cultural knowledge, and viewing motivation influence how individuals perceive and experience AVT (Deckert and Bogucki, 2022, p. 67). Such diversity raises important questions about the benefits of PHNs. This PhD thesis argues for the necessity of exploring personalised approaches to enhance audience reception. By

examining individual preferences in subtitled content reception, it aims to provide insights that could inform future media service practices.

1.2 Research objectives

Roturier (2015, p. 175) proposed that personalisation involves adapting processes to meet the specific needs of individuals, categorised into personas with unique characteristics guiding the personalisation process. This study adopts Roturier's definition and aims to compare audience opinions on two different approaches to PHNs combined with standard subtitles, investigating their impact on the viewing experience. By analysing engagement with content via eye movements, questionnaire and interview responses, the study explores the impact of subtitles and PHNs on viewers' understanding of humour in TV shows.

This thesis addresses the gaps in AVT research concerning the personalisation of subtitles and headnotes. It focuses on testing the impact of PHNs on viewers' comprehension of humour and cultural references in viewing comedies. By categorising headnotes and participants based on personality traits and cultural intelligence, the study examines the correlation between viewers' profiles, humour comprehension and appreciation, and the reception of headnotes and subtitles. Ultimately, this research aims to advocate for a flexible approach to subtitling, allowing viewers to choose PHNs that fit more to their needs, thus enhancing their viewing experience as well as understanding of translated humour and cultural references. Furthermore, it seeks to go beyond existing subtitling personalisation projects by conducting a thorough empirical investigation specifically on the integration of headnotes with subtitle content. Unlike previous studies that primarily focus on general subtitle customisation features, this research provides detailed insights into how PHNs may enhance the understanding and enjoyment of culturally rich and humorous content, thus offering a more comprehensive approach to subtitle personalisation. Hence, the research aims to answer the following question: What is the impact of PHNs on the audience reception of humour in subtitled comedies?

1.3 Thesis overview

This thesis is structured as follows: Chapters 2 and 3 constitute the literature review; the former explores concepts in personalisation, subtitling, and reception studies, while the latter outlines the theoretical framework based on relevance theory. Chapter 4 details the methodological approach, describing the mixed-methods strategy employed, which includes eye-tracking, questionnaires, and interviews, along with an explanation of the research design. Chapter 5 covers the pilot study's setup and findings, as well as the design and execution of the main experiment. The data analysis is divided across Chapters 6 and 7, where Chapter 6 focuses on the results from the pre-task questionnaires and eye-tracking data, while Chapter 7 examines the post-task questionnaires and interview findings. Finally, Chapter 8 discusses the triangulation of the collected data, providing conclusions and suggestions for future research.

Chapter 2

Personalisation, Subtitling, and Reception

2.1 Introduction

This chapter explores the various aspects of personalisation in subtitling and its impact on reception studies. As globalisation continues to increase intercultural interaction and media consumption, the need for personalisation in educational (section 2.2.1) and translated media content (section 2.2.2), including learning and subtitling, has become increasingly salient. This chapter discusses the intricate relationship between personalisation and subtitling, while also examining its implications within the broader scope of reception studies.

The literature review in this thesis was conducted using a flexible approach, aimed at gathering a wide range of perspectives on personalisation in subtitling and its impact on reception studies. Rather than adhering to a rigid review process, the selection of studies was driven by the relevance of the content to the core themes of AVT, subtitling, and personalisation, as well as their implications for reception studies.

The process began with targeted searches in academic databases such as Google Scholar and JSTOR, using key search terms like “personalised subtitles”, “creative subtitling”, “fansubbing”, “relevance theory”, and “AVT reception studies”. Initial searches yielded a broad array of articles, which were then filtered based on their relevance to the focus of this thesis. Both foundational works in translation studies and more recent studies focusing on personalisation and reception were considered. I also referred to the bibliographies of key papers to identify additional relevant literature.

Chapter 2: Personalisation, Subtitling, and Reception

Studies were included based on their contribution to the discussion of subtitling practices, personalisation, relevance theory, and their impact on audience reception. Works that offered theoretical insights as well as empirical studies (such as those using eye-tracking or questionnaires) were prioritised to provide a well-rounded exploration of the topic. The analysis involved summarising key findings from these studies and integrating them into the broader discussion, allowing for a thematic synthesis that highlights both established concepts and emerging trends in the field.

This approach ensured that the literature review was both comprehensive and adaptable, capturing a range of perspectives without the constraints of a more formal, systematic review process.

In this chapter, a broad framework for personalisation is developed, considering its diverse interpretations across fields. Beginning with an exploration of personalisation, Section 2.2 investigates its significance and wide application in the realm of learning, the theoretical and practical perspectives it entails in translation studies (TS), and its specific applications within the domain of subtitling. In Section 2.3, an in-depth analysis of subtitling and its intersection with reception studies is explored. This section focuses on the influence of creative subtitles and fansubbing, as well as the role of headnotes—the main topic of this thesis—in shaping the reception and consumption of audiovisual translation. The examination of headnotes aims to clarify its definition and distinction from other terminologies used in creative subtitling, shedding light on its importance in enhancing audience understanding.

Through this comprehensive exploration, the chapter aims to provide a cohesive understanding of the interplay between personalisation, subtitling, and reception studies by examining the impact of personalisation in various contexts and delving into the intricacies of subtitling and reception studies. The discussion will further

explore how PHNs contribute to a more effective learning process, particularly in cultural adaptation and the comprehension of humour in subtitling.

2.2 Personalisation

The phenomenon of personalisation has become pervasive worldwide, encompassing decoration, modification, and customisation of human-made objects (Oulasvirta and Blom, 2008) to better suit the unique needs and preferences of users. As globalisation continues to increase intercultural interaction and media consumption, the need for personalisation in educational and translated media content, including language learning and subtitling, has become increasingly significant.

Personalisation has been defined differently across fields, each tailored to its specific context. For example, Göker and Myrhaug defined personalisation as “tailoring products and services to better fit the user”, emphasising the consideration of users’ “needs, preferences, interests, expertise, workload, tasks, etc” (Göker and Myrhaug, 2002, p. 1). Similarly, Blom and Monk (2003, p. 3) described personalisation as “the process that changes the functionality, interface, information content, or distinctiveness of a system to increase its personal relevance to the individual”. While Göker and Myrhaug (2002) focused on the personalisation of products and services in general, Blom and Monk (2003) highlighted its application to digital products for individual customers. Both definitions share the commonality of considering users as essential to personalisation. These scholars were among the first to shift the focus from products to users to better meet their needs.

These foundational definitions underline that personalisation is thus understood as a dynamic and user-oriented approach, encompassing various strategies to adapt products, services, or content to meet the unique needs and preferences of users. This broad concept allows for different interpretations across fields, including eCommerce, learning, and subtitling, as outlined below. In eCommerce,

Chapter 2: Personalisation, Subtitling, and Reception

personalisation originated from the belief that personalised features on mobile phones and websites could enhance customer enjoyment and increase purchase likelihood (Oulasvirta and Blom, 2008). The development of personalisation systems has not only boosted product sales but also empowered researchers and wider communities to analyse cultural heritage resources more effectively, as evaluated by Hampson *et al.* (2014). Their project demonstrated the benefits of personalisation systems in improving users' access to and understanding of cultural collections, aiming to build an online personalised portal for cultural heritage in digital humanities.

In the context of language learning, personalisation involves adapting instructional content to accommodate the learner's unique cultural background, learning style, and language proficiency. By integrating culturally relevant materials, personalisation enhances language acquisition and engagement (Sáiz-Manzanares *et al.*, 2019), catering to individual learners' preferences and prior experiences. For example, in teaching Chinese to English speakers, adapting cultural explanations to be more familiar or relatable to Western contexts can facilitate better comprehension and appreciation of language subtleties.

Similarly, in AVT, personalisation plays a critical role in improving the accessibility and enjoyment of media content (Hughes *et al.*, 2015; Gorman, Crabb, and Armstrong, 2021). The concept extends to subtitling (as discussed in Section 2.2.3), where strategies such as PHNs can be employed to offer tailored explanations that cater to viewers' cultural and cognitive backgrounds. For instance, viewers with a higher level of cultural adaptability might benefit from subtitling approaches that retain more of the original cultural elements, while those with lower cultural familiarity may require more localised and familiar explanations.

With the success of personalisation in various fields, it has become a popular topic, requiring careful consideration of users' needs and requirements. Personalisation has now extended into other aspects such as learning, translation, and subtitling, as discussed below.

2.2.1 Personalisation in learning

In the field of education, personalisation has been applied to learners with the goal of enhancing their learning outcomes through personalised systems, environments, and tools. As the Chinese saying goes, 因材施教 (teaching must be in accordance with the student's aptitude), emphasising the importance of recognising and respecting the unique differences among students, such as their abilities, interests, and learning styles, to facilitate effective learning. The modern concept of personalised education aligns well with this philosophy by focusing on adapting teaching methods to meet the unique needs and backgrounds of individual learners, similar to how personalised subtitling in AVT seeks to tailor content to diverse viewer preferences and cultural contexts. Similarly, Green *et al.* (2005, p. 3) stated that “the essence of personalisation” should be making the education system conform to “the learner, rather than the learner to the system”. From this perspective, educational systems and tools that cater to large groups of students should be developed to support personalised learning.

Segedy and Biswas (2015) implemented a learner-centred system, presenting students with various resources and tools in open-ended computer-based learning environments tailored to their learning abilities. They found that students' learning pace increased with the personalised system. In higher education, a study on 124 students revealed that the use of a Moodle-based personalised e-learning system predicted effective behavioural patterns by 74.2% and indicated improved learning outcomes and increased student satisfaction levels (Sáiz-Manzanares *et al.*, 2019). This study demonstrated the advantages and effectiveness of personalised design in e-learning, benefiting both students and educational institutions.

The relevance of personalised approaches in education closely aligns with one of the goals of PHNs in this thesis: enhancing viewers' understanding of cultural elements through tailored subtitles. As demonstrated in the findings (see Section 8.2), PHNs provide context-sensitive explanations that facilitate learning about foreign cultures, much like personalised learning systems that adapt to individual

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students' needs. By customising subtitles to align with audiences' cultural backgrounds and cognitive characteristics, PHNs aim not only to improve comprehension but also to enhance the overall enjoyment of the viewing experience.

Personalisation has been leveraged to enhance both the learning process and its outcomes. Another example of its application lies in TS, which will be explored in the following section through discussions from both theoretical and practical perspectives.

2.2.2 Personalisation in translation studies

2.2.2.1 Theoretical perspective

From the perspective of TS, functionalism and Skopos theory have been widely applied, focusing on the purpose of translation (Colina, 2015). Functionalism in translation emphasises the function of texts and translations, a concept developed by German scholars in the late 1970s, though its roots can be traced back to early practices in literary and Bible translation. As Munday (2001, p. 73) noted, “the 1970s and 1980s saw a move away from the static linguistic typologies of translation shifts and the emergence and flourishing in Germany of a functionalist and communicative approach to the analysis of translation”. Skopos theory, specifically proposed by Vermeer and Reiss in the 1980s, has been extensively used in TS to consider readers' needs (Vermeer, 1996; Nord, 1997), advocating for adaptations based on the purpose (skopos) of the translation task and the expectations of the target audience (Pöchhacker, 2007)..

Functionalist translation theory suggests that translators should adapt their translations to meet the readers' needs (Suojanen, Koskinen and Tuominen, 2014). They (ibid.) also argue that personalisation has long existed in TS through concepts such as “functionalism”, “user-centred translation”, “localisation”, and “adaptation”, without being explicitly called “personalisation”. These strategies share a common objective: to adjust content to better resonate with users' needs.

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This section will explore the links between translation theory and personalisation, particularly in AVT.

Though the term “personalisation” in translation is relatively new, the concept of considering users’ needs is well established. Skopos theory encourages translators to render the source text (ST) functional for the target cultural audience, aligned with the purpose (skopos) of the assignment (Pöchhacker, 2007). This involves clarifying messages and considering the recipients and their contexts (Suojanen, Koskinen and Tuominen, 2014).

Reiss and Vermeer’s (1984) Skopos theory emphasises the function of the translational action itself, treating translations as goal-oriented actions. It underscores the importance of purpose in translation through its central rule: “an action is determined by its purpose [...] in other words: it is valid for translation that ‘the end justifies the means’” (Reiss and Vermeer, 1984, pp. 100–101). By focusing on the requirements of the target audience, the theory introduces a form of personalisation, suggesting that translations should be adapted to meet the expectations and needs of the intended recipients.

However, critics of Skopos theory argue that not all actions need a specific aim and that not all translations have a clear purpose (Nord, 1997; Vermeer, 2004). Hence, it may be challenging to accurately predict what the audience expects or needs, posing limitations to its application in practice. These limitations suggest that while Skopos theory underscores the importance of purpose and audience orientation, its practical application can be problematic. Nonetheless, the theory highlights the necessity of considering recipients’ needs and preferences as an integral part of the translation process.

Nord (2012, p. 32) highlighted the challenge of applying functionalist theory in practice, noting the difficulty in determining audience expectations:

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Audience orientation has been a particularly sensitive aspect of functionalist theory and applications from the start. Critics have been asking how translators know what the audience expects of a translation. Indeed, it is easy to talk about the audience's expectations but much more difficult to obtain empirical proof of what audiences (for certain genres or in certain nonlinguistic fields) really expect.

With Nida's (1964) ground-breaking work in emphasising the role of readers, or in other words, recipients, reception has become more connected to the field of TS. His concept of "dynamic equivalence" aimed to create a similar effect for the target audience as the ST had on its original readers. This concept marked a shift towards considering the readers' responses in translation practices, laying the groundwork for audience-oriented approaches in AVT. Drawing upon his work, Gambier (2018) highlighted a significant gap in empirical investigations of audience perceptions of translated materials and called for greater attention to reception studies and interdisciplinary collaboration for the development of AVT.

This view of a gap is particularly evident in the area of humour reception in AVT. For instance, Chiaro (2014, p. 205) noted that "very little research has been carried out regarding the way audiences perceive translated humour on screen." This supports Gambier's argument, as it highlights the limited focus on audience reception in specific AVT contexts, such as humour translation. However, other scholars have observed a growing interest and progress in reception studies within AVT. Díaz Cintas and Szarkowska (2020, p. 3) observed that the shift away from purely descriptive analyses has led to "an unprecedented boom in experimental research being conducted in the field of AVT". They noted that researchers have increasingly embraced technology and statistical methods to explore audience engagement with audiovisual materials. This demonstrates that, while gaps remain in some areas, reception studies are gaining momentum as a field of empirical inquiry.

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Similarly, Kruger and Kruger (2017) emphasised that research on AVT has, in recent years, placed greater focus on empirical investigations of audience reception than research on written translation or interpreting. This suggests a growing commitment to addressing audience-related issues in AVT, particularly through experimental and data-driven approaches. Furthermore, as Orrego-Carmona (2018) highlighted, reception studies in AVT are evolving into a distinct research field, marked by increasing methodological sophistication and interdisciplinary collaboration.

The broader significance of reception studies in AVT is also underscored by Di Giovanni and Gambier (2018). While Gambier (2018) acknowledged gaps in audience-oriented research, particularly in specific domains like humour, his work alongside Di Giovanni emphasised that reception studies are on the rise and have become a vital area of inquiry within AVT. This indicates a multifaceted perspective: while there is still a need for further empirical research, particularly in underexplored areas such as humour reception and cultural accessibility, the field is actively progressing. There is growing recognition of the importance of understanding how audiences engage with translated audiovisual content, supported by the increasing use of experimental and data-driven methodologies.

These perspectives demonstrate both the ongoing challenges identified by Gambier (2018) and the significant progress being made in the field. The increasing focus on empirical and experimental methods reflects a positive trajectory for reception studies in AVT, even as certain gaps, such as humour reception, remain to be addressed.

Chiaro's (2014) observation on the scarcity of reception studies in AVT resonates with the challenges in translating humour across culturally distant contexts, where cultural references and linguistic nuances often require adaptive strategies. Also, Filizzola (2017) used interlingual subtitles to investigate Italian audiences' reception of humour in British stand-up comedies and discovered that the reception of humour can be influenced by many factors, including people's

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personality, history, and cultural background. Their work suggests that the reception of humour is influenced by various factors, including cultural background, personality, and previous exposure to similar content. This demonstrates the complexity in achieving an equivalent effect for diverse audiences, thereby supporting the argument for personalised approaches to subtitling.

Moreover, from the viewpoint of functionalist translation theory, it is also worth noting Nida's concept of dynamic equivalence (also known as functional equivalence), which involves using various adaptive strategies to produce the same experience for readers (Suojanen, Koskinen and Tuominen, 2014). Nida (1964, p. 120) emphasised that readers' feedback is crucial in translation, referring to "the immediate type of monitoring feedback which everyone experiences when he hears himself talk". This highlights the importance of reader reception in translation. The importance of catering to users also extends to multimedia, where audiences of TV and films are no longer seen as passive recipients but have become interactive users, where their "role as producer of content has become stronger" (Suojanen, Koskinen and Tuominen, 2014, p. 33).

However, this does not mean that Nida strives for a reader-centred translation only, but rather, argues for an "equivalent effect" aiming to reproduce a dynamic relation between the target readers and the target text (TT) that is similar to the one between source readers and ST (Nida, 1964, p. 159). In other words, "dynamic equivalence aims at a translation that is easy to understand (in the intended manner) for the recipient" (Suojanen, Koskinen and Tuominen, 2014, p. 45). However, the concept has faced criticism for oversimplifying the diverse nature of audiences. For instance, House (2014) argues that the "one-size-fits-all" approach inherent in dynamic equivalence does not sufficiently accommodate the distinct interpretive strategies and expectations of different readers. While Nida's approach seeks to create a uniform impact, personalisation recognises the diversity of audiences, aiming to address the unique needs and preferences of individual users. Linking this concept with personalisation, as mentioned in Section 2.2, it

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can be inferred that by incorporating personalisation in translation, translators can achieve dynamically equivalent translations for better readability and comprehension.

Some scholars have criticised the concept of dynamic/equivalent effect. They argue that achieving a perfect equivalence of effect between ST and TT is often impractical and overly simplistic, ignoring the complex cultural and contextual differences between languages. According to Pym (2010), focusing on dynamic equivalence might lead translators to prioritise perceived reader responses over maintaining fidelity to the original meaning, resulting in translations that are more tailored to what translators assume will be comprehensible or acceptable to the target audience (Venuti, 1995). This critique is particularly relevant when personalisation techniques adjust translations to meet assumed audience expectations, potentially diluting the cultural or contextual richness of the ST. Thus, there is a fundamental tension between adapting content for accessibility and preserving the integrity of the original message.

Bucaria (2007) contributes to the debate by exploring how humour and taboo content are dealt with in subtitling, observing that translators often adapt or censor content based on assumed audience preferences or cultural norms. This aligns with the principles of personalisation in translation, where user profiles might influence how humour is rendered. Yet, Bucaria's analysis also indicates the limits of adaptation, as cultural-specific humour can lose its impact or be misinterpreted despite the translator's efforts to make it accessible. Her findings suggest that personalisation strategies need to balance accessibility with a faithful representation of the source culture. Furthermore, Manchón and Orero (2018) expands on the user-centred perspective by discussing the role of personalised subtitles. They highlighted the necessity for personalised features, such as adjustable text size and colour, which cater to individual viewing needs and preferences. Their work emphasised that personalisation extends beyond content adaptation to include technical aspects of AVT, which can significantly impact user engagement.

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In integrating these perspectives, it is pertinent to consider whether dynamic equivalence fundamentally conflicts with the notion of personalisation in translation. Dynamic equivalence operates on the premise of a generalised reader archetype for both SL and TL, thereby aiming to achieve a uniform effect across a broad audience (Nida, 1964). In contrast, personalisation recognises the diversity of readers, each with unique needs and preferences. This raises the question: do these approaches share the same objectives?

Dynamic equivalence seeks to produce a similar interpretive effect for a wide audience, prioritising general comprehensibility and accessibility. Conversely, personalisation aims to customise translations to meet the specific requirements of individual user profiles, potentially leading to more context-sensitive translations. It attempts to cater to the specific preferences and needs of individual users, potentially offering a more precise and user-centred translation. This divergence highlights a critical discussion about the compatibility and goals of these two methodologies in achieving effective and meaningful translation outcomes. However, the challenge lies in finding the balance between broad comprehensibility and tailored adaptations, ensuring that translation remains both accessible and true to the source material. While theoretically appealing, the feasibility of this approach depends on the available resources and the intended use of the translation.

The personalised approach could offer more specific and resonant translations for individual users, potentially enhancing the overall effectiveness of the translation by better aligning with their expectations and context. However, this benefit must be weighed against the logistical challenges and scalability issues inherent in personalised translations. The balance between achieving broad comprehensibility and catering to individual preferences remains a pivotal challenge in TS.

Furthermore, while the personalised approach aims to increase user engagement by providing tailored translations, its implementation must consider the trade-offs

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between individual relevance and the practicality of producing such customised content. This discussion underscores the importance of ongoing research to determine the most effective ways to integrate personalisation into translation practices without compromising on efficiency and accessibility for a wider audience.

Ultimately, the debate between dynamic equivalence and personalisation underscores the complexity of translation as a practice. While dynamic equivalence focuses on achieving a similar impact on a broad audience, personalisation allows for the customisation of translations to better meet individual users' needs. This ongoing discussion is essential for advancing translation studies and enhancing translation practices. It aims to respect both ST and the diverse needs of target audiences while ensuring the process remains pragmatic and efficient. This research builds on these ideas by investigating how personalised subtitles, particularly PHNs, can improve audience reception of humour and cultural references in subtitled comedies, addressing the gaps identified in the existing scholarship.

2.2.2.2 Practical perspective

Since the foundation of functionalism, several relevant neologisms have emerged, such as user-centred translation (UCT), localisation, adaptation, and personalisation. These terms, while distinct, are interconnected and contribute to a broader framework for creating translations that are tailored to the needs of specific audiences.

UCT emphasises the centrality of the user, or reader, in the translation process, positing that through practical tools and translation methods, translators can better address the needs of the target audience, thus enhancing the usability of their translations (Suojanen, Koskinen and Tuominen, 2014). Usability, in this context, refers to the ease with which users can engage with and understand the translation. High usability ensures that users can quickly comprehend the content, promoting both memorability and effectiveness (*ibid.*).

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In the context of localisation, translators play a crucial role in this process, and they go beyond simple language translation by adapting content to fit the cultural and linguistic contexts of the target audience (Roturier, 2015). Due to limited understanding of languages and cultural issues during localisation, the term “user localisation” has been proposed (Sun, 2006). This approach shifts the focus from developers to users, suggesting that developers respond to users’ needs in a timely manner and improve instrumental affordances to support users’ activities and enhance localisation performance (Esselink, 2000). Localisation ensures that translations resonate with the intended users by considering their cultural backgrounds and preferences.

Adaptation, on the other hand, refers to the broader process of modifying content to suit specific contexts, which can occur on both a macro level—such as game mechanics and character design—and a micro level, where specific text and dialogue are tailored (O’Hagan and Mangiron, 2013). Adaptation plays a key role in game localisation and other forms of multimedia, ensuring that users’ experiences are culturally appropriate and engaging. Effective game localisation requires careful consideration of the target culture and players so that misunderstandings are avoided (Dong and Mangiron, 2018). Additionally, evaluating the player’s experience with localised games is crucial to determine if the localisation successfully conveys a gameplay experience equivalent to that of the original game (O’Hagan, 2009).

The concepts of “personalisation” and “adaptation” are often viewed as interdependent, with personalisation equated to adapting for a specific user. Personalisation systems are considered a subtype of general adaptation systems, designed to meet the specific expectations or needs of individuals. The term personalisation shares similarities with adaptation but is distinct in its focus on tailoring content specifically to individual users or specific user groups. Personalisation can involve the adaptation of subtitles, as in AVT, to fit users’ preferences in terms of font size, colour, or other technical aspects. However,

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personalisation goes a step further by considering deeper user traits, such as personality, cognitive style, or cultural intelligence. This individualised approach aims to meet the unique needs of each user, thereby increasing the relevance and accessibility of the translated material (García-Barrios et al., 2005). Similarly, Roturier (2015, p. 175) described personalisation as the adaptive process necessary to fulfil the expectations or needs of particular individuals. These individuals can be grouped into different personas, each with distinct characteristics that inform and guide the personalisation process.

Although these concepts—UCT, localisation, adaptation, and personalisation—may overlap, their distinctions lie in the degree of user-specific customisation. UCT focuses on general usability for an audience, while localisation and adaptation are concerned with aligning content with cultural or contextual elements. Personalisation, however, delves into fine-tuning content for specific users or user profiles, making it the most targeted approach among these terms.

Personas also play an essential role in personalising translations, especially when considering how translations can be tailored to the preferences and characteristics of the end-users. Personas, which are fictional characters representing real user groups, are used to better understand and design for the unique needs of users (Suojanen, Koskinen and Tuominen, 2014). They help translators and developers of translation environment tools (TEntTs) focus on specific user needs, ensuring that the translation process is tailored to the particular characteristics of the intended audience (Van den Bergh et al., 2015). In contrast, personalisation directly addresses the needs of actual users, tailoring the translation process to the individual rather than a generalised “type”. Personas can inform personalisation efforts by providing insights into distinct user characteristics. The discussions on personas and their role in understanding user groups can be valuable for informing personalisation efforts. However, the focus of this study is on personalisation, aiming to address the specific needs of real users rather than generalised user types.

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In human-computer interaction (HCI) studies, personas are often used to enhance user experience design by providing insights into user behaviours and preferences. However, selecting unsuitable users for usability tests can result in flawed qualitative outcomes, highlighting the importance of reaching representative users to understand their needs accurately. Thus, Cooper (2004) introduced the use of personas to replace the idea of a generalised "elastic user" with archetypes based on real user data, ensuring that the design process reflects the diverse needs of users. Similarly, Salminen et al. (2018) highlighted the value of using personas to guide product design, including how users engage with technology and content. Drawing on product design for users, Adlin and Pruitt (2010) identified two types of personas: ad hoc and data-driven personas. Ad hoc personas, also known as "assumption personas", are sketches created by the core team to reflect the organisation's existing assumptions about the user population (ibid., p. 25). In contrast, data-driven personas are derived from extensive quantitative and qualitative data about users, providing a more accurate and evidence-based representation of user characteristics. To further illustrate and expand upon these perspectives, Anvari *et al.* (2017) investigated the impact of personas with varying personality traits on the conceptual design phase of software engineering. Their research demonstrates that different personality traits embedded in personas significantly influence the design outcomes produced by participants, focusing on traits such as extraversion and emotional stability. The findings support the idea that incorporating personality traits into personas can help create designs that better address the specific needs of users with different personalities. This approach emphasises the importance of considering personality traits in the creation of personas for software design, leading to more empathetic and user-centred design outcomes and ultimately improving the overall user experience.

Personas, which include demographic information, contexts and goals of product use, and technical expertise, have been widely used in fields such as HCI, public policy, and marketing (Salminen *et al.*, 2018). Scholars in technical communication have refined persona-building practices to address complex user needs. Getto and Amant (2015) proposed a framework to consider intercultural communication, encompassing local and technological, local and cultural, global

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and cultural, and global and technological aspects. This approach aims to create personas that account for the embodied and mobile nature of users, particularly in healthcare applications (Barnum, 2011).

In the pedagogy of technical and professional communication, Rose and Tenenberg (2018, p. 162) described personas, similar to the patient profiles used in nursing student simulations, as including “images suggestive of prototypical users, bullet lists of user characteristics (often drawn from research), and/or short biographical narratives”. The authors argue that in design and animation, personas reveal as much about their creators as they do about potential users; the creators’ assumptions, strengths, and limitations are all embodied in the guise of an imagined audience. Similarly, when translators are asked to translate for an imagined reader (a “persona”) and to adhere to one specific “function” (or *skopos*) of a text, they risk exposing their own particular shortcomings during the translation process. These might include assumptions about readers’ characteristics, authorial intent, and text function, potentially leading to a flawed translation.

In the field of TS, personas have been employed to enhance translators’ workflows and the personalisation of translation environment tools (TEnTs) (O’Hagan and Mangiron, 2013, p. 215). Through a mixed methodology of surveys, semi-structured interviews, and contextual inquiries, Van den Bergh *et al.* (2015) created two personas representing different types of TEnT users. Each persona acts as a hypothetical character representing an end-user, helping to identify user needs and provide recommendations for improving translation environments in terms of efficiency, effectiveness, and usability (*ibid.*). The application of personas in translation projects assists translators in integrating end users into UCT and selecting translation strategies that are “best suited for a particular case” (Suojanen, Koskinen and Tuominen, 2014, p. 6). Consequently, all major decisions made during the translation process are user-driven, necessitating continual profiling of the unique user.

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However, while the approach of using personas takes readers' requirements into account, it typically involves creating imaginary characters to represent real user groups, based on assumptions and decisions about specific user types. Conversely, personalisation targets the unique needs of actual users, tailoring the translation process specifically for each individual. Numerous studies have explored how translators adapt to their translation tools and the ability of viewers to customise subtitles by adjusting their position, text size, and font (e.g., Manchón and Orero, 2018). These investigations are vital for understanding the interaction between user experience and technological interfaces within the field of AVT. Additionally, O'Brien and Conlan (2018) proposed several suggestions to enhance translator-computer interaction by integrating personalised translation technology. Their recommendations focus on context, user modelling, trust, motivation, and well-being, aiming to improve the overall experience for translators.

As demonstrated in this section, the concept of personalisation has been integrated across various fields to offer more user-centred services and products. This includes areas such as education, where personalised learning tools cater to individual student needs, and game localisation, which adapts content to suit cultural and linguistic contexts. The use of personas in TS highlights the importance of understanding user requirements, though personalisation goes a step further by addressing the specific needs of real users rather than generalised types.

In sum, the developments as discussed above in different fields illustrate the critical role of user-centric approaches in translation and localisation, emphasising the need to understand and address the diverse needs of users through personalisation and personas to enhance the usability and effectiveness of translated materials. In this thesis, personas are critical in designing PHNs. By constructing two ad-hoc personas based on two key variables—cultural intelligence and personality traits (measured using the Cultural Intelligence Scales (CQS) and Big Five Personality Inventory (BFI-S)) (see §4.3.2 and §4.3.3) —this research tailors the PHNs to different audience profiles. Each persona represents a specific

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user group with unique cultural and cognitive characteristics, allowing for a more targeted approach to subtitling that improves comprehension and engagement.

To summarise, the practical application of personalisation in translation is deeply rooted in user-centred design, and it is complemented by related concepts like UCT, localisation, and adaptation. However, personalisation distinguishes itself by its focus on addressing the unique needs of individual users or specific audience profiles, rather than generalising to broad user groups. The incorporation of personas allows this tailored approach to be systematically implemented, ensuring that personalised subtitles, such as PHNs, are optimised for diverse audience needs.

The next section explores the adoption of personalisation in subtitling, examining its development and the improvements it has introduced to various aspects of subtitling within AVT. This discussion highlights how personalised subtitling enhances accessibility and viewer engagement by tailoring subtitles to individual preferences and needs.

2.2.3 Personalisation in subtitling

With the widespread use of portable devices such as tablets and smartphones for television viewing, there is an increasing demand from audiences for customisable subtitles. This includes adjustments to subtitle settings, font size, and screen positioning, a need recognised by the Federal Communications Commission in 2008. This section will review literature that intersects with the concept of personalisation in subtitling. Notably, some of the studies may refer to personalisation using different terminologies, such as UCT. Consequently, this section will also encompass literature on AVT concerning audience reception more broadly.

The rising audience demand has pushed research into personalised subtitles from various angles, including audience reception and the impact of subtitles on viewers. For instance, Tang's (2008) study involving 44 undergraduate and 25 postgraduate

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students in China examined their reception of Chinese subtitles in the Disney movie *Mulan*. It was found that students from Guangdong province, who are more accustomed to Western values and aesthetics, were more receptive to the subtitled film compared to students from other regions. Additionally, personal factors such as gender, education level, and academic background influenced their preferences for subtitled versus dubbed films and their overall reception of subtitles. Tang (*ibid.*, p. 160) concluded that viewers' understanding of subtitles is influenced by social variables such as gender and residence, suggesting that subtitlers should use "target-oriented strategies" to meet audience expectations and preferences.

Age also plays a significant role in subtitle reception. Previous research by scholars such as Ivarsson and Carroll (1998) and De Linde and Kay (1999) indicated that children's time spent reading subtitles varies depending on the film genre, and age differences can impact the validity of research data and its overall credibility.

Similarly, an analysis of subtitles for Kurosawa's films (Martin, 2017) translated from Japanese to English showed that subtitles significantly affect film consumption and reception among fans and critics. The study emphasised that subtitles are "an essential and intrinsic aspect" (*ibid.*, p. 20) of films, making translation crucial. To address audience demands, Matsumura *et al.* (2010) proposed a personalisation system for broadcasting content based on viewers' abilities, preferences, location, and other factors via the Internet. The International "Media for All" conference in Barcelona profiled research combining AD and eye tracking to investigate perceptions of non-visual populations, sparking research interest (Matamala and Orero, 2007; Orero, Martin and Zorrilla, 2015). Projects like "Opera for All" found that visually impaired audiences benefit from specific guidance during live performances (Matamala and Orero, 2007). Following this, Orero, Martin and Zorrilla (2015) conducted the Hybrid Broadcast Broadband TV for All (HBBTV4ALL) project aiming to enhance TV content with synchronised services in a personalised manner. This system provides tools for subtitle authoring and allows users to customise subtitle font, colour, location, duration, and temporal presentation style. It also offers AD for visually impaired viewers, using

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text-to-speech systems to generate descriptions in purely informative genres and providing additional information about TV programmes.

As personalisation becomes more relevant in subtitling like font size, colour, and reading speed on audiences, it is crucial to examine how these customisations impact user experience and content comprehension from an audience or individual perspective. For example, O'Hagan and Sasamoto (2016) examined viewers' attention distribution while watching TV programmes and found that despite the presence of numerous subtitles and annotations, participants primarily focused on the speakers' faces. Szarkowska and Gerber-Morón (2018) tested the subtitling speed and found that faster subtitles did not prevent viewers from watching images in films. Additionally, researchers like Filizzola (2017) observed that different subtitle placements can affect viewers' eye movements and have divided subtitle and image areas to ensure the precision of eye-tracking data.

Furthermore, Hughes *et al.* (2015) described a new approach, “adaptive subtitles”, to displaying subtitles alongside the video content where viewers can make responsive designs for personalisation. These adaptive subtitles focus on the personalisation of font and size, but also include timed text cues enriched with additional information. They may provide glossary definitions for acronyms, foreign terms, jargon, or other difficult language, and can be dynamically added through machine lookup. This feature is particularly useful for users of assistive technology, those with restricted reading skills, and subtitle and caption users, as it improves their understanding of the main content by offering in-depth explanations and hyperlinks to further information. Secară (2018) discussed recent advances in captioning technology that have significantly improved accessibility services in surtitling. For example, smart glasses have been developed that let users control when and how captions are displayed directly on the lenses. This allows each person to customise their viewing experience to better suit their needs. Additionally, speech recognition tools are now being used to make captions more accurate and easier to use (Secară, 2018, p. 138). One key innovation is the Open Access Smart Capture system introduced by the Royal National Theatre in

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London in 2017. This system automatically generates captions using speech technology and signals from the theatre's sound and lighting systems. By doing so, it eliminates the need for a human operator to manually cue the captions during a performance. This combination of human and machine capabilities shows how personalised surtitles can enhance live theatre productions by making them more accessible and integrated into the performance (ibid., p. 139).

Despite these advancements, there is still a need to investigate whether the simultaneous display of subtitles from different positions on the screen influences viewers' cognitive processes and understanding of translated humour, as revealed by their eye movements. Previous studies have primarily focused on technological capabilities without thoroughly addressing the impact on user experience and content comprehension. Earlier research has overlooked user experience and the overall impact of subtitling solutions, as highlighted by the subtitling standards proposed by Karamitroglou (1998). These standards emphasise the importance of readability and ease of watching subtitles, considering factors like the number of lines and their position on the screen. Roturier (2015) suggested that personalisation should take into account users' locations, age, interests, and linguistic preferences.

Recent efforts to personalise subtitles include integrating them with 360° video for an immersive viewing experience and allowing users to customise subtitles by adjusting font size, type, and background (Hughes, Montagud Climent and the Pesch, 2019). These settings can be stored with the user's profile and applied across different devices, accommodating cognitive issues such as dyslexia and varying visual acuity. Personalisation also extends to using colour for speaker identification and modifying text backgrounds to suit user preferences.

Specifically targeting age differences, Manchón and Orero (2018) investigated subtitle setting preferences among participants under and over 65 years old. They found that 89% of Catalan-speaking participants preferred subtitles at the bottom of the screen, with 84% favouring small or medium-sized subtitles. Their study,

which allowed participants to customise subtitle settings, demonstrated a strong preference for bottom-positioned, smaller subtitles, reinforcing the need for personalisation in subtitle design. Despite advancements in customisable subtitles, the impact of these settings on content comprehension remains an area of exploration. Manchón and Orero (2018) found no significant differences in comprehension across different subtitle configurations, indicating that personalisation primarily enhances user comfort and experience rather than comprehension. This underscores the importance of considering user preferences in subtitle design to improve accessibility without compromising the content's integrity.

In sum, the integration of personalisation in subtitling has the potential to improve user's overall experience and accessibility. However, in daily life, not all video service providers or platforms provide viewers with the option to change such settings based on their preference or age. It is more common that subtitles are shown on the bottom of the screen by default, sometimes accompanied by annotations or explanations regarding humour or cultural differences. Researchers have made contributions in combining personalisation with subtitling by allowing customisation of subtitle features, yet there remains a need for further investigation into how these personalised approaches impact the reception of subtitling. The following sections will extend to recent developments in subtitling, including the emerging practice of fansubbing in China, and reception studies in AVT, providing a broader picture of the relevant scholarship and continuing to explore the evolving landscape of personalised translation.

2.3 Subtitling and reception studies

In the field of AVT, subtitling has become an important topic of study, explored from multiple perspectives. Professional subtitlers are trained to follow strict industry standards and guidelines to ensure high-quality translations (Kuo, 2015). These professionals are often employed by media companies, streaming services, and subtitling agencies, where they work with advanced software to synchronise text with audiovisual content accurately. According to Díaz Cintas and Remael

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(2007/2014), professional subtitling involves a meticulous process of text condensation, timing, and cultural adaptation to make the subtitles accessible and comprehensible to diverse audiences. The rise of global media consumption has further amplified the demand for professional subtitling, ensuring that content reaches international audiences effectively (*ibid.*).

Early research mainly focused on the reading of professional subtitles. For example, D'Ydewalle and van Rensbergen (1989) and D'Ydewalle and De Bruycker (2007) found that the time children spend reading subtitles varies with the film genre, and Schotter and Rayner (2012) suggested that linguistic factors of the text influences eye movements during subtitle reading. Additionally, Lång *et al.* (2013) indicated that participants' language skills and ages affect test results, emphasising the need to consider these factors in test setups. Audiences of SDH is another key area of research, with contributions from De Linde and Kay (1999), Romero-Fresco (2015) and Jankowska (2019), promoting accessibility for audiences with more specific needs.

Subtitling speed has also been a focal point for several decades. Szarkowska and Gerber-Morón (2018) examined the “six-second rule” in subtitling and measured participants' comprehension of scenes and subtitles. The “six-second rule”, widely accepted for interlingual subtitles, posits that for average viewers to read and understand two lines of a subtitle, the display speed should be approximately 12 characters per second, or 70 to 74 characters over six seconds (Diaz Cintas and Remael, 2014, p. 96). In their study, Szarkowska and Gerber-Morón (2018) had three groups of participants with different native languages (Spanish, Polish, English) watching clips with subtitles in their mother tongue and audio tracks dubbed into Hungarian at three subtitle speeds: 12, 16, and 20 characters per second (cps). Participants then viewed clips in English at two speeds: 12 and 20 cps. The researchers hypothesised that higher subtitle speeds (20 cps) would hinder the viewing experience by increasing cognitive load and frustration, a prediction supported by Romero-Fresco (2015), who suggested that at 10-11 cps, viewers spend 40% of their time on subtitles and 60% on images, whereas at 17-18

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cps, these proportions shift to 80% and 20%, respectively. However, Szarkowska and Gerber-Morón (2018) found that faster subtitles did not interfere with viewers' ability to watch images in films or to follow the scenes. Participants reported the lowest cognitive load with slower subtitles (12 cps) across all language groups. Despite the aim to reduce cognitive load for viewers, many video service providers, such as Netflix, have adopted the highest subtitle speed of 20 cps (Di Giovanni, 2019).

Comparing professional and non-professional subtitles together, Orrego-Carmona (2016) found that Spanish viewers did not perceive significant differences between professional and non-professional subtitling in terms of understanding the programme's plot. However, professional subtitles showed higher consistency in audience reading behaviour. Similarly, Di Giovanni (2018) researched viewers attitudes towards subtitles created by Netflix and an Italian fansubbing group, suggesting no clear preference for either. These studies help us understand the viewer experience that fan-produced audiovisual translations provide (Pérez-González, 2019a, p. 175).

Building on this understanding of subtitling's impact on viewer experience, recent attention has shifted towards diverse subtitling practices in AVT, including creative subtitles such as "impact captions" and "integrated titles". In contrast to traditional subtitling, recent research has shifted towards non-standard practices, including creative subtitling, which explores innovative ways to enhance viewer experience. Creative subtitling moves beyond basic readability to incorporate stylistic variations that enhance audiovisual narratives. Romero-Fresco (2018) emphasises the importance of creative subtitling to better accommodate individual audience needs. Additionally, there has been a prevalent use of impact captions in Asian entertainment TV programmes (O'Hagan and Sasamoto, 2016) and the practice of integrating titles into the shot composition in films, which has seen increased practical application. Fox (2016) noted that adjusting the placement of integrated titles on the screen increased participants' focal attention on the image area and decreased reading time for subtitles.

These various findings provide insight into the impact of varied subtitling practices but also indicate that more research is still required to understand the impact of subtitles, creative ones in particular, and viewers' perceptions towards them. This research will specifically focus on explanatory notes appearing at the top of the screen, termed as "headnotes" in this study (see Section 2.3.2), to evaluate their effectiveness and influence on viewer comprehension and engagement. In the following section, concepts relevant to creative subtitles and reception studies on them are explored and discussed, including headnotes, the main topic of this thesis.

2.3.1 Creative subtitles and fansubbing

Creative subtitling refers to the use of innovative techniques that go beyond traditional subtitling norms, often incorporating artistic elements to improve viewer engagement (McClarty, 2012). Such techniques are intended to create a more immersive and enjoyable viewing experience by aligning the subtitles more closely with the audiovisual elements of the video content. Romero-Fresco (2019) emphasises that creative subtitling can help convey various aspects such as humour, tone, and cultural references that might be lost with standard subtitling practices. For example, changing the colour of subtitles to reflect different speakers or emotions can provide viewers with additional contextual information, making the viewing experience more intuitive and engaging (Díaz Cintas and Remael, 2007/2014). While these techniques are often employed in SDH, they are increasingly used in creative subtitling to enhance the audiovisual experience, particularly in genres such as comedy and drama, where the subtleties of delivery are crucial to the overall impact of the dialogue.

Several authors have explored the benefits and applications of creative subtitling. Fox (2018), for instance, examined how integrated titles, which are embedded directly into the visual elements of a scene, affect audience engagement and comprehension. Using eye-tracking and questionnaires, Fox (ibid.) demonstrated that integrated titles reduce the cognitive load by aligning the text more closely with visual components, allowing viewers to follow the narrative more easily.

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Sasamoto (2024) further expands the discussion by exploring the pragmatics of creative subtitles and how they enhance the viewer's understanding of on-screen content. She delves into the impact of text-on-screen, emphasising the balance between providing contextual information and maintaining viewer engagement. This aligns with the goals of PHNs discussed later in this thesis, which aim to personalise the cultural and humorous references for specific audience segments.

Creative subtitling represents a significant advancement in the field of subtitling, offering innovative techniques to enhance viewer engagement. Similarly, another branch of subtitling studies, fansubbing, has garnered extensive academic attention due to its influential role as an amateur subtitling culture and its connection to the globalisation of Japanese anime (Pérez-González, 2007). Fansubbing represents a highly innovative and dynamic approach to subtitling, characterised by its creative and often unconventional techniques that differentiate it from professional subtitling practices. Fansubbers frequently experiment with visual and textual elements, employing various methods to enhance viewer comprehension and engagement. These techniques, such as varying fonts, colours, and annotations, often absent in traditional or professional subtitles, contribute to the unique viewing experience that fansubbed content provides. In recent years, the fansubbing phenomenon has expanded to encompass a wider array of media, including TV series, talk shows, and films. Although fansubbing has been researched in translation studies (Munday, 2012), its status as an academic subject remains controversial due to its “resolutely esoteric, niche” nature in many cultures (O'Hagan, 2012, p. 31). Fansubbing stands at a unique cultural intersection of AVT and globalisation, often involving volunteer translation. Moreover, they have influenced the professional practice of subtitling with their “groundbreaking innovations”, such as the inclusion of explanatory notes (Diaz Cintas, 2009, p. 11). Pérez-González (2007) suggests that fansubbers act as cultural mediators, using innovative techniques to make foreign content more accessible to local audiences. For instance, headnotes—annotations displayed at the top of the screen—are frequently used in fansubbing to provide cultural explanations or enhance the understanding of humour.

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One of the most distinctive creative methods used by fansubbers is the integration of explanatory notes or headnotes, which are placed at the top of the screen to provide additional context, such as cultural references or wordplay explanations. These notes are particularly common in Japanese anime and foreign-language dramas where cultural references, puns, or idiomatic expressions might be lost in translation. The goal of these headnotes is to ensure that the humour, cultural nuances, or references specific to the source material are preserved and fully understood by the target audience (Schules, 2012; Cai, 2015), even if they require more text on the screen.

Another hallmark of fansubbing is the use of varied font styles, colours, and effects to distinguish between characters or emphasise particular elements of dialogue. Unlike standard professional subtitles, which adhere to strict guidelines of uniformity, fansubbers frequently experiment with different colours to signify different speakers or to highlight specific lines of dialogue, such as jokes or emotional expressions (Pérez-González, 2007). These visual cues are designed to guide the viewer's attention and help them follow complex conversations more easily (Diaz Cintas and Muñoz Sánchez, 2006).

Dynamic subtitle positioning is another technique fansubbers employ. Instead of adhering to the standard bottom-of-the-screen placement, fansubbers may position subtitles near the speaker or relevant action on the screen. This approach, known as integrated subtitles, reduces the cognitive load for viewers, allowing them to follow both the subtitles and the visual elements of the scene more fluidly (McClarty, 2012).

Fansubbers also make use of timed notes and glosses, which appear and disappear in sync with specific moments in the video. These notes (see Figure 2.4 for an example) can explain cultural references, provide translations for visual text (such as signs or written materials in the background), or clarify slang and colloquialisms (Pérez-González, 2019). By synchronising these notes with the action, fansubbers

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maintain the flow of the viewing experience while enriching it with essential context.

In some cases, fansubbers incorporate motion graphics and animated subtitles to match the tone or energy of the content. For example, subtitles in action scenes or comedic moments might bounce, flash, or fade in dynamic ways that mirror the pace of the on-screen events. These creative visual effects add another layer of engagement, blending the subtitles seamlessly with the audiovisual elements (Dwyer, 2018).

What sets fansubbing apart from professional practices is the flexibility and experimentation allowed by the absence of industry standards. This freedom enables fansubbers to push the boundaries of what subtitles can achieve, creating a more immersive and interactive experience for viewers. While these techniques may not always conform to professional guidelines, they demonstrate the innovative potential of subtitling when traditional constraints are removed (Pérez-González, 2019).

In summary, the creative techniques used by fansubbers—such as headnotes, varied font styles, dynamic positioning, and timed glosses—serve to enhance the viewer’s understanding and enjoyment of the content. These innovations reflect the flexibility and audience engagement central to fansubbing, highlighting its significant contributions to the broader landscape of AVT (Pérez-González, 2019; O’Hagan, 2012). This also shows the intersection between creative subtitling and fansubbing, where amateur practices have informed more professional, creative subtitling techniques. It is important to distinguish between the various forms of creative subtitles—such as abusive subtitles, impact captions, and integrated titles—each offering unique approaches to subtitling. These different methods serve distinct purposes and will be further explained in the following section to clarify their roles in subtitling practices.

2.3.2 Headnotes

Pérez-González (2007, p. 271) noted that in explaining culture-specific humour, fansubbers often utilise “notes and glosses”, which are “normally displayed at the top of the screen”. Schules (2012, p. 83) acknowledged that fansubbers often implement such “linear notes at the top of the screen” so they “become integrated into the viewing and experience”. Cai (2015, p. 443) also observed that when translating an American English TV drama, fansubbers added some “annotations on top of the screen” to illustrate cultural differences for Chinese audiences. As is evident, the phenomenon of adding notes in the fansubbing community has been acknowledged by scholars but the research on it is still limited. The researchers mentioned above refer to this specific type of note on top of the screen in several different ways. Different from the conventional subtitling, headnotes are more commonly used among fansubbers to explain the cultural or humorous references that are embedded in comedies for the audience, by resorting to standard subtitles at the bottom and notes at the top of the screen, hence referred to as “headnotes” (adapted from Diaz Cintas and Remael, 2014, p. 141).

It is worth noting that while the term headnotes may sound similar to “abusive subtitles” (Caffrey, 2009), they function quite differently. Both headnotes and abusive subtitles fall into the fansubbing category and aim to enhance the viewer’s understanding and engagement with the content, but they do so in distinct ways. Headnotes provide supplementary context to aid comprehension. They offer additional explanations and cultural or humorous references that might not be immediately apparent, enhancing the viewer’s understanding of the subtitled content. In contrast, abusive subtitles challenge conventional translation norms by making the translation process and its inherent biases more visible. This approach critiques traditional subtitling practices that prioritise synchrony, cultural adaptation, and viewer comprehension, often at the expense of fidelity to the original content and meanings. Abusive subtitles provide a meta-commentary on the translation and its process, exposing the translator’s work and the ideological assumptions behind it (ibid. pp. 10-12). In summary, headnotes offer explanatory notes to support the viewer’s comprehension, while abusive subtitles aim to reveal and critique the subtitling process itself.

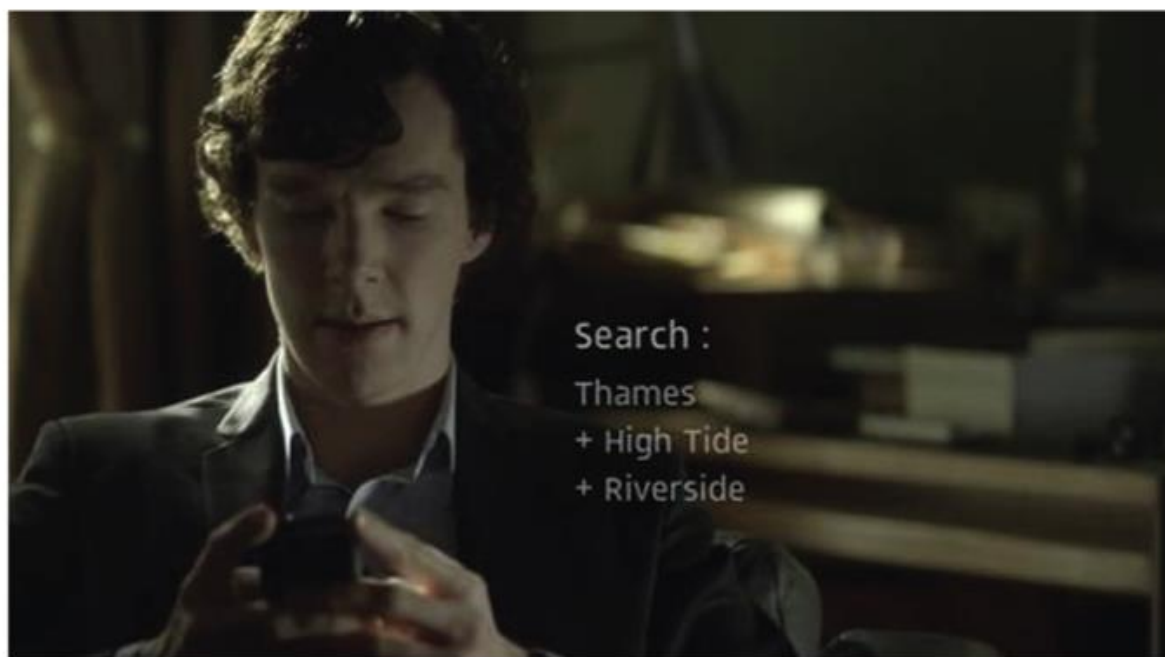
The term is also different from previously employed terminologies in earlier research such as “impact captions” (or locally known as “telop”), “authorial titling”, or “toptitles”. According to O’Hagan and Sasamoto (2016, p. 32), “impact captions” (see Figure 2.1) refers to intralingual TV captions which are “designed to enhance the entertainment value of a programme primarily for hearing audiences by stressing a particular selective message from the producer’s perspective”. Moreover, it is limited to textual inserts on TV and specific to Japan only and may not be necessarily created by fansubbers (ibid.). The term “impact captions” was proposed in Park (2009) and further developed by Sasamoto and Doherty (2015) to describe massive “use of multimodal and dynamic textual inserts” (ibid., p. 212) in entertainment programmes, news, dramas, etc. which could appear on every corner of the screen and sometimes blocks the images of the screen.

Figure 2.1: Example of “impact captions”, sourced from O’Hagan and Sasamoto (2016, p. 34)



Although similar to “impact captions”, the term “authorial titling” employed in Pérez-González (2013) was used as a form of transformative subtitling, for example as shown in Figure 2.2, the texts on mobile phones in BBC’s TV show *Sherlock*. This term refers specifically to subtitles inserted as a diegetic part of the narrative in SL (Sasamoto and Doherty, 2015) while “headnotes” are used as supplementary notes for translated subtitles to explain the intended humour in the target language, including humour regarding cultural references, wordplay, and racism.

Figure 2.2: Example of “authorial titling”, sourced from Pérez-González (2013, p. 15)



Another term “toptitles”, first proposed by Gottlieb (1994, p. 107), refers to textual information inserted by the programme maker to identify names, places, or dates relevant to the storyline. In his semiotic taxonomy of multidimensional translation, Gottlieb (2005) further categorised toptitles as captions within the writing semiotic channel of filmic media. Toptitles are often used to display the name and occupation of the speaker, typically placed in the top left-hand corner of the screen. In contrast, headnotes, usually positioned at the top of the screen, provide more

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extensive annotations beyond just names or occupations, offering additional explanations and context for the audience.

Moreover, Fox (2016) investigated the use of “integrated titles”, a form of creative subtitling where subtitles are embedded within the visual elements of the screen. She found that participants’ focal attention on the image area increased and reading time for subtitles decreased, suggesting that integrated titles can make it easier for viewers to follow both text and visual components (ibid.). This supports Romero-Fresco’s (2018) argument that creative subtitling enhances comprehension and contributes to a more aesthetically pleasing audiovisual experience. Integrated titles are placed in various positions across the screen to align closely with the relevant visual elements or speaking characters. This approach aims to fit viewers’ natural gaze patterns, reducing the distance between the subtitles and the characters or key elements, thus maintaining engagement with the action on screen. Different from traditional subtitles placed at the bottom, integrated titles are part of the scene’s visual flow (McClarty, 2013; Fox, 2018; Black, 2022). Unlike integrated titles, which can blend into the visual elements of the scene, headnotes serve as supplementary annotations with subtitles at the bottom of the screen simultaneously, aimed at enhancing viewer understanding of specific content aspects, particularly in translated media.

Another type of notes for subtitles is “danmaku” in Japanese or “danmu” in Chinese (see Figure 2.3), also known as “barrage commenting”, which is a video annotation system first launched by a Japanese ACGN (anime, comic, game, short novel) video-sharing website but gaining popularity in most of Asia (Dwyer, 2018). Danmu involves the display of viewer-generated titles on the same screen where the media content is being played. These titles can provide translations of the diegetic dialogue or convey viewers’ comments on various issues related to the video. Unlike YouTube comments, which are in a separate section, danmu are superimposed on the multimodal text itself (Pérez-González, 2019b, p. 101). Danmu are typically generated by viewers to express their viewing experiences, give fair warnings for upcoming scenes, or share random thoughts such as their

viewing dates or weather forecasts (ibid.). Li, Wang and Lai (2023) observed that while danmu can create an immersive experience and enhance viewers' perceived benefits by promoting social interaction, an excessive number of danmu can obstruct the screen, thereby diminishing the overall viewing enjoyment. In contrast, headnotes are added by subtitlers or fansubbers to explain intended humour or cultural references, aiming to enhance viewers' understanding of the content. The objective of using headnotes is to create "a translation that is easy to understand (in the intended manner) for the recipient" (Suojanen, Koskinen and Tuominen, 2014, p. 45). By explicitly adding headnotes to illustrate the intended humour in comedies, fansubbers strive to make their translations clearer and more comprehensible, thereby hoping to improve the overall viewing experience.

Figure 2.3: Example of "danmu", sourced from Li, Wang and Lai (2023, p. 442)



Specifically, for example, as can be seen in Figure 2.4, headnotes are often added by fansubbers in TL to explain the intended humour or cultural references for target audiences and are accompanied by the translation of standard subtitles on the bottom of the screen.

Figure 2.4: Example of “headnotes” from English to Chinese explaining a Bible reference, screenshot adapted from YYeTs fansubbing



Headnotes fall into the category of creative subtitles because they provide additional explanations for target audiences, complementing the standard subtitles at the bottom of the screen. Creative subtitling, as defined by Romero-Fresco (2018) extends features of ethnographic subtitling by fostering new narrative mechanisms that engage directly with the audience. Ethnographic filmmakers have used subtitles to give voice to marginalised communities and create visually dramatic effects (Ruoff, 1998). Similarly, authorial titles (Pérez-González, 2013) and impact captions (Sasamoto and Doherty, 2015) are regarded as creative subtitles because they amplify the narrative in engaging ways (Dwyer,

2015). In the same vein, headnotes can be regarded as an innovative method of interacting with viewers by providing explicit annotations regarding humour and cultural references, assuming that viewers might not have the necessary background knowledge to fully appreciate the nuance in the original content. By including viewers in a larger context of the diegetic development and narrative background, headnotes are supposed to serve as engaging notes for the target audience.

2.3.3 Advancements and challenges in AVT

In TS, investigating the experiences and responses of readers of translated fiction and viewers of foreign films presents a complex challenge for researchers (Gambier, 2018). This requires the creation of methodologies capable of accurately capturing and analysing these audiences' interactions with translated narratives and subtitled media. Nida (1964) was one of the first scholars to shift the focus from a purely linguistic perspective to a communicative approach, seeing translators as mediators between authors and readers. He introduced the concept of dynamic equivalence to evaluate translation quality, proposing that a successful translation elicits the same response from its readers as the original text does from its audience (as discussed in Section 2.2.1). While the criteria for assessing reader responses remain underdeveloped, Nida's work redirected scholarly attention from translators alone to include the readers' role in the translation process, suggesting that translations should evoke the same response in the target audience as the original text does in the source audience (Kim, 2015).

In the field of AVT, there has been a notable increase in reception studies, which have advanced the discipline by systematically exploring audience preferences and needs. Di Giovanni (2019) highlighted the adoption of diverse methodological approaches within this growing area of research. Corpus-based studies, such as those by Pavesi (2022), have proven valuable for objectively analysing standardisation, fluency, dubbese, and register shifts in translations. Research on fansubbing and fandubbing (Díaz Cintas and Muñoz Sánchez, 2006) has emphasised the unique consumption modes of AVT and highlighted the active role

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of consumers. Psycholinguistic research, including studies on the impact of AD using emotion scales (Fryer and Freeman, 2014), has further enriched the field by providing insights into audience perception and stimulating additional research areas, such as humour translation using eye-tracking technologies.

Innovative approaches to subtitling have also emerged, utilising technologies like eye-tracking devices to explore viewers' perceptions. Bisson *et al.* (2014) analysed audience reading patterns through eye movements, while Hu (2020) examined the impact of machine-translated subtitles on the reception of MOOC content. Additionally, methodologies involving electroencephalography (EEG) and psychometrics have been developed to investigate the neural processing of subtitles (e.g., Kruger, et al., 2016). The use of electrodermal activity (EDA) has also been proposed to measure emotional responses in media accessibility research, particularly in studies testing the effects of different audio subtitling voicing strategies on emotional activation. For example, Matamala *et al.* (2020) employed EDA to investigate how different voicing strategies in audio subtitling impact viewers' emotional engagement, integrating psychometrics and neurophysiological measures to enhance understanding of audience reception and improve MA for the visually impaired.

Eye-tracking technologies have advanced reception studies on subtitling by providing insights into viewer engagement, effort and comprehension (e.g., Gerber-Morón, Szarkowska, and Woll, 2018). Researchers have widely used eye tracking to study subtitle reading (Bisson *et al.*, 2014), subtitling speeds (Szarkowska and Gerber-Morón, 2018), and SDH (Romero-Fresco, 2019). In AVT, a major challenge for translators is ensuring viewers can effectively read while processing subtitles. Romero-Fresco (2015) described reading subtitles as a complex cognitive act. Recent studies, such as Gerber-Morón, Szarkowska, and Woll (2018), have focused on cognitive load, utilising indicators like difficulty, effort, and frustration. Their experiments revealed that well-segmented subtitles reduce cognitive load, making the reading process easier.

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Researchers such as Szarkowska and Gerber-Morón (2018) tested the “six-second rule” in subtitling, which recommends displaying subtitles at a rate of 12 characters per second (cps) for optimal comprehension. Despite findings indicating that slower subtitles reduce viewers’ cognitive load and can thus be better received, many video providers, including Netflix, continue to use higher subtitle speeds (Di Giovanni, 2019).

The placement of subtitles also impacts viewer engagement. Fox (2016, 2018) found that integrated titles, which are embedded within the visual elements of the screen, increased focal attention and decreased reading time. Conversely, O’Hagan and Sasamoto (2016) found that “telop” or “impact captions”, displayed in large fonts and multiple colours, were not distracting to viewers. These differing results highlight the need for further research on the impact of subtitle placement and supplementary notes.

Research on humour translation has also gained some attention, evidenced by significant works such as Chiaro (2010) and Martínez Sierra and Zabalbeascoa (2017). In AVT, humour translation is challenging due to the cultural specificity and the subtleties of humour, which often require holistic understanding and adaptation to resonate with the target audience (Zabalbeascoa, 2020). Humour’s prevalence in media, ranging from traditional forms to digital memes and emojis, poses unique translation difficulties, including censorship and varying audience understanding. Díaz Cintas and Remael (2007/2014), Bucaria (2007), and Jankowska (2009) also explored humour in subtitling and dubbing, highlighting its complexity and cultural specificity.

As discussed earlier in section 2.2.2.1, dynamic equivalence (Nida, 1964) is crucial in evaluating humour translation, aiming for translations that elicit similar responses as the original text (Suojanen, Koskinen and Tuominen, 2014). The equivalence theory emphasised the need for translators to avoid unintended humour and ensure the intended effect is preserved. Other theories, such as Sperber and Wilson’s relevance theory (1986/1995), have been applied to humour

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in AVT research. For instance, Hernández-Bartolomé and Mendiluce-Cabrera (2004) used relevance theory to analyse the dubbed comedy “Chicken Run”, focusing on how translation strategies contribute to the its humour transfer and overall success; while Zhang (2021) examined the translation of politeness and humour from English to Chinese in the TV drama “Hotel Babylon” with relevance theory as part of the theoretical model, highlighting the necessity of understanding multimodal environments to achieve effective humour translation across significant cultural differences.

Emerging media platforms add further challenges to humour translation, as technical variations and the rise of fansubbing introduce new dynamics. The use of creative subtitles, such as headnotes, by fansubbers exemplifies innovative humour translation methods. Mateo and Zabalbeascoa (2019) noted the increase in research on humour translation modalities and reception studies, with Filizzola (2017) examining Italian audiences’ reactions to translated British stand-up comedies using eye-tracking and questionnaires. Her findings indicate that non-verbal elements, like body language, enhance humour comprehension.

Overall, translating humour in audiovisual environments remains a complex task, requiring attention to multimodality and the integration of verbal and non-verbal cues to achieve effective translation. To address these challenges comprehensively, Chapter 3 endeavours to establish a theoretical framework for the translation of humour within the specialised context of subtitling.

Chapter 3

Theoretical Framework for Subtitling Translation

3.1 Introduction

This chapter establishes a robust theoretical framework for translating humour within the specialised context of subtitling, drawing on relevance theory as developed by Sperber and Wilson (1986/1995). Relevance theory, with its focus on ostensive-inferential communication and the interpretation process, has been instrumental in TS, particularly following Gutt's (2014) application of its principles to translation as a communicative act.

By introducing key concepts from relevance theory—such as cognitive effects, processing effort, and optimal relevance—this chapter displays the complex challenges of translating humour. The emphasis is on balancing cultural understanding with visual appeal, especially within the constraints of subtitling, where brevity and clarity are critical. This relevance-based approach aims to enhance translation practices in audiovisual contexts, ultimately improving the viewing experience.

The chapter is structured to first examine the existing challenges in translating humour (Section 3.2) before providing an overview of relevance theory and its core principles (Section 3.3). It then discusses Gutt's theoretical contributions to TS, including debates and applications from previous research (Section 3.4). Finally, Section 3.5 focuses on the application of relevance theory in translating humour, with a specific emphasis on subtitling comedic content. The chapter aims to shed

light on how relevance theory can enhance both the understanding and the practice of translation, particularly in the context of humour within audiovisual media.

3.2 Challenges in translation of humour

Humour travels faster today than ever before, driven by technological advancements and globalisation, which have effectively shrunk the planet. Until the last quarter of the twentieth century, mass media was limited to newspapers, film, and television (Chiaro, 2010). However, the internet and digitisation have drastically expanded our access to information, establishing television and internet as cultural leaders globally. Consequently, humour now appears in various forms of media, from traditional films and TV shows to cartoons and advertisements, reaching audiences from diverse cultural backgrounds.

The translation of humour presents a significant challenge, especially when it involves culturally specific items (CSIs). According to Aixelá (1996), CSIs are references in the source text that pose difficulties during translation because they involve elements unique to the source culture. These items may include references to customs, historical events, food, or idiomatic expressions that are unfamiliar or carry different connotations in the target culture. CSIs often become more complex in the context of humour, where they can significantly influence the meaning and reception of a joke or comedic scene.

Chiaro (2008) highlighted the challenge of translating humour, noting that humour often does not translate well across languages. This difficulty is exacerbated when humour is based on culturally specific words. Beyond culture-specific humour, many examples also involve language-specific humour, or “language-restricted jokes”, as termed by Zabalbeascoa (2005). These jokes rely on culture-bound terms that either contribute to the meanings in a pun or are situated near a pun in the same joke. The unique linguistic nature of these jokes adds complexity to the translation of culturally distinct humour. Hence, translating such

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humour poses a dual challenge: capturing the linguistic play and conveying the cultural nuances in a way that resonates with the target audience.

The issue becomes even more pronounced when translating jokes that intertwine sociocultural allusions with language play. These forms of humour, which combine wordplay with cultural references, are among the hardest to reproduce in another language Chiaro (2006). The translator must consider the cultural, linguistic, and contextual factors that affect humour perception in different cultural environments.

To operationalise culture in this study, it is treated as a set of shared knowledge, beliefs, customs, and values that shape the way individuals interpret messages and respond to humour. This study categorises humour translation challenges based on the degree of cultural specificity involved in the content. For example, a joke involving a CSI such as a local dish or historical event may be more difficult to translate than a universal joke with broad appeal. The strategies (see Section 4.4.4.1) for dealing with CSIs, such as retention, domestication, foreignisation, or omission, are chosen based on the anticipated comprehension level of the target audience and the cultural significance of the reference.

In the context of translating AD scripts, the challenge is further compounded because the describer needs to convey cultural elements orally, often in a limited timeframe (Szarkowska and Jankowska, 2015). For instance, they (*ibid.*) examined how different strategies, such as retention or omission, are employed depending on the nature of the cultural reference and the anticipated comprehension level of the target audience. Similarly, in a study by Jankowska *et al.* (2017), it was emphasised that in translating AD scripts, the challenge is magnified because the describer must convey these cultural elements orally, often within a limited timeframe. The decision-making process for dealing with CSIs in AD requires a deep understanding of both the source and target cultures depending on the nature of the cultural reference and the anticipated comprehension level of the target audience.

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With the widespread dissemination of humour influenced by technological changes and the popularisation of mass media, questions about audience reception arise. Gulas and Weinberger (2010) emphasised that humour is not solely based on the joke itself but also on the intricate relationship between the joke, the joke teller, and the listener. A particular joke may amuse one person while profoundly offending another. The internet has enabled individuals worldwide to access texts not originally intended for them. Gulas and Weinberger (*ibid.*, p. 30) explained that “while humour is a natural human trait, responses to specific humour executions are learned behaviors”. Chiaro (2010) noted that humour is perceived differently by each individual, indicating that while humour can be universally understood, its effects and understanding are personalised. Thus, translating humour for a global audience involves understanding these learned cultural responses.

The translation of humour in cartoons exemplifies the complexity of incorporating CSIs. Like jokes, cartoons are a form of communication that is challenging to translate. The difficulty lies not just in the words but in the cultural references depicted in the images. If a reader is unfamiliar with these cultural references, even if the words make sense, the cartoon may fail to elicit laughter (Zanettin, 2010). Effective humour in cartoons often depends on the target readers sharing the same cultural knowledge as the source readers, such as assumptions, stereotypes, and visual culture. Zanettin (*ibid.*) concluded that humour in cartoons and jokes frequently relies on some form of incongruity anticipated by the viewers, either within the image itself or between visual and verbal cues. When words are present, they guide the reader to one of the overlapping scripts. Harvey (2009) suggested that even simple drawings can convey humour when combined with culturally relevant words, illustrating the challenge of ensuring that visual and textual elements are culturally accessible to the target audience.

Similarly, in the field of advertising, where humour is often employed as a persuasive tool, the translator must consider the target audience’s cognitive environment to effectively convey the intended message. Modern advertising

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increasingly relies on various marketing methods for effective promotion, making the integration of different communication modes one of its distinguishing characteristics. In the realm of advertising translation, understanding the target audience's cognitive environment is crucial for achieving the intended impact of humour (Pan, 2003). This involves careful consideration of how various communicative modes interact within an advertisement to produce a coherent and contextually relevant message. Pan (2015) studied the features of billboard advertising in relation to translation. She argued that translators must consider the integration of different communication methods in advertising and the interplay between various modes when reproducing billboard headlines accompanied by graphic and other verbal or nonverbal elements. To ensure the intended effect for the target customer, translators must predict the cognitive context generated by the interaction of nonverbal elements and related information stored in memory, as well as the target reader's cognitive environment with the possible translations of the headline.

Relevance theory, therefore, provides a valuable framework for addressing these challenges, offering insights into how humour can be translated and communicated across cultural and linguistic boundaries. Across diverse media applications, relevance theory serves as a crucial framework for understanding the translation and communication of humour. This approach emphasises the importance of contextualisation in communication, whether translating humour in cartoons, comics, or advertisements, or adapting content for global audiences. By applying relevance theory, translators and content creators can navigate the complexities of cultural and linguistic differences (Alves and Albir, 2010), ensuring that humour remains a universal source of entertainment and connection in the digital age. The emphasis of relevance theory on achieving optimal relevance—where the communicative effort is balanced with the cognitive benefit—guides translators in making strategic decisions that enhance the accessibility and enjoyment of humour across different cultures and media formats.

3.3 Relevance theory

Relevance theory (Sperber and Wilson, 1986/1995) offers a cognitive-pragmatic framework, explaining the way addressees process ostensively communicated information. The theory quickly found its application in TS (Gutt, 2014), offering profound insights into the communicative act of translation. Central to relevance theory are two principles (Sperber and Wilson, 1986/1995, p. 260):

1. The Cognitive Principle of Relevance: “Human cognition tends to be geared to the maximisation of relevance”. In other words, individuals naturally pay attention to information that is expected to yield the most cognitive benefits for the least cognitive effort.
2. The Communicative Principle of Relevance: “Every act of ostensive communication communicates a presumption of its own optimal relevance”. This means that when someone communicates, they imply that the information provided is relevant enough to be worth the audience’s effort to process it, balancing cognitive effects with cognitive effort.

Relevance theory offers a cognitive approach to understanding communication, which intersects with language psychology, cognitive psychology, and communication theory to explain how individuals interpret and process information. According to relevance theory, communication is not primarily governed by Grice’s Cooperative Principle (Grice, 1989), which is based on conversational maxims, but rather by the principle of relevance (Sperber and Wilson, 1986/1995, p. 49).

From a relevance-theoretic standpoint, translation involves cross-linguistic interpretive use. Relevance theory allows for the investigation of intra- and inter-lingual verbal communication as expressions of the same underlying principles, offering a unified explanation of verbal communication. A key idea in relevance theory is that human cognition is naturally inclined to maximise relevance. This means that if an addressee believes a remark is relevant, they will make the effort to process it, adjusting their cognitive environment accordingly (Wilson and

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Sperber, 2004, p. 610). In other words, humans are hardwired to focus on what is significant to them, or what may cause changes in their cognitive environment. These changes, known as cognitive effects, are central to relevance theory; the more cognitive effects a stimulus produces, the more relevant it is (Wilson and Sperber, 2004). However, these cognitive effects must be weighed against the effort required to obtain them, as increasing the effort needed to analyse an utterance diminishes its significance. In contrast to the descriptive use of language, which aims to describe a state of events in some possible world, the interpretive use of language involves an utterance representing what someone else has said or thought. This results in interpretive resemblance between the original speech and the utterance used to represent it, with the degree of resemblance determined by the shared implicatures and explicatures.

In relevance theory, weak implicatures are inferred meanings that are not explicitly stated or strongly suggested by the speaker (Wilson and Sperber, 2004). Instead, they involve a range of possible interpretations that the listener might infer based on context, background knowledge, and subtle cues. Unlike strong implicatures, which convey specific, clear meanings, weak implicatures allow for multiple, complex interpretations, depending on the listener's cognitive environment (Sperber and Wilson, 1986/1995). This makes communication richer and more flexible, as it enables the audience to derive different levels of meaning from the same message. In humour, weak implicature is particularly relevant because jokes, satire, and other forms of humour often rely on the audience picking up on subtle hints, cultural references, or shared knowledge that are not overtly stated. This makes humour accessible on multiple levels, depending on the audience's ability to infer the intended meaning.

Relevance is defined by the interaction between cognitive effects and processing effort. "According to relevance theory, an input is relevant to an individual when its processing in a context of available assumptions yields a positive cognitive effect" (Wilson and Sperber, 2006, p. 608), such as contextual implications, adjustments of beliefs, or reinforcement of existing assumptions, while requiring minimal

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processing effort. The presumption of optimal relevance posits that communication is most effective when it achieves a balance where substantial cognitive effects are obtained with minimal cognitive effort (Sperber and Wilson, 1986/1995, p. 270). This balance is crucial to determining the relevance of a communicative act.

Sperber and Wilson define context as “the set of premises used in interpreting an utterance”, which introduces the broader concept of a “cognitive environment” (Sperber and Wilson, 1986/1995, p. 15). The cognitive environment refers to all assumptions accessible to an individual at any given time, whether currently in use or available for use. Context, then, is a specific subset of these assumptions, actively selected and employed during the interpretation process. These assumptions are not limited to the immediate physical surroundings or prior discourse but also encompass expectations about the future, scientific theories, religious beliefs, anecdotal memories, cultural norms, and perceptions of the speaker’s mental state (*ibid.*). Unlike traditional views of context as a constant and static backdrop of information, relevance theory presents context as a dynamic psychological construct, continuously shaped by the cognitive environment and adapted for interpreting specific utterances, serving as an interactive process. In relevance theory, context adapts and evolves through the interaction between communicative participants, highlighting its fluid nature in facilitating understanding and meaning (Fetzer, 2012). In the realm of subtitling, where new information (subtitles) is introduced to an existing narrative (source verbal information and visual images), the interaction between these elements directly influences cognitive effects, as highlighted by Chen and Wang (2019).

Chen and Wang (*ibid.*, p. 198) found that source verbal language alone does not directly influence cognitive effects, as most viewers cannot understand the original language. However, it is integral to subtitle translation, as visual information and verbal messages interplay to enhance cognitive effects. Simply repeating information does not enhance cognitive effects; instead, incoming communicative

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stimuli must interact meaningfully with existing assumptions within the cognitive environment to achieve optimal relevance (Sperber and Wilson, 1986/1995).

In this research, existing visual images and standard subtitles on the video are treated as the existing assumptions, while headnotes are new information. It is posited that integrating subtitles and headnotes could enhance viewers' cognitive effects. However, the addition of new information may also increase processing effort, which must be considered for the sake of optimal relevance (as explained below), this is because relevance of a communicative stimulus is not solely determined by cognitive effects but also impacted by the processing effort.

A critical aspect of achieving relevance in communication, including translation, is managing the balance between cognitive effects and processing effort. Relevance is determined by how much cognitive benefit (in terms of new information, reinforcement of existing assumptions, or contextual implications) can be derived from the communicative act with the least necessary effort (Sperber and Wilson, 1986/1995). Optimal relevance occurs when the cognitive effects are substantial enough to justify the processing effort required (*ibid.*). In the context of translation, this means that the translator must ensure that the target text is not only accurate but also accessible, so that the target audience can derive the intended cognitive effects without expending unnecessary effort (Gonçalves, 2020). In other words, the more effortlessly an audience can derive meaningful implications from new information, the more relevant that information is considered to be. Strong cognitive effects alone do not guarantee relevance if they require excessive cognitive resources.

Here, the theory navigates the balance between the cognitive rewards offered by cognitive effects and the effort required to achieve these effects. Previous research including Koolstra *et al.* (2002) stated that the cognitive load is heavier when viewing subtitled films compared to their dubbed counterparts, impacting content comprehension and retention adversely. Thus, how to minimise the cognitive strain induced by frequent shifts between subtitles and on-screen action is worth

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the investigation. Chen and Wang (2019) suggested that the integration of both visual and spoken elements in subtitles can alleviate this strain, enhancing both the relevance and the contextual understanding for the viewer.

According to Sperber and Wilson (1986/1995), communication depends on the communicator's ability to formulate an utterance that allows the addressee to derive the intended interpretation without unnecessary cognitive effort. An utterance is most effective when the audience can grasp its meaning with minimal effort as intended by the communicator. This process should yield significant cognitive benefits for the audience, referred to as "positive cognitive effects" (ibid., p.227), which are psychological in nature and involve changes in knowledge.

The principle of relevance, considered an inherent aspect of human cognition, underpins optimal relevance in communication. It is understood in relevance theory that the hearer, motivated by the presumption of optimal relevance, follows a specific comprehension procedure:

1. Follow a path of least effort in deriving cognitive effects: test interpretive hypotheses (reference assignments, disambiguations, implicatures, etc.) in order of accessibility.
2. Stop when your expectations of relevance are satisfied (Wilson and Sperber, 2004, p. 613)

Following this relevance theoretic comprehension procedure, the addressee (or the audience, in the case of this thesis) process incoming stimuli to recover the intended interpretations that demand minimal cognitive effort with adequate reward, aligning with the speaker's intended meaning and context. Thus, the theory posits that communication success is largely dependent on the communicator's ability to anticipate the addressee's processing capabilities and produce stimuli that lead to the intended understanding efficiently.

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Ideas from relevance theory have also been applied in examining the visual and non-verbal facets of communication. For instance, Rohan, Sasamoto, and O'Brien (2021) employed relevance theory in an eye-tracking study focusing on the readers' engagement with onomatopoeia in manga. Their research, comparing eye-tracking responses to onomatopoeia translated via two distinct methods, revealed that even non-Japanese-speaking readers are drawn to onomatopoeia. This phenomenon could be attributed to relevance theory's concept of "ostensively delivered stimuli" (ibid., p. 70) which posits that such elements captivate readers' attention, generating a unique, non-propositional poetic impact.

3.4 Gutt's theoretical framework

Ernst-August Gutt's theoretical framework is based on the premise that translation is "an act of communication across language borders" (Gutt, 1989, p. 65) and effective translation results in successful communication. He asserts that the phenomena of translation can be explained by the general theory of ostensive-inferential communication within relevance theory, eliminating the need for a separate translation theory (Alves, Gonçalves and Szpak, 2012). Gutt argued that relevance theory provides adequate guidelines and principles for understanding translation as a communicative act, encompassing the essential aspects of the translation process (Gutt, 2000, p. 199). These insights pertain to what addressees find relevant in a communication and how they determine this relevance, emphasising the significance of inferential processes within human cognitive contexts (Gutt, 1989, 1992). He suggested that translation does not require a separate theory; instead, it can be fully explained within the relevance-theoretic framework. This approach emphasises that translation is successful when the translated text achieves optimal relevance for the target audience, replicating the cognitive effects of the original with justifiable processing effort (Gutt, 1990). Gutt's approach redefines translation in cognitive terms, focusing on the mental processes involved in communication rather than just linguistic equivalence.

Relevance theory explains how human cognition and communication function in real-world situations (Gutt, 1989). The principle of relevance posits that every act

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of ostensive communication carries a presumption of its optimal relevance (Sperber and Wilson, 1986/1995, p. 158). Communicators strive to provide information that is most relevant within the audience's cognitive environment, tailored to their abilities and preferences (*ibid.*). If the information generates maximum cognitive effects with minimal processing effort, the utterance achieves optimal relevance. This concept is essential for effective communication.

Expanding on relevance theory, Gutt applied its principles to the analysis of TS. Gutt (2000) advocated for a relevance-theoretic approach to translation, suggesting that cognitive processes guiding translation decisions can be effectively framed by relevance theory. The concept of interpretive use, which is an integral part of the overall relevance-theoretic framework, was applied by Gutt to translation, emphasising that achieving relevance in translation involves ensuring interpretive resemblance between ST and TT. It refers to the degree of similarity between the cognitive effects intended by ST and those achieved in TT (*cf.* Gutt, 2000; Alves and Gonçalves, 2003). Interpretive resemblance is the idea that a translation should not merely replicate the words of ST but should aim to reproduce the intended cognitive effects within TT (Gutt, 1990). This is achieved by ensuring that the TT and ST resemble each other in their interpretive properties, meaning that the TT should evoke similar thoughts, feelings, and implications in the target audience as the ST does in its original audience. According to Gutt (2000), achieving relevance in translation involves ensuring this interpretive resemblance between ST and TT. The concept of interpretive resemblance, integral to the relevance-theoretic framework, highlights that translation transcends mere information transfer, respecting the cognitive and cultural dimensions that shape audience expectations (Alves, Gonçalves and Szpak, 2012).

Moreover, the translator's responsibilities are multifaceted, involving a thorough assessment of the meanings embedded within ST and the contextual implications that frame these meanings. Gutt (2000) argued that translators must carefully examine and consider the cognitive environment of the target audience to ensure the translated text achieves relevance. This approach enables translators to tailor

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their interpretations to enhance the audience's comprehension and engagement, facilitating successful communication.

Transitioning to an analytical assessment, it becomes clear that relevance theory's applicability to TS enriches the theoretical landscape. While Gutt's explanatory approach provides valuable theoretical insights, its practical contributions should be viewed as complementary to existing translation theories rather than revolutionary advancements (Smith, 2004). This perspective situates relevance theory primarily as a theoretical scaffold that enhances our understanding of translation from a cognitive and communicative standpoint, rather than offering new practical techniques.

The exploration concludes by affirming the significant theoretical contributions of relevance theory within the domain of TS. Gutt's relevance-theoretic framework, while not drastically altering practical translation practices, still enhances the theoretical depth of TS. This contribution is vital for advancing our understanding of translation as a complex interplay of language, cognition, and culture. By providing a richer theoretical context, relevance theory explains the challenges and intricacies involved in translation, offering a robust framework for further exploration and analysis.

Salkie (1991) commends Gutt's explanation of translation for its insightful contributions to translation theory, praising it as a significant step forward. This approach contributes to translations studies by moving beyond the limitations of earlier code-model-based theories, offering a deeper understanding of the translation process. This evolution allows for more solutions that are adequate/appropriate in a specific context, to the complexities encountered in translation practices (Wickler and Van Der Merwe, 1993), indicating a broader appreciation among scholars for the theoretical advancements facilitated by Gutt's insights.

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Gutt's relevance-theoretic approach to translation has been pivotal in advancing translation theory, but it has also faced significant criticism. Critics such as Liu and Zhang (2006) and Smith (2004) have pointed to its perceived ambiguity and questioned its practical applicability in translation practices, sparking debate within the field. Some argue that while Gutt's framework is theoretically enriching, it lacks clear guidelines for practical implementation, making it challenging for translators to apply consistently (Alves and Gonçalves, 2013). Gallai (2022) further elaborated on these concerns, noting that while relevance theory provides a profound cognitive-pragmatic framework, its complexity and abstraction often make it difficult for practitioners to apply directly in real-world tasks. The theory's focus on cognitive processes, though insightful, may not always align with the practical demands of translation, where decisions are often made under time constraints without detailed cognitive analysis (*ibid.*). These criticisms highlight the need for relevance theory to be complemented with more practical tools, ensuring it offers not only theoretical insights but also tangible strategies for navigating cultural and linguistic complexities.

As a practical method, Gutt's approach has often been dismissed as too vague. His discussion of examples typically takes the form of explanations or critiques of translation decisions already made (Almazán García, 2001). Wendland (1996) argued that relevance theory, despite its intellectual allure, remains too abstract, offering little concrete assistance for translators grappling with day-to-day decisions. Fawcett (1997) similarly critiqued the approach for relying on deductive reasoning from general principles rather than on inductive analysis from empirical observations. This critique suggests that while Gutt's framework is theoretically enriching, it may fall short in addressing the pragmatic needs of translators (Gallai, 2022).

The divergent views on Gutt's relevance-theoretic approach reflect a broader debate within TS: the balance between theoretical richness and practical utility. While Gutt's framework contributes to a deeper theoretical understanding of translation as a cognitive and communicative act, the critiques underscore a gap

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between theoretical models and their applicability in practice. These criticisms remind us that translation theories need to be not only intellectually robust but also grounded in the realities of translation work, offering strategies that can be applied in the diverse contexts translators face.

In summary, Gutt's relevance-theoretic approach encapsulates the tension between theoretical innovation and practical application in TS. Relevance theory underscores the importance of understanding the target audience's expectations for effective communication. Gutt's perspective particularly emphasises this in translating humour and cultural references, where consideration of the audience's cognitive environment is crucial to achieving interpretive resemblance. As the field evolves, fostering a dialogue between theoretical insights and practical challenges will be crucial for developing translation models that not only enhance our understanding of translation as a complex cognitive activity but also empower translators to navigate the multifaceted challenges of their profession.

3.5 Relevance theory and its applications

The application of relevance theory extends beyond theoretical exploration; it has been extensively employed in TS (e.g., Díaz-Pérez, 2014), focusing on how contextual language factors determine relevance. When viewers are simultaneously exposed to visual images, source verbal conversations, and graphically displayed subtitles, visual and verbal modes work together to mediate cognitive effects. This section explores how relevance theory addresses the challenges of translating humour, particularly in dealing with cultural specificity and linguistic difficulties. Relevance theory has guided translators in balancing fidelity to source material with adaptation to target audiences' expectations, ensuring that humour and other culturally rich content are translated in a way that is both accessible and resonant.

Alves and colleagues (2012) investigated the cognitive processing involved in translation by analysing eye movements and fixation durations. Although their

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study did not specifically focus on humour, it highlighted the cognitive demands on translators, showing that cognitive effort is higher during TT production compared to ST comprehension. This underscores the importance of considering cognitive load when translating complex content, such as humour, where balancing cognitive effects and processing effort is crucial.

As discussed earlier in Section 3.2, the translation of humour requires understanding both source and target cultures, considering cultural references and the target audience's comprehension level. Relevance theory helps explain many translator decisions in this context. Translators may adopt varied strategies, depending on their interpretation of humour. In relevance theory, the relationship between a translation and its ST is based on interpretive resemblance. According to Gutt's relevance-theoretic approach (1990), translation aims to achieve interpretive resemblance between ST and TT. The goal is to evoke similar cognitive effects in the target audience as intended by the original text, considering the TT audience's cognitive environment. This requires careful analysis of the original communicator's intentions and shared cognitive environment, followed by strategies to recreate these effects with minimal but justified processing effort.

Subtitling, as defined by Gottlieb (2001), involves translating verbal messages from film media into another language, presented as written text on the screen, synchronised with the original dialogue. A key aspect of subtitling is the need for compression: subtitles are condensed versions of the spoken dialogue in the audiovisual source. Even when subtitles are in the same language as the source audio, they are not direct transcriptions. The subtitles must be shorter to ensure that viewers have time to read them, even during rapid conversations. Antonini (2005) noted that subtitles typically reduce the word count by 40 to 75 percent.

A technological limitation in subtitling is the maximum number of characters that can be displayed on screen, generally between 30 to 40 characters, divided into one or two lines (Gottlieb, 2001). These constraints require translators to carefully simplify the dialogue while preserving its meaning and impact. Relevance theory

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plays a crucial role in making translation decisions. Relevance theory posits that effective communication is achieved by balancing the cognitive effort required to process information with the cognitive benefits gained. In the context of subtitling, this means translators strive to create subtitles that are easy to read and understand while retaining the intended humour and cultural references of the original content. The cognitive environment of the audience, including their knowledge and cultural background, significantly influences how they interpret these subtitles.

In a study analysing the subtitling of the American TV show *Modern Family* from English into Spanish, Díaz Pérez (2017) found a tendency among translators to retain elements of the source culture, even if it meant that the TT audience might miss some humorous effects intended in the ST. This approach likely stems from a concern that overly domesticating translations could lead to confusion or rejection by the Spanish-speaking audience, failing to achieve the original humorous intent. By analysing cultural references like “touchdown”, the researchers observed that translators aimed to remain true to the cultural context, based on their understanding of the target audience’s cognitive environment. However, they also noted instances where translators adapted the content to ensure the humorous effects were accessible to the TT audience, even if it required altering some semantic and cultural aspects. This indicates that the inferential processes for ST and TT audiences can be similar, balancing processing effort and cognitive impact effectively (*ibid.*).

Scholars in China also applied relevance theory to address challenges in translating subtitles from English to Chinese. Zhao (2015) explored the use of inference in solving English riddles in TV shows, demonstrating how cultural references can be effectively translated using relevance theory. Similarly, Jiang and Liu (2010) applied relevance theory to explain the function of cognitive context and the distinction between maximal and optimal relevance when translating English cultural references in films. Zhang, Ou, and Wang (2012) further illustrated how reducing viewers’ processing effort through inferential processes can enhance the

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understanding of English cultural references using relevance theory's cognitive and communicative principles.

Relevance theory provides a framework for understanding how translators manage the complexities of cultural and linguistic differences, ensuring that humour and other elements are effectively communicated across languages (Albir *et al.*, 2015). This approach not only preserves the intended effects of the original content but also enhances the viewing experience for diverse audiences.

The application of relevance theory in subtitle translation involves intricate inferential processes, requiring translators to anticipate how target audiences will interpret cultural references and humour. By focusing on the inferential similarities between ST and TT, translators can create subtitles that reflect the original intent while engaging the target audience effectively. This strategy ensures that the humour or cultural references in the subtitled content maintain their intended effect, fostering a balance between cognitive effort and viewer enjoyment.

Relevance theory allows for the examination of the translation of humour and cultural references, particularly in films and TV comedies. This theoretical framework provides insights that help translators navigate the intricacies of subtitling, balancing fidelity to the source material with ensuring comprehensibility for the target audience. It highlights the importance of cognitive strategies in translation, emphasising the translator's role in fostering cross-cultural dialogue and comprehension through meticulous subtitling.

Additionally, relevance theory addresses the challenges of humour translation across various media. By focusing on the cognitive mechanisms underlying humour interpretation, relevance theory offers strategies for achieving translation outcomes that resonate across diverse cultural landscapes. This underscores the critical role of contextuality, cognitive engagement, and judicious translation

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methodologies in maintaining the original humour's integrity while seamlessly integrating it into different target cultures.

In essence, relevance theory offers a comprehensive and insightful framework crucial for both practical translation and academic exploration. Through the interplay between cognitive dynamics and communication efficacy, relevance theory provides valuable perspectives on the challenges of translating humour, subtitling, and other content types. As translation studies progress alongside the evolving global communication landscape, relevance theory's principles can ensure that translation practices navigate the complexities of linguistic and cultural convergence effectively.

However, Braun (2016) and Bogucki (2020) highlight that much of the existing research on relevance theory in AVT remains preliminary, relying heavily on exploratory and case-specific studies. Such reliance limits the generalisability and practical application of the findings, creating a research gap in the systematic application of relevance theory to subtitle translation. Current research often falls short of offering empirically backed strategies that can be applied across different cultural and linguistic contexts. Therefore, further studies are necessary to refine subtitle translation practices, ensuring they cater to the cognitive and cultural needs of diverse viewers. This study aims to address these gaps by providing a more systematic and comprehensive analysis of how relevance theory can be applied to improve subtitle translation, enhancing the viewing experience for varied audiences.

In the following chapter 4, research questions are introduced and designed to offer new insights into effective translation strategies grounded in relevance theory.

Chapter 4

Methodological Considerations and Research Design

4.1 Introduction

This chapter delves into methodological considerations, introduces the research questions and describes the mixed-methods approach adopted in this research. In recent years, mixed-methods research has been regarded as a holistic and appropriate approach to elicit both quantitative and qualitative data (Dawadi, Shrestha and Giri, 2021). With the focus on TS, most previous contributions of research on AVT have highlighted the need for further development of multi- or interdisciplinary approaches to AVT (Di Giovanni, Orero, and Agost, 2012). Approaches from fields such as psychology and computer science have significantly advanced AVT and MA studies, helping to bring them closer to maturity. In this chapter, a mixed-methods approach is proposed, combining quantitative (eye-tracking technology and questionnaires) and qualitative (interviews) methods. This methodology emphasises quantitative data and follows a sequential design, with quantitative data collected and analysed first, followed by qualitative interviews for deeper insights.

In terms of methodological approaches, a variety of methods have been incorporated in AVT studies. Surveys, utilising questionnaires as instruments, have been administered at specific screenings or delivered online for quite some time. The sharing of results through published research has progressively led to more sophisticated experiments over the years. For example, the study by Szarkowska and Jankowska (2015) on audio describing foreign films involved post-

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screening discussions and questionnaires with visually impaired viewers to gather qualitative data on their experiences and preferences. The use of such method underscores the importance of understanding viewer engagement and improving AVT practices. Eye-tracking devices are also effective in monitoring the eye movements of readers/viewers during their subtitle reading or video viewing process (e.g., Fox, 2016; Szarkowska and Gerber-Morón, 2018). Their use has generated multiple conclusions relevant to subtitling speed (e.g., Szarkowska and Gerber-Morón, 2018), SDH communities (e.g., Iriarte, 2017), and subtitling conventions (e.g., Lång *et al.*, 2013). Kruger (2012) provided an extensive overview of the application of eye-tracking technology in AVT research, discussing its advantages in studying viewer behaviour and cognitive processing during subtitle consumption. Kruger *et al.* (2015) further elaborated on these methodologies, highlighting their potential in refining subtitling practices to enhance viewer comprehension and enjoyment. Di Giovanni (2020) also offered a comprehensive review of reception research in AVT, addressing the integration of traditional methods like questionnaires with advanced techniques such as eye tracking to capture a more holistic understanding of viewer interaction with subtitles. These contributions underline the evolving sophistication of methodological approaches in AVT studies, emphasising the critical role of empirical data in informing subtitling practices.

In this research, eye-trackers, questionnaires, and interviews are employed to gather diverse types of data regarding the reception of humour among viewers, channelled through subtitles and different types of headnotes. This methodological approach aims to measure the impact of additional subtitling practices on humour reception, ultimately leading to subtitles that better align with viewers' preferences. Comprehensive triangulation of data allows for a more extensive investigation of the phenomenon of AVT (Orero, *et al.*, 2018). A preliminary experiment conducted by Fryer (2013) used eye-tracking technology in combination with self-reporting instruments to examine audience reactions to different types of audio descriptions in clips designed to elicit three specific emotions. The significance of triangulation has been repeatedly emphasised in previous research, as corroborating results through multiple methods ensures greater rigour (Hansen, 2010). Specifically,

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Kruger and Doherty (2018) analysed the triangulation of online and offline measures of processing and reception in AVT, concluding that this approach enhances the validity of results in tightly controlled experimental research.

In this chapter, research questions and methodology are outlined. Section 4.2 introduces the research questions and the within-subject mixed methods design while Section 4.3 discusses different measures of humour and the chosen research materials, providing foundational context. Section 4.4 covers the creation of personas based on Cultural Intelligence Scales (CQS) and Big Five Personality Inventory Metrics (BFI-S), along with the construction and translation strategies for PHNs. Next, the chapter lists three methods employed. Section 4.5 details the use of eye-tracking, including AOIs and fixation durations. Section 4.6 describes the pre-task and post-task questionnaires, including the use of Likert scales, and Section 4.7 explains the rationale behind semi-structured interviews. Finally, Section 4.8 summarises the methodological approaches and their importance in ensuring the reliability and validity of the research findings.

4.2 Research questions and research design

As this study examines the impact of different subtitling conditions on audience reception of humour in subtitled comedies, the primary research question (RQ) and hypothesis are outlined as follows:

Main research question: What is the impact of personalised headnotes (PHNs) on the audience reception of humour in subtitled comedies?

Main hypothesis: PHNs have a positive impact on the audience reception of humour in subtitled comedies, compared with the absence of them.

To explore this, the main RQ is divided into two aspects: appreciation and comprehension of humour. This investigation includes measuring humour appreciation and comprehension, as detailed in §4.3. Humour is assessed using two measures: observed mirth and a scene comprehension test. This leads to the following research questions and hypotheses:

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RQ1: Is the appreciation of humour affected by the use of PHNs?

RQ2: Is the comprehension of humour affected by the use of PHNs?

Hypothesis 1: The level of appreciation in humour is higher with the use of PHNs than subtitles only.

Hypothesis 2: The level of comprehension in humour is higher with PHNs than with subtitles only.

Next, two types of personas are identified as described in §4.4, with the distinguishing feature being the difference in scores across two metrics (CQS and BFI-S). The CQS (detailed in Section 4.4.2) measures cultural adaptability across four dimensions, while the BFI-S (see Section 4.4.3) assesses personality traits that can influence how individuals engage in multicultural settings. Previous research indicates that individuals with higher scores in both metrics tend to perform better in multicultural settings, revealing an inherent correlation between these metrics (Ang, Van Dyne and Koh, 2006).

To investigate the impact of PHNs, this research focuses on two key audience characteristics: cultural intelligence and personality traits. With these personas in place, two versions of PHNs are constructed and compared against an additional condition where no PHNs are provided, featuring only subtitles at the bottom of the screen (SBS). These three conditions are designed to explore the correlation between participants' scores on cultural intelligence and personality traits tests and the PHN strategy used. From this, the following question and hypotheses can be inferred:

RQ3: Is there a correlation between participant's scores in CQS and BFI-S and their preference for specific PHNs?

Hypothesis 3: Participants with low scores in the CQS and BFI-S scales think the clips with PHN1 strategy are funnier compared to the PHN2 strategy and SBS only.

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Hypothesis 4: Participants with low scores in the CQS and BFI-S scales can better understand the cultural references in the clips with PHN1 strategy, compared to the PHN2 strategy and SBS only.

To address research questions and hypotheses, a mixed-method design is appropriate. First, an eye-tracking device was used to record participants' responses to humour, subtitles, and PHNs, while also monitoring their facial expressions. Additionally, it was necessary to document participants' scores on CQS and BFI-S, and to measure their comprehension of the humour and scenes. This involved administering pre-task questionnaires to select participants fitting Persona 1 and Persona 2 categories, and post-task questionnaires to gather participants' perceptions after viewing each clip. Lastly, semi-structured interviews were conducted to explore participants' opinions regarding headnotes in a more open format, and to crosscheck the answers provided in their post-task questionnaires for data triangulation.

4.2.1 Research design

Before participant recruitment for the main experiment, two personas were created based on CQS and BFI-S scores. PHNs were prepared with different translation strategies (domestication and foreignisation, see Section 4.4.4.1) to assess their impact (if any) on humour appreciation and comprehension.

To recruit participants fitting the study criteria, an online CQS and BFI-S questionnaire was targeted at specific groups that matched the intended research demographics. This included adult native English speakers (at least 18 years old) with normal or corrected vision. The questionnaire aimed to gather a wide range of responses to capture a diverse sample representing different levels of cultural intelligence and personality traits, which were critical for creating the personas used in the experiment.

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The questionnaire was initially distributed through the researcher's professional and social networks to identify potential participants who could then recommend the survey to others, a method known as snowball sampling. Additionally, to reach a broader audience and increase diversity in responses, flyers and posters promoting the questionnaire were strategically placed across the Dublin City University (DCU) campus, particularly in areas frequented by students and staff likely to fit the study's inclusion criteria.

Following previously established practices in eye-tracking research (e.g., Orero and Vilaró, 2012), all the recruited participants had normal to corrected vision to avoid distorted data or difficulties in calibration. In this research, participants were asked to wear none or minimum eye make-up, and for participants with vision problems such as short-sightedness, they were asked to wear glasses or contact lenses as they normally do in everyday life. The way in which the sample was built could be regarded as a form of “purposive sampling” (Saldanha and O’Brien, 2014, p. 34) and a strong effort was made to build a varied sample. Participants were recruited from the researcher’s network, who then recommended the survey to others (snowball sampling). Participants were purposively sampled based on their CQS and BFI-S scores to align with the hypotheses, forming two groups corresponding to the two personas. The final sample comprised a varied demographic, reflecting different cultural intelligence levels and personality profiles. All participants consented to the study and received a 20-euro voucher for their participation. Ethics approval was obtained from the DCU Research Ethics Committee. Detailed informed consent forms, plain language statements, and ethical approval letter are provided in Appendices E, F, J.

Participants who qualified based on their questionnaire scores were invited to the main experiment. To eliminate order effects, the viewing order was randomised for each participant (Mellinger and Hanson, 2017). Participants watched three video clips under three conditions: (1) SBS only, (2) SBS+PHN1, and (3) SBS+PHN2. During viewing, eye movements and facial expressions were recorded using a Tobii T60XL eye tracker and Tobii Pro Lab software. After each clip, participants

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completed a questionnaire on humour reception, scene comprehension, and PHNs (see §4.6 for the questionnaire). They also rated the audiovisual material using an attitude test adapted from the SHQ questionnaire (Svebak, 1996) with a five-point Likert scale (see §4.6). In the final phase, semi-structured interviews elicited opinions on headnotes. The entire experiment lasted approximately one hour per participant, including a 2-minute greetings and eye-tracker calibration period before each the start, 30 minutes of video viewing, 10 minutes for questionnaire completion, and a 10-minute post-viewing interview. An overview of the experiment procedure is detailed in Table 4.1.

Table 4.1: Experiment procedure

Step 1	Create 2 personas based on CQS and BFI-S	Pre-experiment	
Step 2	Generate 2 PHNs for 2 personas		
Step 3	Distribution of online questionnaires: CQS and BFI-S		
Step 4	Invite participants with higher and lower scores		
Step 5/7/9	Watch clip 1/2/3 in a random order with one of each condition applied randomly	Main experiment: eye-tracker monitored	three conditions: SBS SBS+PHN1 SBS+PHN2
Step 6/8/10	Answer post-task questionnaires 1/2/3		
Step 11	Semi-structured interview		

4.2.2 Research design of within-subject and mixed methods

This research utilised three subtitling conditions, combining SBS and/or PHNs, and analysed the data to compare the reception of humour among participants. A within-subject design was selected to test participants under various conditions, minimising personal variability and reducing sample size, thereby enhancing validity and reliability (Mellinger and Hanson, 2017; Van Hoecke, Schrijver, and Robert, 2022). This approach allows researchers to achieve robust results with a smaller participant pool, ensuring consistency and accuracy in experimental AVT research. This approach aligns with the notion of personalisation, assuming different personas have distinct needs.

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However, as distinguished in Mellinger and Hanson (2017), within-subject designs have drawbacks like fatigue, order effects, and carryover effects. To mitigate these, the order of clips was randomised for each participant, ensuring that no two participants viewed the clips in the same sequence in the same condition (see Table 6.6). Additionally, participants were tested individually, with each session conducted one-on-one, allowing for more controlled conditions and reducing potential distractions or external influences. Post-viewing questionnaires were administered immediately to assess scene and subtitle comprehension, helping to capture participants' immediate responses and minimise memory-related biases. To further reduce the risk of fatigue, the text was kept under 300 words (O'Brien, 2009). Despite these precautions, a pilot study was conducted to identify and address potential issues, ensuring a reliable experimental process. Based on the results from the pilot study, several modifications were made to improve the process and data collection in the main experiment (see section 5.5 for details).

This research employs a within-subject design integrating eye tracking, questionnaires, and semi-structured interviews. The research questions drive the choice of methods, adhering to the pragmatic principle: select methods that best answer the research question (Johnson and Onwuegbuzie, 2004). While some argue for an interactive relationship between methods and questions (Mertens *et al.*, 2016), this study anticipates that the combination of quantitative and qualitative approaches would produce a variety of data types that will help to examine the phenomena being researched in more depth, hence, mixed-methods strategy is chosen. With the help of the eye-tracking device and questionnaires, quantitative data on the reading of translated SBS and PHNs can be elicited while with the interviews as a supplementary tool, qualitative data regarding viewers' perception and specific reasons behind their answers can be sought.

Examples of using mixed methods in research can be found abundantly in AVT studies. Orrego-Carmona (2015) explored audience reception of professional and non-professional subtitles by triangulating data from eye-tracking, questionnaires, and semi-structured interviews. Szarkowska *et al.* (2016) used eye trackers and

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comprehension tests in questionnaires to examine the reading patterns of deaf, hard of hearing, and hearing viewers watching intra- and interlingual subtitles. Szarkowska and Gerber-Morón (2018) combined eye tracking, questionnaires, and interviews to investigate the effects of different subtitle speeds on participants. Similarly, Hu (2020) employed a mixed methods approach, including eye-tracking and questionnaires, to assess the impact of machine-translated subtitles on Chinese viewers.

Mixed methods also enrich understanding through insights that a single method design cannot achieve (Meister, 2018). Using different methods for data collection and comparison is known as triangulation. According to Williams and Chesterman (2002, p. 63), triangulation employs “multiple sources that may all illuminate one another”. It is a primary justification for combining several approaches in TS, described as “the backbone of solid, high-quality research” by Saldanha and O’Brien (2014, p. 5). They claim that “when two methods are used to collect and analyse data on the same research question, this is called **triangulation**, which means cross-checking the results one set of data provides with results from another set of data” (ibid., p. 23, original emphasis).

In this research, data from eye-tracking was gathered to analyse participants’ behaviour using statistical testing, enhancing objectivity and reliability. Questionnaire data revealed participant characteristics and subjective opinions, allowing identification of connections between eye movement data and perceptions of subtitles. Data from the online questionnaire regarding participants’ characteristics of CQS and BFI-S and questionnaires on PHNs were central to answering research questions (see §4.2). Finally, interviews provided more subjective and insightful opinions from participants about subtitles and PHNs.

4.3 Measurements of humour

With the specific research design in place, it is necessary to dismantle each element within it to provide a comprehensive perspective and to clarify the selection of research materials.

Humour manifests in various forms, according to Martin (2007) and Zabalbeascoa (2020), humour should be viewed from the stance of the recipients regarding their varied reactions. Gavanski (1986) identified that enjoyment of humour primarily connects with emotional responses, while assessments of funniness tend to align more with cognitive processes. Building on this, this research categorises the reception of humour into two distinct facets:

- 1) Humour **appreciation**, which encompasses observable responses like laughter and facial expressions, collectively referred to as “mirth”. Mirth, in this context, encompasses a range of expressions from a faint smile to a broader smile, escalating to audible chuckling and even laughter as the emotional intensity increases (Martin, 2017, p. 155).
- 2) Humour **comprehension**, which involves the cognitive evaluation of humour’s understandability.

Martin (2007) described humour as a “multifaceted” phenomenon, intricately linked to the positive emotion of amusement or mirth and characterised by the distinct behaviour of laughter. He further clarifies that humour involves a cognitive process that deems a stimulus amusing, potentially leading to laughter. Despite the apparent association between humour and laughter, the relationship between outward emotional expressions and the experienced level of humour remains ambiguous, with challenges in measuring the emotional dimensions of humour such as mirth (Warren and McGraw, 2016). This underscores the complexity of defining and quantifying the emotional components associated with humour. Thus, although it is complex to define humour through expressions, both Martin (2007, 2017) and Gavanski (1986) acknowledged that humour involves both emotional responses and cognitive evaluations. This research adopts Martin’s (2007)

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approach, considering humour as a multifaceted phenomenon and using expressions of mirth as indicators of humour appreciation.

Integrating these perspectives, this research highlights the dual nature of humour reception: humour appreciation, marked by visible emotional reactions, and humour comprehension, rooted in cognitive processes. This dual framework underscores the complexity of defining and quantifying humour's emotional and cognitive components, highlighting the intertwined yet distinct pathways through which humour is processed and expressed. However, as Zabalbeascoa (1997) suggested, translating humour requires an intricate balance, emphasising the necessity of prioritisation and creative flexibility to preserve narrative cohesion and the intended comedic effect within the constraints of subtitling.

In this section, we discuss how that humour reception is operationalised in the study design and methodological approach. This thesis adopts the point of view that humour should be measured from perspectives of humour appreciation and humour comprehension as detailed in the following section, using mixed methods in monitoring participants' facial expressions, opinions, and their ratings on the funniness and understanding of the video clips.

4.3.1 Humour appreciation: mirth

In everyday life, laughter is a common response to humorous situations. Martin (2007) defines humour broadly as anything that tends to make people laugh. However, laughter is not the sole reaction people exhibit to express amusement. Other behaviours in humorous contexts may include clapping, tapping on the lap, or trembling with laughter, and sometimes, there may be no overt reaction at all. Attardo (2020, p. 44) noted that while uproarious genuine laughter is a clear indicator of humour, the claim that laughter is the most common indicator is incorrect: smiling is probably more frequent. Ruch (2008, p. 21) also highlighted that in experimental settings, smiling is the most typical response to humour.

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Martin (2007) mentioned that different scholars use various terms to describe laughter, choosing “mirth” to capture its emotional nature and its association with humour and laughter, including smiling (ibid., p. 155). Attardo (2020) described humour as a cognitive process occurring in the brain. The emotion felt when experiencing and appreciating humour is termed mirth or exhilaration (Ruch, 1992; Martin, 2007). However, laughter is not always linked to positive feelings; it can also express fear or nervousness or embarrassment in certain social contexts or cultural artifacts (Nikopoulos, 2017; Caron, 2020).

The various uses of laughter in unusual contexts are beyond the scope of this discussion, with detailed distinctions found in Attardo’s (2020) work. This research uses “mirth” as a general term for measuring humour appreciation, encompassing laughter, smiles, and other facial expressions, as well as the different functions of laughter in specific situations (Martin, 2007, p. 155). Thus, mirth is employed here as an umbrella term that includes bursts of laughter, silent smiles, broader smiles, and other facial expressions indicating emotional reactions to humorous situations.

Using an eye tracker with a built-in camera, this research recorded and generalised different facial expressions as observed mirth. The focus is primarily on facial expressions, particularly smiles and laughter, as indicators of humour appreciation. This emphasis on facial expressions, rather than other bodily actions such as clapping or tapping, is due to the methodological limitations of the eye tracker, which is designed to capture the face area of participants only. Consequently, while eye movements and facial expressions, including smiles and laughter, were recorded and analysed, capturing body movements that occur outside the camera’s scope is not feasible. For data protection purposes, face screenshots were not displayed in the thesis.

4.3.2 Humour comprehension: questionnaires

Besides the enjoyment of humour, another essential factor in humour measurement is humour comprehension, that is, the cognitive understanding of

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the received humour. This research focuses on exploring participants' understanding of the humorous elements under three subtitling conditions (SBS only, SBS+PHN1, and SBS+PHN2).

Researchers have developed several types of questionnaires to measure various aspects of humour. For instance, Svebak (1974) introduced the Sense of Humour Questionnaire (SHQ), which diverged from traditional questionnaires that ask participants to rate the funniness of jokes or cartoons. Instead, Svebak proposed a three-dimensional construct encompassing cognitive, social, and expressive/emotional dimensions of humour, assessed through self-reports of participants' everyday behaviour rather than specific humorous content. His subsequent revisions to the SHQ aimed to better assess the extent of a playful humorous attitude in daily life, as well as the habitual tendency of individuals to express or suppress feelings of mirth and joy (Svebak, 2010, p. 293). The SHQ includes self-report items reflecting everyday behaviours and attitudes related to humour, focusing on participants' habitual use and expression of humour, their enjoyment of humorous interactions, and their ability to perceive humour in various situations. Example items might include "I can see humour in everyday situations that others might not find funny" (cognitive dimension), "I enjoy making others laugh and often use humour in conversations" (social dimension), and "I often laugh out loud when I find something funny" (expressive/emotional dimension).

In addition to the SHQ, other humour assessment tools such as the Situational Humour Response Questionnaire (SHRQ) and the Sense of Humour Scale (SHS) have been widely used in humour research. The SHRQ, developed by Martin and Lefcourt (1984), focuses on assessing participants' tendency to respond with humour to everyday situations, thus measuring how humour is applied in real-life contexts. It includes items like "If I'm feeling low, I often make jokes to cheer myself up". The SHS, developed by Thorson and Powell (1993), measures individuals' overall sense of humour across cognitive, emotional, and behavioural

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dimensions, with items such as “I enjoy watching comedy shows on TV” and “I can laugh at myself when I make a mistake”.

While these scales provide valuable insights, they were not directly adopted in this study for several reasons. First, the SHRQ primarily measures how individuals use humour in spontaneous, everyday situations, making it less suited to the context of structured audiovisual subtitling where participants engage with pre-designed humorous content rather than responding to real-life situations. Similarly, the SHS focuses on broad, trait-level assessments of humour across various contexts, rather than the specific cognitive and emotional engagement required when processing humour in subtitled videos. Although these scales offer a comprehensive view of humour as a personality trait or a habitual response, the specific goal of this research was to evaluate humour comprehension and enjoyment within a controlled subtitling environment, which calls for more targeted questions.

Drawing inspiration from the comprehensive approach of SHQ, SHRQ, and SHS, this research designed a post-task questionnaire to investigate participants’ sense of humour while watching subtitled videos, aiming to measure their levels of understanding and enjoyment of the humour within the videos. Although none of these scales was adopted directly, their holistic consideration of humour’s cognitive and emotional aspects informed the development of the questionnaire. Specifically, this post-task questionnaire consists of four questions relevant to the shown clips and ten questions regarding attitudes towards subtitles and PHNs.

For instance, the attitude test includes questions such as:

S6. I think this video is funny. (Assessing overall enjoyment, similar to SHQ and SHS social and emotional dimensions)

S7. I had enough time to read both the subtitles and the headnotes. (Evaluating the cognitive processing of subtitled information)

S8. I think the headnotes are easy to understand. (Measuring cognitive comprehension, related to the SHQ’s cognitive dimension)

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S9. Compared to standard videos with subtitles only, I think the video with the headnotes is funnier. (Assessing comparative enjoyment and cognitive engagement)

S10. I think the headnotes help me in better understanding the humour in the video. (Evaluating the cognitive support provided by headnotes)

S11. I think the headnotes help me in better understanding the cultural references in the video. (Similar to SHQ's cognitive dimension, focusing on cultural comprehension)

The answers to these questions are provided through five-point Likert scales, and the total score indicates the participant's understanding of the humour from the clips. Detailed versions of these post-task questionnaires for three clips under three subtitling conditions are listed in appendices B1-B3.

In summary, the questionnaire design draws on the established humour measurement tools SHQ, SHRQ, and SHS to guide the design of the questionnaire, while tailoring the approach to fit the specific context of subtitled videos. This approach ensures the accurate measurement of humour comprehension and enjoyment in this setting, allowing for a deeper understanding of participants' cognitive and emotional engagement with the subtitled content.

4.3.3 Research materials

For the experiment, three clips¹ were selected from the popular Chinese TV show "Super Sketch Show". Produced by iQIYI and MEWE (media companies in China), this show addresses societal issues like housing problems while maintaining artistic value (Hu and Hu, 2022). Across 12 episodes, actors and comedians are divided into three teams, competing through various themed sketch shows to be voted as the best team. Each episode has sparked nationwide discussions, making

¹The link to the clips used in this research:
https://drive.google.com/drive/folders/1J2dOdZqRKmaZUYJSCqXAdQCqzSXEgNdh?usp=drive_link

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comedians and their performances trending topics on Chinese social media. The show's popularity has introduced a new comedic genre to audiences and showcased advanced comedy writing in China (Zheng, 2022). Specifically, the following three clips were selected because they were each around 10 minutes long, minimising participant fatigue. These clips contained key research elements—humour and cultural references—that are central to the research objectives. The use of these clips allows for an in-depth examination of how cultural items and humour intersect, and how they contribute to audience engagement and comprehension. For all three clips, the translation of subtitles and headnotes was conducted by the researcher, as detailed in Appendix D. These translations were proofread by both a native Chinese-speaking translator and a native English-speaking proofreader to ensure high translation quality. Additionally, the subtitles, headnotes, and videos were created and edited by the researcher using the software Aegisub.

The first clip used in the experiment, Clip 1 (Are You Asleep), humorously depicts how nighttime is consumed by various distractions such as online videos, eating food, and spiralling thoughts. The narrative follows personified characters like Brain, Liver, and Eyes as they struggle to stay focused amidst digital interruptions, making it difficult to fall asleep. Eventually, they stay up all night only to realise the next day is a holiday. This script highlights the modern challenge of balancing work and leisure in the digital age.

Clip 2 (Dramatic GPS) is a comedic sketch centred on playful navigation voice prompts. Actors deliver humorous dialogues while impersonating various characters like Guanyin Buddha, the Landlady, and Ziwei from famous Chinese movies and TV shows. Through voice and bodily gestures, they enhance the comedic effect. The sketch concludes with the driver failing to reach his intended destination, ultimately surrendering to the GPS due to its overly dramatic guidance.

Clip 3 (Time flies) humorously explores how young people waste their time through various digital distractions, resulting in procrastination and lack of productivity. The protagonist tries to work but is constantly sidetracked by Chinese social media

platforms, WeChat, Weibo, and TikTok. Despite their intentions to stay focused, they end up spending the night checking notifications and watching videos, realising that their time has slipped away, and they have missed the submission deadline for work. The sketch ends with a comical yet poignant reflection on where all their time has gone.

All three clips contain abundant humorous elements derived from linguistic and bodily expressions, as well as cultural references specific to Chinese culture, which pose some challenges for translation into English. These clips were carefully selected to test viewers' reactions to humour and cultural references that are culturally distant. The use of PHNs aims to assess whether they can help viewers better understand and appreciate the humour and cultural references present in the clips.

4.4 Personas and PHNs

As discussed in section 2.2.2.2, the concept of personas has been widely applied in several fields, including HCI and the development of TEnTs. In product design and marketing, personas, also known as user archetypes, are used to represent key user characteristics and behaviours. These personas help designers and marketers understand and empathise with their target audience, allowing them to create more user-centred products and services. By personifying crucial user attributes, personas facilitate a more focused and effective approach to design and communication strategies.

Following works on personalisation in related studies, the researcher created two ad hoc personas based on the assumed scores of two questionnaires: the Cultural Intelligence Scales (CQS) and the Big Five Personality Inventory (BFI-S) (see §4.4.2 and §4.4.3 for details). The use of assumed scores is intended to simulate a contrast between these personas before participant recruitment. These two different personas represent English-speaking target audience members with relatively low and high scores in both questionnaires. They serve as proxies for a

larger population of participants in the main experiment and are essential for building PHNs. With a lower score achieved from answering questionnaires, Persona 1 is regarded as a participant whose score indicates low adaptability in a multi-cultural context and thus requires an “equivalence”² of Western cultural references in watching Chinese comedies. On the other hand, Persona 2 with a high score indicating high adaptability to other cultures can understand the cultural reference with explanations more authentic and similar to the original culture. This demonstrates that the main distinction in strategies for generating PHNs lies in the level of cultural adaptation required by personas, based on their assumed adaptability scores. Therefore, it is important to clarify the concepts of cultural references, as discussed in the section below. For detailed translation strategies on creating PHNs, refer to Section 4.4.4.1.

4.4.1 Cultural references

As explained in §2.3.2, “headnotes” are commonly used among fansubbers to explain the cultural references embedded in genres such as comedies by adding notes at the top of the screen in addition to the standard subtitles at the bottom. Headnotes assume that viewers lack prior knowledge of the intended humour and cultural references.

Addressing the need to bridge cultural gaps in translation, it is crucial to explore strategies for effectively conveying cultural references to different audiences. Building on the concept of creative subtitling (see §2.3.1) to cater to audience needs, it is essential to consider the challenges involved in translating cultural references. According to González-Davies and Scott-Tennett, a cultural reference is defined as:

[a]ny kind of expression (textual, verbal, non-verbal or audiovisual) denoting any material, ecological, social, religious, linguistic or emotional manifestation that can be attributed to a particular community (geographic,

² The word “equivalence” is used here to refer to the English translation from the Chinese phrases with specific references regarding culture and humour, but the translation process and adoption of personalised headnotes still follow the theoretical framework of relevance theory, as discussed in Chapter 3.

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socio-economic, professional, linguistic, religious, bilingual, etc.) and would be admitted as a trait of that community by those who consider themselves to be members of it. Such an expression may, on occasions, create a comprehension or a translation problem (2005, p. 166).

As cultural references can pose significant challenges in translation, several strategies have been proposed as solutions, including lexical recreation, generalisation, domestication and foreignisation. For instance, Pérez and Javier (2017) applied relevance theory to analyse subtitles in the American TV series “Modern Family”. Their study demonstrates the necessity of strategic choices to maintain humour and relevance when translating cultural references. Similarly, Díaz Cintas and Remael (2007/2014) suggested that conveying cultural elements in subtitles poses inherent challenges due to potential disparities in cultural equivalence, necessitating creative translational strategies to bridge such gaps effectively and maintain the intended humour.

From the perspective of relevance theory, as mentioned in Chapter 3, the use of headnotes aims to help achieve optimal relevance by bridging the gap between viewers’ existing knowledge and the new information presented, thus providing necessary contextual assumptions. Relevance theory posits that communication achieves relevance when it balances cognitive effort with cognitive effects. In this study, PHNs are constructed to achieve this balance using two distinct translation strategies: PHN1 employs a domestication strategy, providing specific and familiar contextual information that makes Chinese cultural references more accessible to less culturally adaptable viewers. In contrast, PHN2 uses a foreignisation approach, offering explanations that retain the original cultural elements, making them more similar to the source culture and language, which aids viewers with higher cultural adaptability in understanding the meaning of Chinese phrases. In short, PHN1 are constructed to be more adapted, familiarised, and localised while PHN2 more authentic and retains the original Chinese flavour.

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By providing tailored explanations, PHNs help enhance the relevance of subtitled content, making it more accessible and comprehensible. This approach aligns with relevance theory's emphasis on balancing processing effort with cognitive effects, ensuring that humour and cultural references are effectively communicated across languages. This approach not only improves accessibility but also enriches the overall viewing experience by deepening the understanding of cultural references and humour.

For example, as shown in Figure 4.1 and Figure 4.2, relevance is achieved with the help from information provided through different explanations of the intended cultural reference in a selected clip with PHNs. To explain the meaning of the word "81" from the subtitles, PHN1 provides extra information through a Western cultural reference ("meaning jumping through hoops"), while PHN2 explains it as "meaning significant difficulties, as 81 is a sacred number in Buddhism", illustrating the concept of overcoming challenges. The English phrase "jumping through hoops" means to "make someone undergo (or be made to undergo) a difficult and gruelling test or series of tests" (The Oxford Dictionary of Idioms, 2020). In this clip, the scene reflects the difficulties the driver faces using the navigation GPS. By implicitly referring to this English idiom, PHN1 vividly describes such a painstaking process in the scene.

Figure 4.1: PHN1 with an adapted English cultural reference to ST



Figure 4.2: PHN2 with an explanation similar to ST



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Another concept similar to PHNs is “personalised” or “adaptive subtitles”, which can be used to describe various non-standard subtitling practices that go beyond conventional subtitles. This includes subtitles that provide additional information, such as explanations of cultural references or definitions of terms, and allow for user interaction or technical customisation. For example, personalised or adaptive subtitles offer viewers the ability to adjust subtitle settings such as text size, font, and timing to suit their preferences (Hughes *et al.*, 2015; Gorman, Crabb, and Armstrong, 2021). These features are particularly beneficial for viewers with specific accessibility needs, as they enable customisation of the viewing experience.

In contrast, PHNs in this research focus on personalising the translated text content rather than technical aspects. These headnotes, created by the researcher, are integrated as static annotations tailored to different audiences based on personality traits and cultural adaptability. PHNs provide context-sensitive explanations of cultural and humorous references, translated from Chinese into English, and are displayed at the top of the screen to enhance comprehension.

While personalised or adaptive subtitles prioritise user-controlled adjustments to technical features (Hughes *et al.*, 2015), PHNs are more centred on content personalisation, offering tailored annotations to meet the specific characteristics and needs of the audience. Both approaches aim to improve the viewing experience but differ fundamentally in their focus: the former enhances accessibility through technical adaptability, while the latter enriches the audience’s understanding of cultural and humorous content.

Following this, the next section discusses the construction of personas based on cultural intelligence and personality traits, which helps identify potential correlations between participants' opinions of PHNs and their inherent characteristics.

4.4.2 Cultural Intelligence Scales (CQS)

The concept of cultural intelligence (CQ), developed by Earley and Ang (2003), is rooted in modern theories of intelligence (Sternberg, 1986). CQ is defined as an individual's capability to function and manage effectively in culturally diverse settings. This multidimensional construct includes four components: metacognitive, cognitive, motivational, and behavioural (Ang *et al.*, 2007; Ang and Van Dyne, 2008).

The Cultural Intelligence Scale (CQS), a 20-item self-report measure developed by Ang *et al.* (2007), thus assesses CQ across these four components. Metacognitive CQ, or strategy, involves planning and awareness in cross-cultural interactions. Cognitive CQ refers to knowledge of cultural norms and differences, gained through education or experience. Motivational CQ measures the interest and effort in adapting to diverse cultures. Behavioural CQ is the ability to adjust verbal and nonverbal communication to fit different cultural contexts. By understanding these components, personalised approaches can be developed to tailor intercultural interactions more effectively. Based on this, people with higher levels of CQ across all four dimensions are expected to be better able to communicate effectively and can more readily associate information from many cultures.

CQ has been widely applied in teaching and training, validated across various contexts (Leung, Ang and Tan, 2014). Early publications on intercultural training primarily focus on preparing individuals for living and working abroad, highlighting the importance of cultural awareness and flexibility. Using CQS, as highlighted in Leung and colleagues (*ibid.*), several individual developments in culturally diverse contexts can be predicted, including psychological outcomes such as intercultural adjustment, behavioural outcomes such as idea sharing and development of social networks with culturally different others, and performance outcomes such as task performance and cross-border leadership effectiveness.

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In the context of this study, the concept of personalisation is crucial to tailoring PHNs to the audience's CQ. By assessing participants' CQ using the CQS, it is possible to personalise the PHNs based on their cultural adaptability. This approach ensures that the subtitled content is more accessible and engaging for viewers with varying levels of cultural intelligence. Individuals with higher scores on CQS tend to show more cultural adaptability than those with lower scores since they identify with someone more “conscious of the cultural knowledge I apply to cross-cultural interactions” (an element from CQS). For instance, viewers with low CQ scores may require more specifically localised cultural explanations in the PHNs, while those with high CQ scores can benefit from more authentic and original references that leverage their existing cultural knowledge. Thus, the use of CQ in this study (see Appendix A: Q9-Q28) allows for a personalised subtitling experience that enhances comprehension and enjoyment across a diverse audience.

While CQ emphasises direct elements of thinking, feeling, and behaving in cross-cultural contexts, other approaches focus on distant correlates of intercultural competence. Research, including Wilson, Ward and Fischer (2013), has explored personality traits associated with intercultural competence, finding that traits such as neuroticism, openness, and extraversion significantly impact intercultural abilities. Ang and Van Dyne (2008) noted that all CQ dimensions positively correlate with openness to experience. Harari *et al.* (2018) identified predictors of expatriate adjustment, including extraversion, emotional stability, and open-mindedness. These findings underscore the value of personalising intercultural training by incorporating broader personality traits to enhance cultural competence. Therefore, the correlation between cultural competence and aspects of the Big Five personality traits justifies the need to incorporate both approaches in this research.

4.4.3 Big Five Personality Inventory Metrics (BFI-S)

Ang, Van Dyne, and Koh (2006) demonstrated that the four dimensions of CQ are distinct from the Big Five personality traits—openness to experiences, conscientiousness, extroversion, agreeableness, and neuroticism (OCEAN)—but

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they do relate to each other in meaningful ways. Each personality trait is measured on a scale of 1 to 5, totalling between 5 to 25 points (Ang, Van Dyne, and Koh, 2006) (see Appendix A: Q4-Q8). The Big Five traits are stable across cultures and influence personal decisions and actions (McCrae & Costa, 2008; Schmitt *et al.*, 2007), regardless of language differences.

However, these traits can still influence how individuals engage cognitively in multicultural settings. For example, Salgueira *et al.* (2012) found that openness correlates with students' participation in research and intercultural group work, indicating a willingness to learn about other cultures. Conscientious individuals, being responsible and diligent, likely exhibit high cognitive engagement. Extroversion, characterised by friendliness and talkativeness, aids in communication, compensating for limited foreign language skills (Poort, Jansen, and Hofman, 2021). Agreeable individuals demonstrate empathy and support in collaborative settings, while neurotic individuals, marked by emotional instability and anxiety, may avoid stressful intercultural situations (*ibid.*).

Using the relationships between the Big Five personality traits and the four dimensions of CQ, Ang, Van Dyne, and Koh (2006) describe personality as a predictor of CQ. These relationships are: conscientiousness with metacognitive CQ; agreeableness and neuroticism with behavioural CQ; extroversion with cognitive, motivational, and behavioural CQ; and openness with all four factors of CQ.

Thus, individuals with higher scores on both CQS and BFI-S tend to demonstrate better cultural adaptability and extroversion, highlighting their superior ability to navigate multicultural settings effectively. Based on existing research, we expect positive correlations between openness, conscientiousness, extroversion, and agreeableness with CQ and cognitive engagement, while neuroticism likely shows a negative relationship. These correlations, as supported by Harari *et al.* (2018), suggest that higher CQS scores align with greater cultural adaptability.

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Consequently, cultural adaptability becomes crucial in developing personas for PHNs in this research. Personas with lower adaptability scores might need more extensive explanations to understand foreign humour, while those with high scores could grasp such humour more easily. This study employs PHNs tailored to the participant's cultural adaptability, aiming to enhance their comprehension of humour from different cultures.

In this research, two personas were constructed based on the discussed metrics: Persona 1, with low scores on CQS and BFI-S, and Persona 2, with high scores. The CQS assigns scores from 1 to 7 through each component, and the BFI-S scores range from 1 to 5. Additionally, given the negative correlation between neuroticism (from BFI-S) and CQS metrics (Ang, Van Dyne, and Koh, 2006; Wilson *et al.*, 2013), Persona 1 is characterised by a high score on neuroticism, whereas Persona 2 scores low on it.

The hypothesis posits that participants with high CQS and BFI-S scores are better at understanding translated foreign humour in a multicultural context. Conversely, those with low scores, like Persona 1, require culturally tailored explanations to their background. It is anticipated that PHN₁, localised and adapted into English cultural references, may enhance humour reception—including both comprehension and appreciation—for those with low scores. In contrast, PHN₂, offering explanations that retains more authenticity from the original culture, may benefit participants with high scores (Persona 2), who are more culturally adaptable and need less support from headnotes.

4.4.4 Construction of PHNs

This section delves deeper into the methodology and rationale behind the construction of subtitles and particularly PHNs. As explained in Section 2.3.2, fansubbers often include headnotes along with standard subtitles to clarify humorous or cultural references in translated videos. In this research, a total of 11 PHNs across three clips were presented, with subtitles positioned at the bottom of the screen. Initially, the subtitle and PHN guidelines followed Netflix standards,

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but after the pilot study, they were adjusted to align with BBC subtitling standards to improve readability and comprehension (see Section 5.5 for details). Specifically, the display speed for SBS or SBS with PHNs was reduced from Netflix's 20 characters per second (cps) to the BBC-recommended 17 cps, allowing participants more time to process both subtitles and PHNs. The display speed, layout, format, and other adjustments made (as detailed in Section 5.5) were implemented to enhance viewer comprehension during the research experiment.

A total number of 11 PHNs were created in this research, and this decision was made to strike a balance between providing additional cultural context and ensuring a manageable viewing experience for participants. Limiting the number of PHNs helps avoid overwhelming participants with excessive textual elements, thereby maintaining their focus and preventing cognitive overload. By selecting a manageable number of PHNs, the research was able to concentrate on key cultural references and humour that were most relevant and impactful, without diluting the focus by including unnecessary headnotes. This approach also allows for a balanced distribution of attention between the visual content, subtitles, and PHNs, thereby helping participants engage with the material without disrupting the natural flow of the videos.

Moreover, limiting the number of PHNs is crucial for collecting valid eye-tracking data, as a more controlled number of textual elements facilitates accurate tracking of participants' gaze patterns and engagement levels. Excessive text on the screen could lead to more frequent gaze shifts and increase data variability, which would hinder the ability to draw reliable conclusions about attention allocation. The choice of 11 PHNs also aimed to recreate a realistic viewing experience, similar to what viewers might encounter in a typical at-home setting, where subtitles and occasional cultural explanations are included. By doing so, the research sought to emulate a naturalistic environment that aligns with everyday viewing practices.

Persona 1, with low CQS and BFI-S scores, indicates a lower tolerance for unfamiliar cultural references, thus requiring more explicit explanations in PHN1.

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Conversely, Persona 2, being more culturally adaptable, needs less detailed explanations in PHN2. PHN1 provides more adapted, familiarised, and localised cultural explanations to ensure the understanding, while PHN2 offers more authentic explanations, retaining the original Chinese flavour and assuming a high level of cultural familiarity.

The main reason for different strategies in constructing PHNs is to achieve optimal relevance for different audience types. As mentioned in Chapter 3, this research follows relevance theory in translating subtitles and constructing PHNs. Relevance, as defined in Section 3.3, is the balance between cognitive effects and processing effort. An assumption with greater cognitive effects is more relevant, and one requiring less processing effort is also more relevant (Wilson and Sperber, 2004). Optimal relevance is guided by the cognitive principle, an inherent constraint in human cognition. According to relevance theory, the addressee seeks the path of least effort to gain maximum cognitive effects, driven by the presumption of optimal relevance, and stops when the expectations of relevance are satisfied (*ibid.*). This presumption of optimal relevance plays a crucial role in ensuring successful communication, allowing addressees to recognise the speaker's intentions with minimal effort³. Furthermore, the addressee expects that the speech, when coupled with the appropriate context, provides an interpretation that justifies the effort. In the main experiment, participants watching videos containing different information (e.g., Chinese audio, English subtitles, and PHNs) search for optimal relevance to achieve a higher level of comprehension of culture and humour. Therefore, it is important to provide translated subtitles and PHNs to ensure the content achieves optimal relevance for the participants.

As Gutt (2000) (see Section 3.4) illustrated, the interpretive use of translation involves ensuring that the degree of resemblance between the ST and TT influences

³ In this section, the participants of the experiment are viewed as addressees with the videos as “speakers” in delivering the intended information, e.g., humour and cultural references. From this perspective, the viewing of the videos including the subtitles and headnotes on the videos is considered as a way of communication between participants and the videos.

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the relevance for the target audience. This implies that the translator must consider the type and degree of interpretative resemblance anticipated by the target audience. In other words, Gutt's insights emphasise that achieving optimal relevance in translation requires maintaining a balance between fidelity to the original content and the target audience's expectations. This reinforces the need for PHNs to achieve optimal relevance by providing culturally appropriate and accessible translations that consider the target audience's cognitive environment. Gutt (2000) takes the relevance theoretic perspective and underscores the importance of understanding and meeting the target audience's expectations to ensure effective communication and comprehension in translations, particularly in translating humour and cultural references.

By applying relevance theory and specific translation strategies, PHN1 and PHN2 are designed to cater to different levels of cultural adaptability. PHN1 employs a domestication strategy, offering more localised and familiar cultural explanations for viewers with low cultural adaptability. This approach ensures that the content achieves optimal relevance by providing viewers with familiar references from English culture, making it easier for them to understand and enjoy the content.

Conversely, PHN2 uses a foreignisation strategy, providing more authentic and source-culture-retentive explanations for viewers with high cultural adaptability. These viewers are expected to require less assistance to achieve a similar level of understanding and can handle more authentic cultural references without extensive explanation. By retaining the original cultural elements and offering explanations that preserve the Chinese flavour, PHN2 allows these viewers to engage more deeply with the source culture, enhancing their overall viewing experience.

Additionally, in terms of overall length, PHN1 tends to be shorter than PHN2 as it conveys denser information through a concise English saying or reference. PHN2, on the other hand, provides more detailed explanations that align closely with the source culture, catering to the needs of more culturally adaptable viewers.

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This tailored approach ensures that PHNs address the specific needs of different audience types, improving their comprehension and enjoyment of the content. By aligning the PHNs with the viewers' cultural intelligence and adaptability, the translation achieves a balance between cognitive effort and cognitive effects, as emphasised by relevance theory.

4.4.4.1 Translation strategies and difficulties for PHNs

As discussed in Section 3.2, translating humour and cultural references poses challenges for translators, especially when dealing with culturally specific content. For example, the phrase “81” in Figure 4.1 might refer to a specific cultural or historical context in China that is unfamiliar to English-speaking audiences. In this research, PHNs aim to bridge this gap by providing context-sensitive explanations without overwhelming the viewers. The translation of PHNs involves several strategies to address cultural and linguistic differences, ensuring optimal relevance for audiences with varying levels of cultural adaptability. The primary translation strategies adopted include domestication and foreignisation in creating PHNs (see Appendix D for detailed list of PHNs).

Chinese humour often relies on cultural references that may not have direct equivalents in English. For instance, the humour in Clip 2 (Dramatic GPS) involves voice impressions of different characters like Guanyin Buddha, The Landlady, and Ziwei, along with distinctive facial and bodily expressions, which are iconic in Chinese culture but might be obscure to Western audiences. To bridge this cultural gap, PHN1 provides explanations similar to Western equivalents and culture, such as comparing Guanyin Buddha to Archangel Gabriel, to facilitate the viewers' understanding and appreciation of the humour. Moreover, the linguistic structure and idiomatic expressions in Chinese can be challenging to translate into English. PHNs must navigate these differences by either adapting the content to be more familiar to the target audience's culture (domestication) or retaining the original cultural elements and providing additional context (foreignisation) to maintain the humour's impact.

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Venuti (2013) described domestication and foreignisation as two opposing strategies in translation. Domestication involves higher degree of intervention by the translator, who may rewrite, paraphrase, or adapt ST to align with the cultural norms and expectations of the target audience, making the content more familiar and accessible (*ibid.*). This strategy is applied in PHN1 to cater to Persona 1, who has low scores in CQS and BFI-S. For instance, along with translated subtitles, the culturally specific Chinese dish 豆腐脑 (*dòu fu nǎo*), literally “Tofu brain”, is explained as “a jelly-like dish”, conveying a similar humorous effect. Additionally, 观音菩萨 (*Guān yīn Pú sà*, meaning Guanyin Buddha) is described as “similar to Archangel Gabriel”, providing a more familiar and localised image for the viewers. This approach aims to reduce the cognitive load for the audience, making the humour more accessible to viewers from the Persona 1 group.

Foreignisation, on the other hand, shows respect for the foreign text by preserving the distinctiveness of the source culture (*ibid.*, P. 127). Venuti’s (1995; 2013) concept of foreignisation is not monolithic; it encompasses a range of strategies that can vary in degree depending on how much the translator chooses to retain the foreignness of ST: from minimal mediation, to moderate and high degree foreignisation. He acknowledges that this strategy can range from retaining the original term with minimal explanation to providing more detailed context while still preserving cultural distinctiveness. The choice of how much to explain versus how much to retain depends on the target audience’s cultural familiarity and the translator’s goal of preserving the source culture’s integrity. This is evident in PHN2 explanations where varying degrees of foreignisation are applied. Minimal mediation is seen in 豆腐脑 described as “tender tofu served with gravy or sugar”, while moderate mediation is used in explaining 听一段相声 (We listen to Xiangsheng now) as “Chinese comedic dialogue with one leader and one supporter”. High mediation is evident in some detailed explanations of PHN2. For example, in Clip 2, 本座已为你凑齐九九八十一盏红绿灯 (Your majesty has selected this path with 81 traffic lights for you) by connecting it to Buddhism: “meaning ‘significant

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difficulties' as 81 is a sacred number in Buddhism", offering viewers with high cultural adaptability a deeper understanding of the original cultural references.

PHNs are tailored to the audience's CQ and personality traits. For Persona 1, PHNs include detailed cultural explanations offering a familiar context (domestication). For example, "Chinese Singles' Day sales" (光棍节 Guāng gùn jié) is explained as "similar to Black Friday sales", providing a more adapted reference. For Persona 2, PHNs assume the viewer's high cultural adaptability and provide more source-culture-retentive explanations (foreignisation), "an annual big sales day on 11 Nov, as 1 looks like a single person", encouraging viewers to engage more deeply with the original content and source culture.

By using different translation strategies in creating PHNs and tailoring them to the CQ and personality traits of personas, this research aims to ensure that the humour and cultural references in subtitled comedies are accessible and engage for the audiences. Through careful consideration of cognitive effects and processing effort, PHNs aims to enhance the overall viewing experience, adhering to relevance theory. However, it should be noted that due to the different strategies used, the average character length of the 11 PHN1 is 25.55, while the 11 PHN2 have an average length of 42.27 characters—approximately 1.65 times longer. Moreover, a paired t-test result on character length of each PHN1 and PHN2 confirmed this difference as statistically significant ($p < 0.05$). This greater length of PHN2 may pose a potential difficulty for viewers trying to read both subtitles and headnotes simultaneously.

4.5 Eye-tracking and recording devices

Before delving into the application of eye-trackers, it is essential to understand that the working mechanism of eye trackers is linked to the eye-mind hypothesis, which states that what a person is looking at is strongly correlated to what he or she is thinking about (Just and Carpenter, 1980). According to this hypothesis, eye movement records may offer a dynamic log indicating the level of attention a

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person was paying to the visual presentation. It posits that there is no discernible temporal lag between what a person focuses on and what the brain processes (Saldanha and O'Brien, 2014), thus enabling eye-tracking to be a valuable tool for studying cognitive effort across disciplines.

Many studies have built on this foundation, examining the conditions under which the eye-mind hypothesis holds true. For instance, Holmqvist et al. (2011) discussed how fixation durations can provide insights into cognitive processes, though they caution that these measurements can be affected by task complexity and individual differences. This perspective highlights that while there is a general correlation between gaze and thought processes, interpreting eye-tracking data requires consideration of contextual factors.

Duchowski (2017) also emphasised that eye-tracking is an indirect measure of cognitive load and attention. The author outlines how combining eye-tracking data with other methods, such as physiological measures or subjective reports, can provide a more robust understanding of cognitive engagement. This multimodal approach is particularly relevant for complex tasks where multiple cognitive processes are at play, such as humour comprehension in audiovisual translation.

Moreover, recent advancements in eye-tracking technology and data analysis have allowed for more nuanced interpretations of gaze patterns. For example, Bojko (2013) discussed how advanced software enables researchers to define Areas of Interest (AOIs) and create detailed visualisations like heatmaps and scan paths, which can help in identifying which elements of a visual presentation capture more attention. Such tools are essential for applications like this study, which uses eye-tracking to examine how subtitles and PHNs are processed.

However, critics of the eye-mind hypothesis, such as Rayner (2009), argue that fixation duration does not always equate to cognitive processing. It highlights that while cognitive processing strongly influences when the eyes move, other factors

such as low-level visual properties and task demands also play a significant role in determining fixation durations and saccade lengths. This indicates that fixation duration can be influenced by various factors beyond just cognitive processing. This limitation points to the importance of using a multimodal approach that integrates eye-tracking with other data sources, such as facial expression analysis, to better understand the emotional and cognitive dimensions of humour reception.

In this study, the Tobii T60XL eye tracker was utilised, which features a built-in camera and collects data at a rate of 60 Hz. The eye-tracking software employed was Tobii Pro Lab, which enables researchers to define AOIs and export pertinent data, such as the duration of fixations and heat maps. The software also enables the viewing of all fixation durations recorded throughout the viewing.

4.5.1 Eye-tracking and AVT

Eye-tracking devices were first introduced into AVT research in the early 1990s and have since been widely used to study subtitling and viewers' reading speeds, helping researchers understand cognitive processes during subtitle reading (e.g., Sasamoto and Doherty, 2015; Black, 2022). Szarkowska and Gerber-Morón (2018) suggested that faster subtitles led to higher proportional reading time but did not hinder scene recognition, and viewers can generally keep up with fast subtitles without a significant increase in cognitive load.

The use of eye-tracking technology in AVT research is well-established and has been applied to various aspects such as subtitling, AD, and dubbing. However, debates arise regarding the accuracy of gaze recordings, with some researchers (e.g., Cui and Hondzinski, 2006) advocating for the use of data from both eyes, while others (e.g., Backus *et al.*, 1999) highlight potential inaccuracies due to larger images in the right eye, and Blignaut and Wium (2014) pointed out potential trackability issues for Asian participants due to darker eye colours, which can affect the differentiation between the pupil and iris (O'Brien, 2009).

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Despite these controversies, eye-tracking technology remains very useful for analysing audience reactions and conducting reception studies. It has found numerous applications in subtitling (e.g., Orrego-Carmona, 2015; O'Hagan and Sasamoto, 2016; Kruger and Doherty, 2018; Di Giovanni, 2019), AD (e.g., Krejtz *et al.*, 2012; Di Giovanni, 2014), dubbing (Di Giovanni and Romero-Fresco, 2019), and other areas of AVT research. This technology provides valuable insights into how viewers process and understand audiovisual content, contributing to the development of more effective and accessible media translation practices. Filizzola (2017), for example, combined eye-tracking with questionnaires to investigate the perception of subtitled humour, collecting data from 103 participants across Italy. Although primarily qualitative and exploratory, this study used eye-tracking data to gain a high-level understanding of attention distribution between subtitles and images. The study highlights the application of eye-tracking in accessibility and audience reception research.

In this research, the eye-tracking device serves two main purposes: (1) ensuring participants have viewed and read the headnotes to validate questionnaire responses, and (2) recording facial expressions to capture observed mirth during humorous scenes. This method allows confirmation of attention allocation on different sections of the screen and captures participants' emotional reactions, such as laughter and smiles, while protecting their privacy by not disclosing facial screenshots. The integration of eye-tracking technology supports the measurement of humour appreciation (see Section 4.3.1) through observed mirth, providing valuable insights into audience reception and the effectiveness of PHNs.

As pointed out in O'Brien (2009), there are several challenges to address in setting up eye-tracking equipment, for example, the control of the research environment (light and sound); researchers should also be familiarised with their participants in terms of eye condition, language competence etc. Moreover, the selection of the eye tracker device is important as although head-mounted eye trackers are more precise, a desktop model was chosen to replicate a reasonably standard viewing experience and, consequently, would make participants feel more at ease (*ibid.*).

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Eye-tracking helmets and spectacles are portable but can bring problematic results due to their lower accuracy (Saldanha and O'Brien, 2014).

The eye-tracking device used in this research is Tobii T60XL, which is a screen-based eye-tracking device with a stable data-rate of 60 Hz (Tobii Technology, 2011). The software used is Tobii Pro Lab. This eye tracker was placed in a fixed location, about 65 cm from the participant's eyes, as recommended by Tobii user manual (ibid.). The main experiment was conducted in a research lab in DCU to ensure that the experience and device presented for all the participants are the same. The maintenance of the eye tracker in the same location also guarantees that the researcher can control the device and environment (such as lighting and sound in the research room) to minimise the effect on the participants (Saldanha and O'Brien, 2014). Tobii eye trackers have proved effective in multiple research projects including AVT and psychology. For example, O'Hagan and Sasamoto (2016) chose Tobii Glasses eye-trackers to create an environment for TV-viewing and to generate heatmap visualisations from eye movements. Rohan, Sasamoto and O'Brien (2021) used Tobii X2-60 binocular portable eye trackers to measure participants' visual attention while reading manga in a digital format. However, inconsistencies in eye-tracking measurement terminology exist both within the research field and across manufacturers, as noted by Hu (2020). To avoid confusion, this section defines some key terms first.

4.5.2 AOIs

The eye tracker in this research is utilised to record participants' facial expressions and ensure they have watched the entire video, read the SBS, and read the PHN1 or PHN2. Areas of Interest (AOIs) are crucial for this process, referring to specific screen areas being monitored for eye movements (Huff *et al.*, 2010). Calibration is required after each viewing to adjust for participants' heights and comfort, with ideal placements determined based on pilot study results (see Chapter 5).

In this study, the primary AOI included the image area, while more AOIs were designated near the top and bottom of the screen to optimise data capture. As

shown in Figure 4.3, PHN area on top of the screen was marked as AOI-A, the subtitle area at the bottom as AOI-B, and the image area in between marked as AOI-Image.

Figure 4.3: Example of AOIs



To accommodate the 11 PHNs used across the three video clips, a total of 11 AOIs were defined for the analysis, covering both subtitle areas and specific headnotes (Clip 1: 3 AOIs, Clip 2: 4 AOIs, Clip 3: 4 AOIs). These AOIs were monitored from the moment of their appearance to approximately three seconds after disappearing. This extended capture period allowed for variations in individual reading speeds and ensures the entire engagement period was captured.

Within AOIs, various types of eye movement data were tracked, including fixation durations. This research specifically focuses on fixation durations to ensure participants have read the headnotes and subtitles thoroughly, thereby enhancing the credibility of their subsequent answers in the questionnaires and interviews.

4.5.3 Fixation durations

It has to be noted that the purpose of the eye tracker in this research is to ensure participants have *engaged* both with the provided subtitles and PHNs to some degree. That is, to ensure that participants directed their fixation towards the headnotes area for a certain duration of time. Fixation duration provides valuable insights into cognitive processing depth during tasks like subtitle reading. Fixations, which stabilise the retina over a stationary object (Duchowski, 2017), are crucial when viewing scenes that simulate natural environments, such as movie scenes. Henderson (2011) observed that human's direct fixations to a scene in real time to support ongoing perceptual and cognitive activity. Research shows that longer fixations are associated with deeper cognitive processing (Holmqvist *et al.*, 2011).

However, there is no definitive guideline on the valid duration of fixations for engagement of content in eye-tracking studies. According to the eye-tracking field norms, the minimal threshold for detecting fixations is generally set around 75 milliseconds (ms) by Tobii and 80 ms by SMI standards (Orero *et al.*, 2018, p. 113). Holmqvist *et al.* (2011, p. 23) noted that fixations typically last between 200 ms and 300 ms, though these durations can vary greatly depending on the task. Following these norms, Kruger *et al.* (2018, p. 18) implemented an 80 ms threshold in their analysis of subtitle engagement. However, fixation lengths may considerably exceed these thresholds during reading tasks, as demonstrated by Jakobsen and Jensen (2008).

In the operation of eye-tracking devices, the embedded software relies on predefined thresholds within its algorithms to accurately differentiate between various eye movement events, such as saccades, fixations, or other relevant occurrences. This distinction is crucial for the effective analysis and interpretation of eye movement data. Specifically, in the case of the Tobii Pro Lab software, there is an automatic mechanism that filters out fixation durations falling below 60 ms (Tobii AB, 2022, p. 167). By excluding shorter fixation durations, which may not represent meaningful visual engagement, the software enhances the accuracy and

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relevance of the eye-tracking data collected. Thus, the threshold for minimum fixation durations was set at 60 ms in this research, and collected fixation durations lower than this were removed.

There was a risk that participants who did not adequately engage with AOIs provided less meaningful responses in the subsequent phases of the study, specifically in the questionnaire and interview sections that probe their perceptions of SBS and PHNs. This potential lack of engagement could directly impact the quality and reliability of their insights, as their limited interaction with the AOIs may not furnish them with sufficient context or understanding necessary to formulate informed opinions about these elements. Therefore, setting a minimum fixation duration threshold of 60 milliseconds helps ensure participants' meaningful engagement with the AOIs, thereby supporting the quality and reliability of their responses throughout the study.

In this research, the minimum and maximum fixation durations were first collected to calculate the mean fixation time on each AOI. The mean fixation durations were then measured and normalised for each participant based on the number of letters in AOIs. These measures ensured the validity of the collected eye data and confirmed that participants actively read SBS and PHNs rather than merely skimming them.

The mean fixation durations from the eye-tracking data were further normalised per character for both headnotes by dividing the total character count of each headnote by the average fixation duration observed across all participants and video clips (see Section 6.3.2). This approach provided further validation that participants thoroughly engaged with the content, as it accounted for variations in reading speed and ensured that the data accurately reflected active reading behaviour.

By implementing these normalisation techniques, the study ensured a rigorous analysis of participants' engagement with the content types, thereby enhancing the credibility of their responses in the subsequent questionnaires and interviews for data triangulation. This method aligns with established practices in eye-tracking research, as highlighted by studies such as Drusch, Bastien, and Paris (2014).

4.5.4 Attention Distribution

In this research, attention distribution was also included during the data analysis for the main study to ensure the validity of the collected data and to crosscheck participants' engagement with subtitles and PHNs. Attention distribution analysis is relevant in AVT studies, especially since subtitles typically occupy a significant portion of visual attention. Previous studies suggest that subtitles can account for 37.22% of a viewer's visual focus (Cambra et al., 2014), with participants spending around 84% of their viewing time looking at subtitles during audiovisual content (Jensema et al., 2000). Understanding how viewers distribute their gaze across different screen elements is critical for evaluating the effectiveness of subtitling strategies (O'Brien, 2009; Orero et al., 2018).

Building on this established focus on subtitles, the analysis examined fixation durations across various AOIs, including the subtitle area and the PHN areas. The proportion of total fixation duration allocated to each AOI was calculated to assess how participants distributed their attention among subtitles, headnotes, and other visual elements. This analysis provided insight into whether participants were indeed engaging with the headnotes as intended or if their focus remained primarily on the subtitles.

Although attention distribution was not essential for directly answering the primary research questions, it served as an important crosschecking measure to validate the eye-tracking data. By examining how participants' fixation duration was distributed, the study ensured that the data collected from eye movements accurately reflected meaningful engagement with the content, thereby supporting

the reliability of the subsequent analysis involving fixation durations and participant responses.

The attention distribution analysis was thus used to confirm that besides the image area on the screen, participants also directed their focus appropriately towards both subtitles and headnotes, ensuring that the methodological approach captured genuine engagement with the audiovisual content. This step helped reinforce the overall validity of the data collected and provided a foundation for a rigorous analysis of the impact of PHNs on viewer reception.

4.6 The questionnaires

This mixed-methods approach, combining eye tracking and self-reported data from questionnaires, is common in humour and psychology research. For instance, Gavanski (1986) explored humour appreciation using self-ratings on a humour scale and tracking mirth responses, while Falkenberg *et al.* (2011) assessed humour responses in depressed participants using a questionnaire of coping humour scale (as mentioned earlier in §4.3.2). These examples demonstrate the value of integrating objective and subjective measures to comprehensively understand humour-related phenomena in reception studies.

This section explains the rationale for using questionnaires and their application. Questionnaires are widely used in AVT reception studies due to their accessibility, confidentiality, potential to reduce bias, structured data collection, and ability to reach a large number of participants, as summarised in Gratton and Ian (2014). The primary goal of questionnaires is to gather data to answer research questions (Brace, 2013). Saldanha and O'Brien (2014) stated that they also provide a large-scale method for gathering structured data without imposing significant pressure on participants. Mellinger and Hanson (2017, p. 30) also stipulated that questionnaires are convenient to collect “quantitative data about perceptions and opinions of participants”, and in a larger study, they can be helpful in gathering “descriptive and demographic information”.

In this research, participants completed web-based questionnaires via Google Forms, a platform supported and approved by DCU. The research design included both pre-task and post-task questionnaires. The pre-task questionnaire, containing CQS and BFI-S tests, was used to collect participants' scores and select those with scores fitting for the main experiment. Post-task questionnaires assessed participants' comprehension of humour in the clips, SBS, and PHNs after viewing each clip. Both of these questionnaires were drafted before the pilot study and were adapted based on the feedback and opinions from samples in the pilot respectively (see Appendices B1-B3).

4.6.1 Pre-task and post-task questionnaires

In this study, a web-based questionnaire on Google Forms was utilised to gather data on participants' scores of CQS and BFI-S. The scores from these tests were used to match participants to the aforementioned constructed personas. Based on these personas, two versions of PHNs were developed and tested in the main experiment.

Participants in the main experiment were asked to complete a post-task questionnaire after each video clip viewing. This questionnaire aimed to measure their comprehension of humour and their perceptions of SBS and PHNs. For example, in Clip 2, a humour stimulus occurs when a female actor imitates Guanyin Buddha, triggering laughter from live audience from the original culture in the video. The questionnaire tested participants' comprehension of this humour by asking them to identify the Buddha's name from a multiple-choice question, based on the scene, subtitles, and PHN2 (see Q3 in Appendix B2). Participants then provided their opinions on the three conditions (SBS only, SBS+PHN1, and SBS+PHN2) in a randomised order.

To sum up, this research design implements pre- and post-task questionnaires where the former collects participants' online answers to the provided two tests

and the latter elicits their responses regarding perceptions, comprehension, enjoyment, and preferences. This comprehensive approach ensures a robust evaluation of how PHNs impact the viewers' reception in subtitled comedies.

4.6.2 Likert scales

In the implementation of pre- and post-task questionnaires, Likert scales have been widely used in measuring “respondents’ attitudes, preferences, and subjective responses to statements” (Sullivan, 2009, p. 293). The Likert scale is a popular questionnaire that seeks to investigate a specific construct (Mellinger and Hanson, 2017).

It was developed by Likert (1932) to measure attitudes towards agreements on a bipolar scale from scales of 1 (strongly approve) to 5 (strongly disapprove). It is commonly offered in formats consisting of five, seven or nine points for a continuum of answers. Initially, Likert (ibid.) believed that the use of five points could suggest an evenly spaced interval level of measurement (Mellinger and Hanson, 2017), but varied research shows the respondents’ tendency to select the middle point, causing problems for the validity of data (Saldanha and O’Brien, 2014). As summarised in Brace (2013), four problems can arise in using Likert scales: order effect, acquiescence, central tendency, and pattern answering. As a possible solution to offset the central tendency, the middle point should be listed to represent a neutral opinion to be “distinct from having no opinion” (Mellinger and Hanson, 2017, p. 32), such as “neither agree nor disagree” or “not sure”. Moreover, they (ibid.) suggested the inclusion of reverse-coding where questions or statements should be phrased in both positive and negative directions to prevent respondents from forming a habit of choosing the same Likert scale. Some researchers also choose even-numbered scales trying to prevent respondents from selecting the middle point.

Hence, there is no consensus regarding the optimal number of Likert scale points, but researchers must consider the probable variations between these points as well

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as the participants' capacity to differentiate these points when choosing a scale (Brace, 2018). In this research, the five-point Likert scale with a neutral middle-point was selected for the ordinal data collection in the attitude survey. For example, to a statement in the post-task questionnaire (see S7 in Appendix B2) "I had enough time to read both subtitles and headnotes" participants were given the following options with a middle point: A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree".

Moreover, positively and negatively phrased statements asking respondents if they agree with the statement of "I think the headnotes help me in better understanding the cultural references in the video", and if they disagree with the statement of "I think the headnotes interfere with my reading process of subtitles at the bottom during watching the video" were both included in the post-task questionnaire (see statements S11 and S12 in Appendix B2).

Following the collection of data from both the pre- and post-task questionnaires, it is imperative for the study to provide a measure of internal reliability (Mellinger and Hanson, 2017) and to test the consistency of the collected answers (Saldanha and O'Brien, 2014). This study opted to report results of Cronbach's alpha across answers from all the questionnaires to test "whether participants' scores on any one statement are related to their scores on the other statements" (Hu, 2020, p. 103). Many studies use the Cronbach's alpha measure for its easier interpretation and wider acceptance and application in the field of social sciences compared to other reliability tests. The scale ranges from negative infinity to 1, with 1 representing the highest possible correlation (Saldanha and O'Brien, 2014), but a robust and valid scale should never yield a negative value for Cronbach's alpha (Mellinger and Hanson, 2017). Across multiple fields and disciplines, a substantial number of researchers deem a value of .70 as the minimum acceptable threshold for Cronbach's α (ibid.). This widely accepted standard is frequently referenced in academic papers, and hence was adopted as a cutoff value in this study.

4.7 Semi-structured interviews

Semi-structured interviews were used in this research to complement data from eye-tracking and questionnaires. While questionnaires provide structured data, interviews allow for exploration of individual differences and deeper insights into participants' reasons and opinions (Orrego-Carmona, 2015). Interviews also serve to crosscheck data from questionnaires, ensuring research credibility.

Interviews are important across various disciplines, generally categorised into unstructured, structured, and semi-structured types (Saldanha and O'Brien, 2014). Each type has its own strengths and weaknesses. Semi-structured interviews, used in this research, combine guiding and prepared questions with flexibility, enabling comparison of three viewing conditions: SBS, SBS+PHN1, and SBS+PHN2.

However, interviews, especially face-to-face ones, can be stressful for participants, potentially leading to biased answers. They also require more effort in follow-up data analysis, involving coding and "translating text into numerical values" (Rasinger, 2008, p. 59). Despite these challenges, semi-structured interviews offer valuable qualitative insights that enhance the overall understanding of participant perceptions and behaviours in the study.

Before starting the interviews, several key issues were addressed, as suggested by Saldanha and O'Brien (2014): participants were reminded of ethical considerations, including confidentiality, and consent was obtained; the approximate duration (around 10 minutes) was communicated, with a signal given near the end to avoid rushed responses; an interview schedule listing all research topics was prepared, allowing for flexibility for the researcher to ensure all required questions were covered. The semi-structured interviews were conducted immediately after the third post-task questionnaire, each lasting approximately 10 minutes (see Table 4.1 in Section 4.2.1 for detailed procedures).

Chapter 4: Methodological Considerations and Research Design

As shown in Appendix C, the interviews focused on specific questions about headnotes and translation of humour and cultural references, allowing participants to compare the different subtitle conditions. Because of the randomised viewing order, the questionnaire compared only the two PHN conditions, excluding that of SBS only. Conducting the interview after watching all three conditions enabled participants to compare each subtitle condition directly. The flexibility of semi-structured interviews enabled participants to elaborate on their responses freely. For example, Q10 asked, “Do you think headnotes explained the humour well?” encouraging participants to discuss their perceptions openly. Interviews also sought to clarify responses given in the post-task questionnaire, such as why participants rated one clip funnier than another.

The use of qualitative data from interview responses necessitates a follow-up thematic analysis (TA) aimed at generating findings relevant to PHNs. This analysis helps determine which persona group of participants found PHN1 or PHN2 more preferable. TA, as detailed by Braun and Clarke (2006), involves identifying, analysing, and reporting patterns within data, organising it in rich detail, and interpreting various aspects of the research topic. In this study, it provided insights into participants’ preferences and perceptions regarding PHNs.

Braun and Clarke (2019) described reflexive TA as a qualitative approach that goes beyond surface-level observations, emphasising deep, reflexive questioning. This method is “*fully* qualitative in terms of both its procedures and the underlying research values” (Braun and Clarke, 2021, p. 40). Reflexive TA codes evolve through engagement with data, producing coherent and compelling narratives (Braun and Clarke, 2013). Themes are multi-faceted and developed from codes, not predetermined, and must contain central organising ideas (Braun and Clarke, 2013, 2019, 2021). This method has been applied in AVT research, such as studying the subtitle production network in Thailand (Pidchamook, 2021) and investigating the emotional impact of subtitling on subtitlers (Georgiou and Perdikaki, 2020).

Chapter 4: Methodological Considerations and Research Design

Using NVivo software, the interview data was systematically analysed to identify, code, and categorise themes and sub-themes. The process began with transcribing the audio-recorded interviews. The transcripts were then read multiple times by the researcher to be familiar with the data. Initial open coding was used to highlight significant features, which were grouped into potential themes. These themes were reviewed and refined to ensure they accurately represented the data, resulting in six main themes (detailed in Section 7.3). These themes were essential for answering RQs concerning PHNs and subtitles.

NVivo facilitated this coding process by allowing efficient data management and analysis. It enabled a systematic approach to organising coded data into coherent themes, ensuring the identification of patterns and insights within the qualitative data. Applying TA ensured robust data collection and provided a comprehensive understanding of participants' experiences and opinions. This approach enhanced the overall validity and reliability of the research findings, offering detailed insights into the effectiveness of PHNs tailored to different audience types.

4.8 Conclusions

This chapter details the methodological framework for the research design, encompassing several complementary approaches to provide a comprehensive analysis of subtitled audio-visual content. The study begins with pre-task questionnaires using CQS and BFI-S tests to narrow down participant selection. Eye-tracking devices were used to capture participants' fixation durations and facial expressions. Post-task questionnaires were administered to gather data on participants' understanding of humour, subtitles, and PHNs. Semi-structured interviews were conducted to allow participants to openly express their opinions and perceptions, with the recorded audio analysed using TA. These methods collectively ensured a rigorous approach to investigating the reception of subtitled content, utilising both quantitative and qualitative data. The triangulation of data from these methods provided a more in-depth and comprehensive perspective on the phenomenon being studied.

Chapter 5

Pilot Study

5.1 Introduction

This chapter presents an overview of the data collection process in the pilot study, conducted with six participants. The aim of the pilot study was to identify and address any potential limitations or issues that may arise during the research process, such as questionnaire design, viewing experience, and effective use of the eye-tracking technology. The experiment was approved by the Faculty Research Ethics Committee in DCU. Before conducting a larger-scale experiment, it is standard practice to carry out a pilot study, especially in resource-intensive empirical research. This pilot study involved six participants, all native English speakers with normal or corrected vision, who were recruited through the researcher's personal network. They were not required to take the CQS and BFI-S tests, as the aim of the pilot study was to ensure the smooth operation of the main experimental procedure, not to address RQ3 (Is there a correlation between participants' scores in CQS and BFI-S and their preference for specific PHNs?).

Before testing, all six participants received information sheets on the plain language statement and provided their written informed consent. Participants were informed that they would watch Chinese videos with English subtitles. Details about the translation of SBS and PHNs were revealed only during the post-task interview to avoid influencing their viewing process and to provide a natural viewing experience. Each session included calibration, video viewing, a questionnaire, and a semi-structured interview to gather opinions on SBS and PHNs.

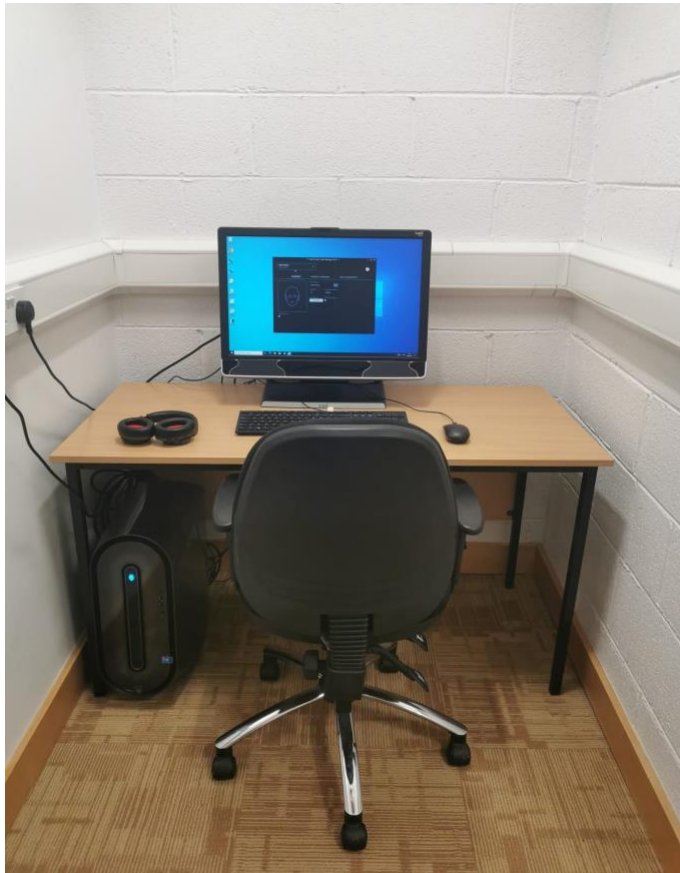
Chapter 5: Pilot Study

Prior to the pilot, three video clips were translated and subtitled by the researcher using Aegisub 68 (version 3.2.2) to provide English subtitles. A black mask was added as a backdrop to the English subtitles in order to obfuscate the original Chinese subtitles present in the videos. The English subtitles were burned into the videos using the video editing software HandBrake (version 1.6.1), a multifunctional media converter. Netflix's English Timed Text Style Guide⁴ was used as the standard for subtitling the video. For example, according to this guide, the maximum reading speed is 20 characters per second, the font colour of subtitles is white, and numbers above 10 should be written numerically.

Eye-tracking data were collected using Tobii T60XL eye tracker, and all participants were recorded individually in a dedicated eye-tracking lab (see Figure 5.1). The lab was set up to ensure optimal conditions for eye-tracking, including a comfortable chair, a clean environment with no direct sunlight, and an optimal viewing distance of 65cm from the screen (Tobii pro, no date). Participants were instructed to watch the videos wearing headphones and to complete a post-task questionnaire, followed by a semi-structured interview.

⁴ Note: The guideline followed in the main experiment was later changed into BBC subtitle guidelines based on the pilot results, see details in §5.5. <https://partnerhelp.netflixstudios.com/hc/en-us/articles/217350977-English-Timed-Text-Style-Guide>

Figure 5.1: Eye-tracking lab setup



With three different subtitle conditions: SBS, SBS+PHN1, SBS+PHN2, the study utilised a 3 (videos) \times 3 (conditions) within-subjects design, with nine counterbalanced conditions presented in a random order to each participant. Participants watched each set of subtitles once, resulting in a total of 36 potential viewing combinations. For the pilot study, six participants experienced three different conditions, resulting in six responses per condition in total (see Table 5.1). For example, participant P1 watched Clip 1(Are You Asleep) under condition 1 (A1), Clip 3 (Time Flies) under condition 2 (T2), and Clip 2 (Dramatic GPS) under condition 3 (D3), followed by a questionnaire for each clip. The pilot study led to modifications and improvements in the main experiment, which are detailed in Section 5.5. The data presented here are descriptive and do not represent a broader group of participants (which is detailed later in Chapter 6).

Table 5.1: The order of pilot participants' viewing

Participant	clips		
P1	A1	T2	D3
P2	T1	D2	A3
P3	D2	A3	T1
P4	A3	T1	D2
P5	A2	D1	T3
P6	T3	D2	A1

This chapter is organised as follows: The first section provides an overview of the pilot process, while §5.2 presents the results of the eye-tracking data collected. In §5.3, the data from post-task questionnaires across three subtitle conditions is reported and the results from the interviews are discussed in §5.4. Finally, the chapter concludes with a summary of the pilot study's results and modifications taken to enhance the validity of the main experiment by addressing identified issues.

5.2 Eye tracking data

In this research, the tracking ratio refers to the percentage of time that the eye-tracker records the gaze during the task (Riege, Gourdon-Kanhukamwe and Vallée-Tourangeau, 2021). Prior to viewing the first video, a nine-point calibration was performed for each participant to guarantee the accuracy of the eye-tracking data collection. The process of calibration plays a critical role in eye-tracking, being the initial step to determine the extent to which a participant's point-of-regard corresponds with the corresponding location on the screen (Hu, 2020).

As presented in Table 5.2, the results of eye tracking ratio during the viewing of three clips indicate that half of the participants (P3, P5, P6, marked in red) had an eye-tracking ratio below 70%, rendering their data invalid for eye-tracking analysis. According to O'Brien (2009, p. 257), while there is no universal standard, a basic recommendation is to consider eliminating any participant who spends less than

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70% of their allocated screen time. Hence, a tracking ratio of 70% is considered as a threshold limit for inclusion, and participants who spent less time looking at the screen were excluded from the study. Consequently, the decision has been made to include only eye-tracking data with a tracking ratio above 70% for this research. Thus, out of the six pilot participants who completed the full experiment, only the eye-tracking data from P1 (93%), P2 (90%), and P4 (93%) met the validity criteria and were deemed valid.

Table 5.2: Eye-tracking ratio results of pilot participants

Participant	Tracking ratio
P1	93%
P2	90%
P3	43%
P4	93%
P5	36%
P6	64%

Despite instructions provided to the participants not to divert their attention from the screen, their head and eyes movements may have resulted in a lower tracking ratio. A low tracking ratio indicates a substantial amount of missing data, although it is normal to expect some degree of data loss during eye-tracking studies (Holmqvist, 2011). The possible reasons behind the low tracking ratio could include problems from eyelid ptosis, eye surgery, or glasses with more than one power (*Participant management and recruitment*, 2022). Additionally, participants may blink, and their eyelids or eyelashes may obscure the pupil or corneal reflection, which are both essential for tracking the gaze position. Additionally, participants may occasionally look away from the screen, which can also result in data loss (Riege, Gourdon-Kanhukamwe and Vallée-Tourangeau, 2021).

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It was only at the interview stage that P6 mentioned their glasses were varifocal, which could have contributed to the lower tracking ratio observed. To address this, and in line with recommendations from Tobii eye tracking company (ibid.), participants wearing glasses or contact lenses with multiple powers were excluded from the main study to enhance the quality of the data obtained. Further instructions that encourage participants to minimise blinking and keep their eyes open during the study were also incorporated.

While the eye-tracking data from P3, P5, and P6 were excluded from the eye-tracking analysis due to their low tracking ratios, their data were still included in the questionnaire and interview analysis for the pilot study due to the small sample size (six participants). However, for the main study, all the participants with tracking ratios below 70% were excluded from data analysis of eye-tracking, questionnaire and interview (see Section 6.3).

The results presented in this section are based on this small sample regarding participants' total fixation durations and mean fixation durations. These measures would serve to provide further validation that the participants actively engaged with each subtitle and did not merely skim through it.

Data on fixation duration was collected and analysed, along with AOIs defined (see §4.5.2) for each video clip and their specific time lengths. Each headnote that appeared in the video clips was defined as an AOI from its appearance until approximately one second after it disappeared. This approach accounted for individual reading speed differences and ensured participants' visual attention was captured. For example, as shown in Figure 5.2, in Clip 1, the PHN explaining "Hongbao" was tagged as an AOI for 5 seconds, along with two other AOIs and SBS defined with tag names, shown by a circle on the right. These AOIs facilitated detailed examination of eye movements during the clips.

Figure 5.2: Example of defined AOIs (HONGBAO)



Table 5.3 provides data of mean fixation durations for each participant during the viewing of the video clips. Based on this data, all participants actively engaged with the SBS and PHNs presented on the screen, as evidenced by the recorded fixation durations from the eye-tracking software. This result aligns with the collected interview data, where three participants (P1, P3, P4) mentioned reading PHNs. Specifically, P2 acknowledged reading PHNs and expressed a preference for PHN1 in Clip 2 (Dramatic GPS) (see details in §5.4).

Table 5.3: Results of participants’ mean fixation durations

		Participants' average duration of fixations in three clips													
Participant	Viewing order	Are you asleep				Dramatic GPS					Time flies				
		Tofu	Xiangsheng	Hongbao	SBS	Guanyin	81	Gaojia	Ziwei	SBS	Gou	Pengyouquan	Wujing	Guanggunjie	SBS
P1	A1T2D3				148	107	99	129	121	153	117	103	176	123	154
P2	T1D2A3	112	240	89	192	111	167	158	142	193					194
P4	A3T1D2	159	210	183	197	197	153	208	217	193					192

Table 5.4 provides an overview of the total duration of participants’ fixations during the video clips. The data suggests active engagement with SBS and PHNs. Participant P2 showed a longer fixation duration compared to P1 and P4, indicating higher involvement with the headnote AOIs, which may explain P2’s later expressed preference against reading PHNs (see Section 5.4). Here, the pilot

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study’s data set was too small to facilitate such analysis. However, the larger data set in the main study allowed for the use of comprehensive data analysis methods, such as one-way ANOVAs, to determine the significance of any detected differences. Moreover, additional analysis would be required for the eye-tracking measures for the subtitled conditions with and without PHN1 or PHN2. This convergence of data from both the interview and eye-tracking analysis would also provide a more precise triangulation, lending credibility to conclusions for the main study.

Table 5.4: Participants’ total duration of fixations

Participants' total duration of fixations in three clips															
Participant	Viewing order	Are you asleep				Dramatic GPS					Time flies				
		Tofu	Xiangsheng	Hongbao	SBS	Guanyin	81	Gaojia	Ziwei	SBS	Gou	Pengyouquan	Wujing	Guanggunjie	SBS
P1	A1T2D3				156157	533	1382	900	483	90936	700	617	176	616	188048
P2	T1D2A3	450	700	267	205436	333	500	1899	283	113855					234502
P4	A3T1D2	1116	2099	2015	173218	1183	1532	1665	433	96854					194555

The eye-tracking device in this study included a built-in camera to record participants’ facial expressions for analysis. After excluding invalid data, the pilot study used data from three participants (P1, P2, P4). Instances of observed mirth (see Section 4.3.1), such as laughter during the clips, were recorded and cross-referenced with questionnaire and interview responses. Occurrences of mirth across different conditions were compared to test the hypothesis that participants with lower CQS and BFI-S scores find clips with PHN1 funnier than those with PHN2 or SBS alone. For instance, in “Dramatic GPS”, P1 was observed to express a bigger number of occasions of mirth under the PHN2 condition (4 instances) than P2 and P4 under the PHN1 condition (3 and 2 respectively).

This data on mirth was cross-checked with self-reported questionnaire responses and interviews. P1’s higher rating for “Dramatic GPS” as the funniest clip aligns with their higher mirth instances. Conversely, P4’s lower preference for this clip matched their lower number of mirth responses. These findings highlight the need for comprehensive analysis and cross-validation to support the research hypotheses.

In summary, the collection of eye tracking data from participants provided initial data to be cross-referenced with other data from the questionnaire and interview. However, the loss of data from half of the participants highlights the need for screening participants for their vision and lens usage to minimise data loss and to ensure accurate and reliable results. In the main study, participants wearing multiple-power glasses and contact lenses were excluded to ensure a minimised data loss. Additionally, the verbal instructions given to participants were refined to emphasise the importance of keeping their eyes open and minimising head movements during the recording, although setting adjustments in the eye-tracking equipment were also made to improve tracking accuracy.

5.3 Questionnaire data

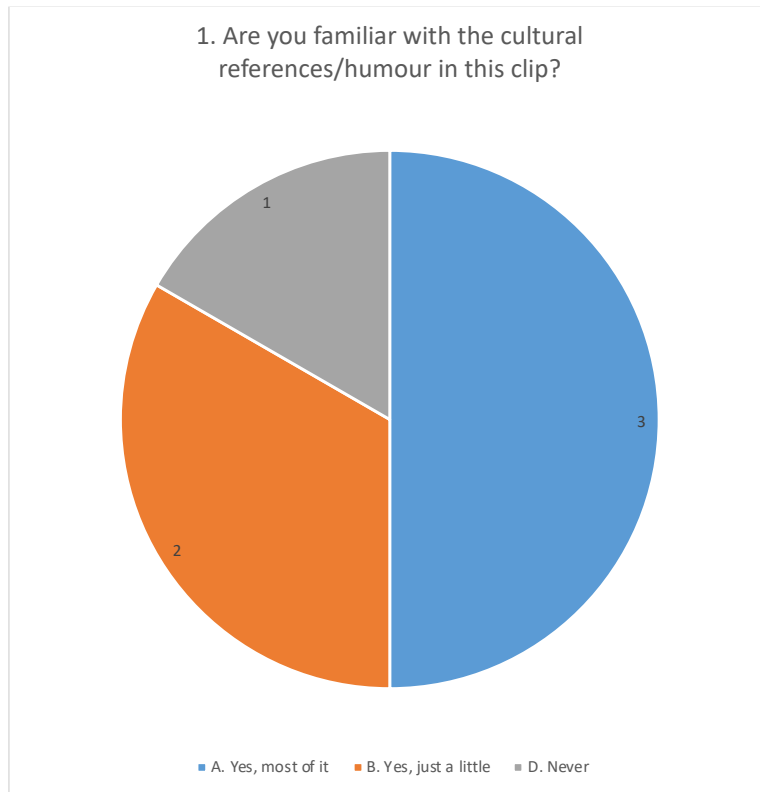
This section presents a summary and analysis of the data collected from the questionnaire, organised based on the three different conditions presented to participants. The responses provided by six participants were carefully examined to extract key findings⁵.

5.3.1 Condition 1: SBS only

In this condition, the questionnaire consisted of a total of 12 questions, divided into two parts. The first part aimed to assess the participants' comprehension of humour, while the second part focused on their attitude towards videos and subtitles. The first question in each questionnaire sought to establish whether the participants were familiar with the cultural references or humour present in the clip. As shown in Figure 5.3, five out of six participants answered in an affirmative way.

⁵ During the pilot study, despite invalid eye-tracking data from three participants, their questionnaire and interview responses were still analysed as the objective was to test as much of the methodology as possible. However, in the main experiment, only data valid across all instruments were included in the analysis.

Figure 5.3: Responses to Q1



The following four questions (Q2-Q5) related to humour comprehension and were designed with correct responses assigned 1 point, while incorrect responses were assigned 0 points. As Table 5.5 shows, the total score for condition 1 was 20 (out of 24) on humour comprehension among the six participants, indicating a high level of understanding. The “sum” column presents the overall score of each question for every participant, but it should be noted that these scores were calculated across three clips under condition 1, rather than from a single clip. P2 and P3 obtained the highest total scores among all six participants, indicating a higher level of comprehension of the humour and cultural references portrayed in the video clips. Further comparisons with the other conditions are discussed in the following sections.

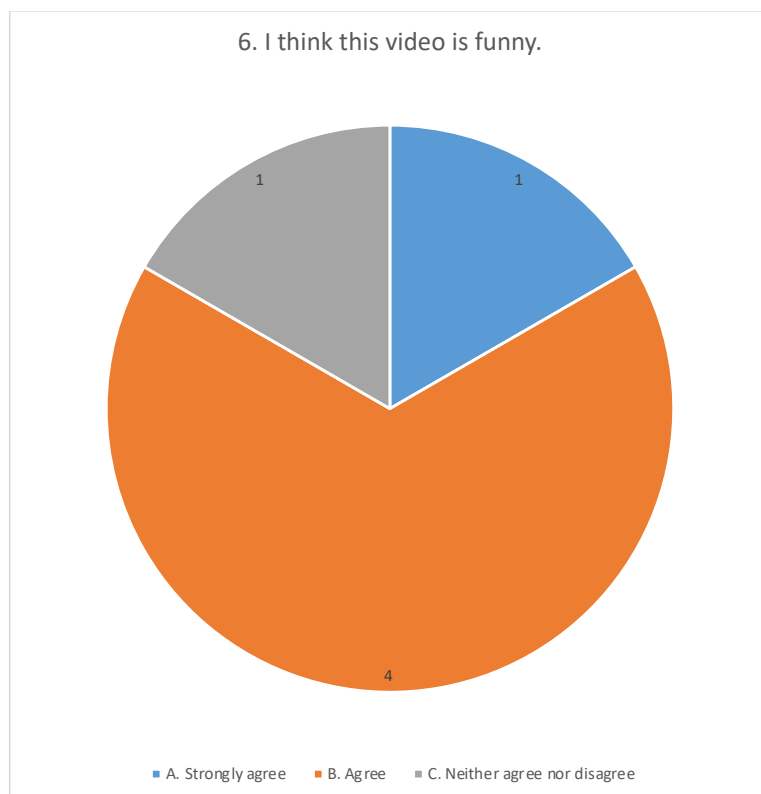
Table 5.5: Scores on comprehension questions – condition 1

Condition 1 (SBS)	P1	P2	P3	P4	P5	P6	Sum
Q2	1	1	1	1	1	0	5
Q3	1	1	1	0	1	1	5
Q4	1	1	1	1	1	1	6
Q5	0	1	1	1	0	1	4
Total	3	4	4	3	3	3	20

The questionnaire also included six statements (S6-S12) for assessing the participants’ attitude towards the videos and the use of subtitles. As explained in §4.6.2, the questionnaire used a 5-point Likert scale. The first (S9) asked participants to rate the funniness of the video, while the remaining three questions were focused on the subtitles.

According to Figure 5.4, five participants strongly agreed or agreed with the statement that “I think the video is funny”, as measured by the 5-point Likert scale.

Figure 5.4: Responses to S6



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According to Figure 5.5, four participants reported having sufficient time to read the subtitles, while Figure 5.6 revealed that all the participants strongly agreed or agreed that the subtitles were easy to comprehend. The results indicate that a majority of participants perceived that they had adequate time to read the accompanying subtitles. The combination of these two questions establishes a fundamental criterion that serves as a basis for the credibility of their subsequent responses.

Figure 5.5: Responses to S7

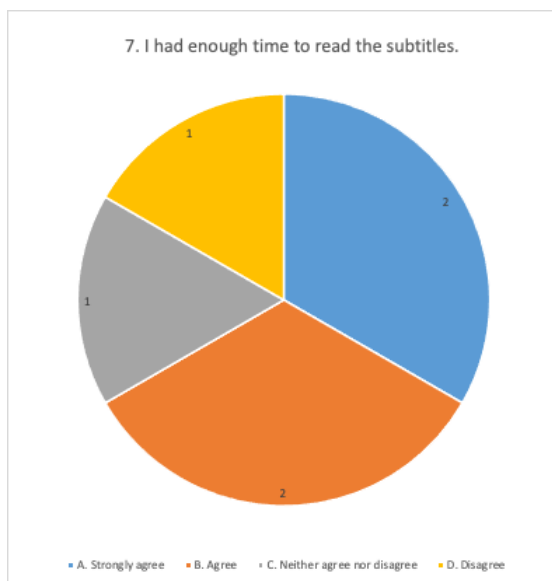
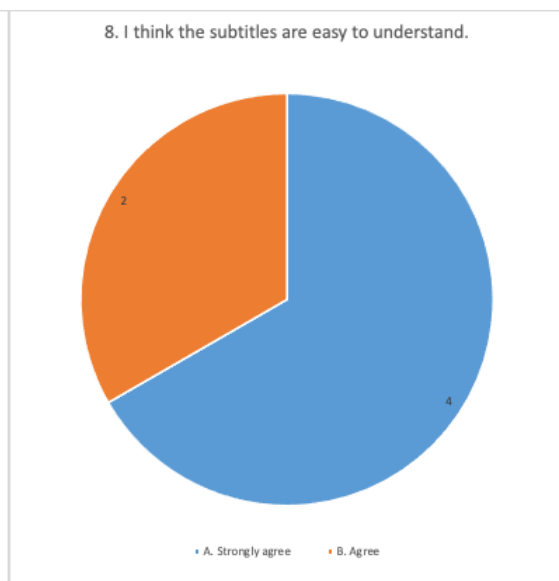


Figure 5.6: Responses to S8



To evaluate participants' comprehension of humour and cultural references, other statements (S9–S12) were included using two positive logic and two negative logic approaches to ensure an accurate assessment of the participants' understanding. The responses to these questions were analysed and revealed that, according to Figure 5.7 and Figure 5.8, five and four participants respectively believed that the subtitles were instrumental in enhancing their understanding of both the humour and the Chinese cultural references featured in the videos.

Figure 5.7: Responses to S9

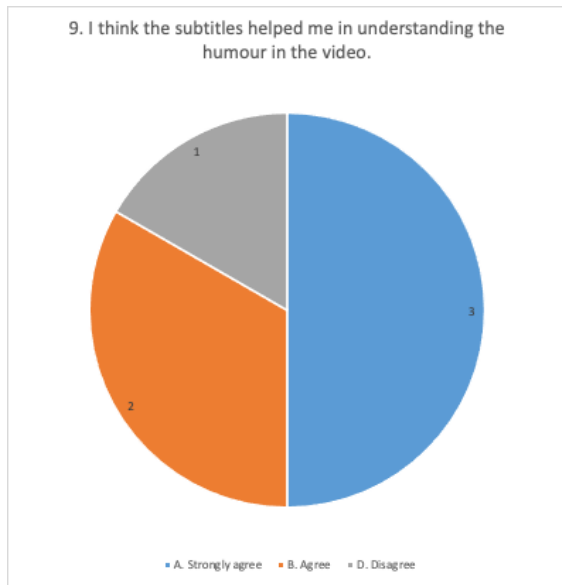
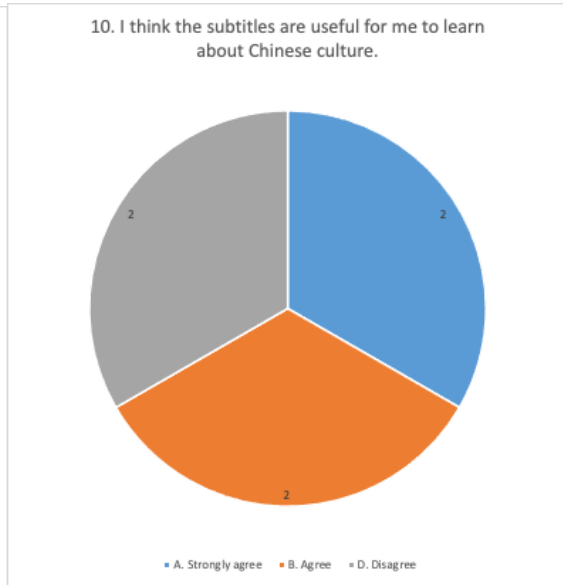


Figure 5.8: Responses to S10



Two negative phrased statements (S11 and S12) were included in the survey questionnaire, which asked participants whether subtitles interfere with their understanding of the humour and cultural references present in the video clips. All six participants chose either “disagree” or “strongly disagree” with the statement, as shown in Figures 5.9 and 5.10.

Figure 5.9: Responses to S11

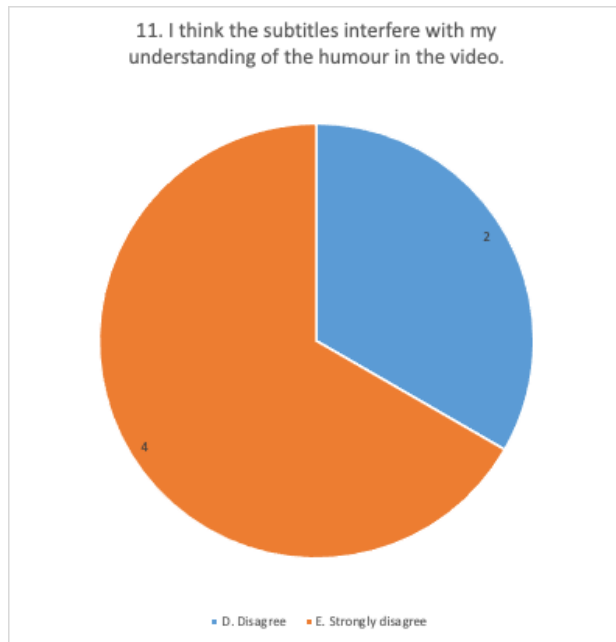
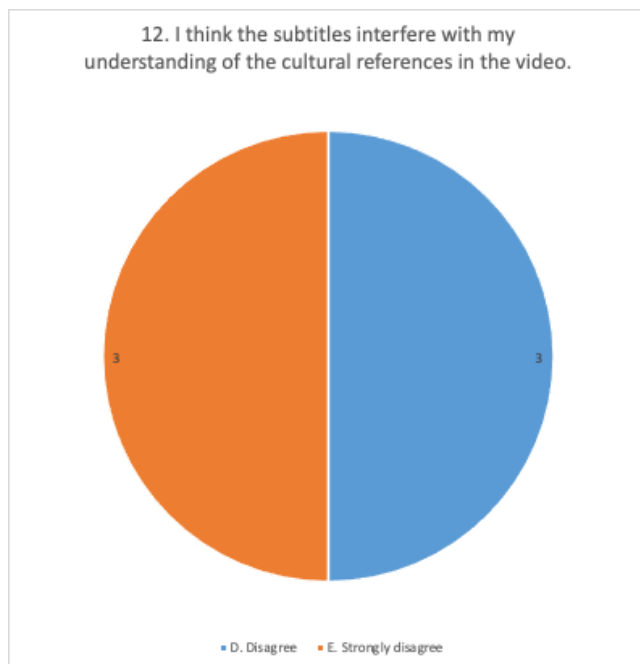


Figure 5.10: Responses to S12



In summary, the survey results from condition 1, where only subtitles were present across three video clips, indicate that most participants found the clips humorous, had sufficient time to read the subtitles, and found them easy to understand. All

six participants agreed that the subtitles were helpful in comprehending Chinese humour and cultural references.

5.3.2 Condition 2: SBS+PHN1

In this experimental condition 2, a total of 15 questions were designed, with the first part aimed at assessing participants' comprehension of the humour in the video clips, while the second part focused on their attitudes towards videos, subtitles, and headnotes. Unlike condition 1, which solely pertained to subtitles, questions Q9 to Q15 in this condition required participants to compare headnotes to previously viewed videos with only subtitles.

Regarding Q1, four participants indicated their familiarity with the humour present in the clip, albeit to varying degrees (Figure 5.11). With respect to participants' comprehension of the video content, the total score on Q2 to Q5 was 18 out of 24, which is lower than the score in condition 1, as indicated in Table 5.6. Linking back to RQ2 (Is the comprehension of humour affected by the use of PHNs?), these scores were further compared in §5.3.3 to find the condition with the highest score.

Figure 5.11: Responses to Q1

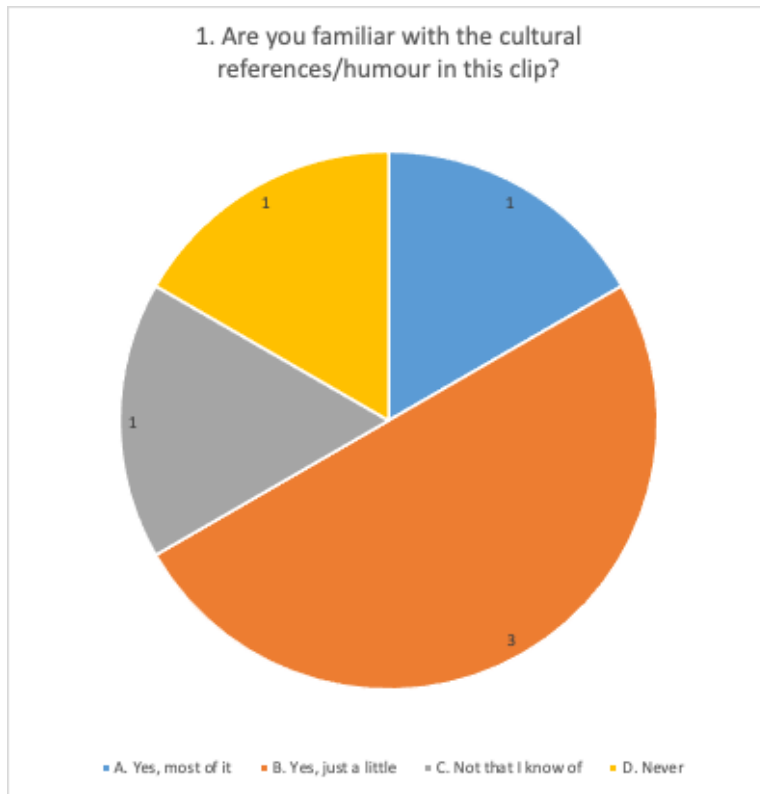


Table 5.6: Scores on comprehension questions – condition 2

Condition 2 (SBS+PHN1)	P1	P2	P3	P4	P5	P6	Sum
Q2	1	1	1	1	0	1	5
Q3	1	1	1	0	1	1	5
Q4	1	0	1	1	1	1	5
Q5	1	1	0	1	0	0	3
Total	4	3	3	3	2	3	18

In response to S6, it was found that four participants held the belief that the video was humorous, with only one participant indicating a strong agreement with the statement (as shown in Figure 5.12). When asked about their ability to read the SBS and PHNs within the given timeframe, only one participant responded positively, while three indicated insufficient time (Figure 5.13). Concerning the comprehensibility of the headnotes, three participants viewed them as easy to comprehend, while the remaining three expressed disagreement (Figure 5.14). These results were carefully considered to improve the readability of SBS and

PHNs concerning speeds and display in the main experiment, which is detailed in §5.5.

Figure 5.12: Responses to S6

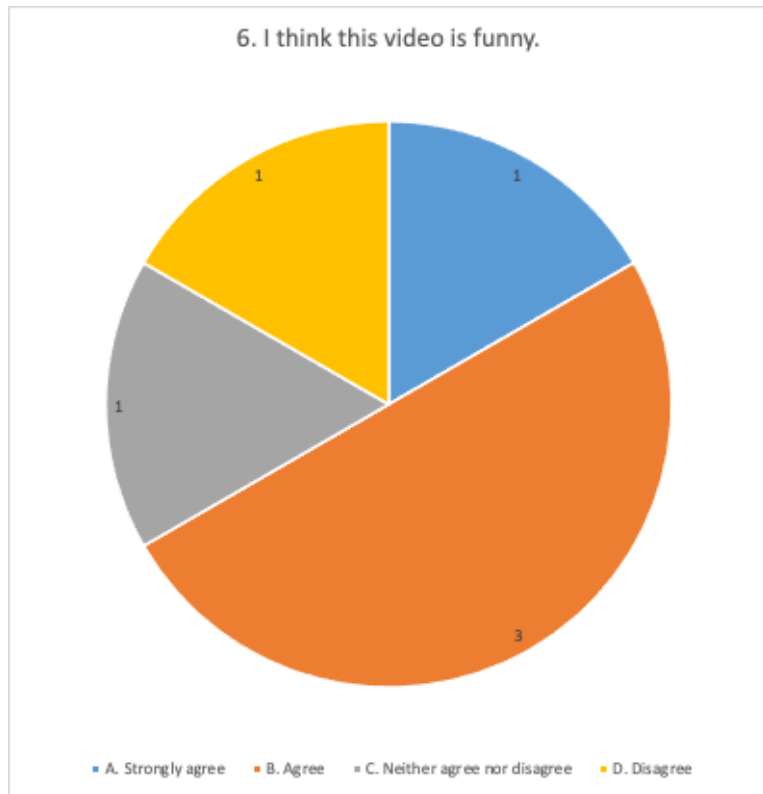


Figure 5.13: Responses to S7

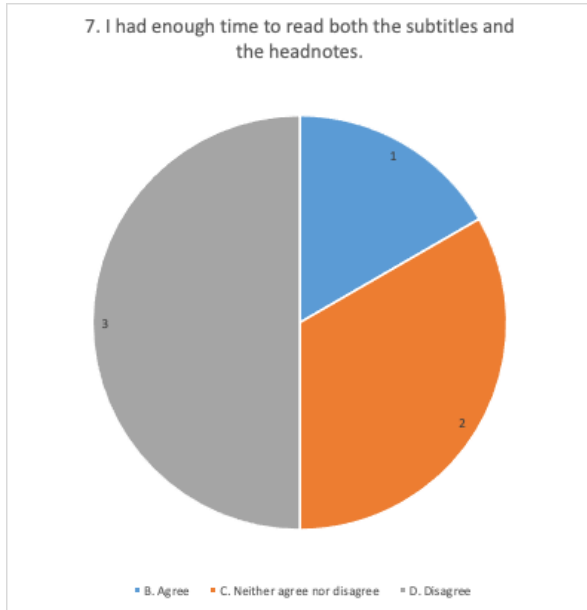
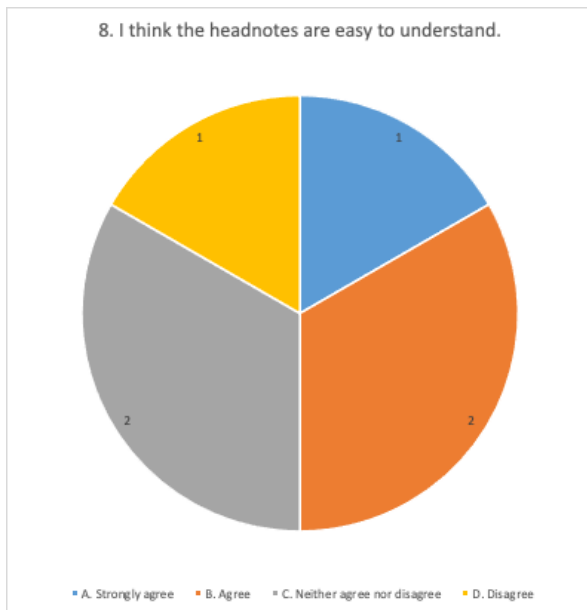


Figure 5.14: Responses to S8



The subsequent S9 to S15, prompted participants to compare the headnotes they encountered during the study with subtitled videos typically encountered in everyday life. The random viewing order during the experiment implies that despite exposure to all three conditions, participants may not have been aware of the need to compare two headnotes with one subtitle. To provide participants with

a frame of reference for comparison, the questions were prefaced with the prerequisite, “Compared to other videos you have seen with standard subtitles only”. This guided participants to evaluate their current viewing experience in relation to their previous experiences with standard subtitles, thereby reducing potential confusion.

Figure 5.15 reveals two conflicting viewpoints, with three participants agreeing that the video with headnotes is funnier (P1, P3, P4), while the remaining three chose “disagree” or “neutral”. This contrast is also reflected in the responses to S10 (Figure 5.16), where the same three participants responded positively on the effectiveness of the headnotes in enhancing humour comprehension.

Figure 5.15: Responses to S9

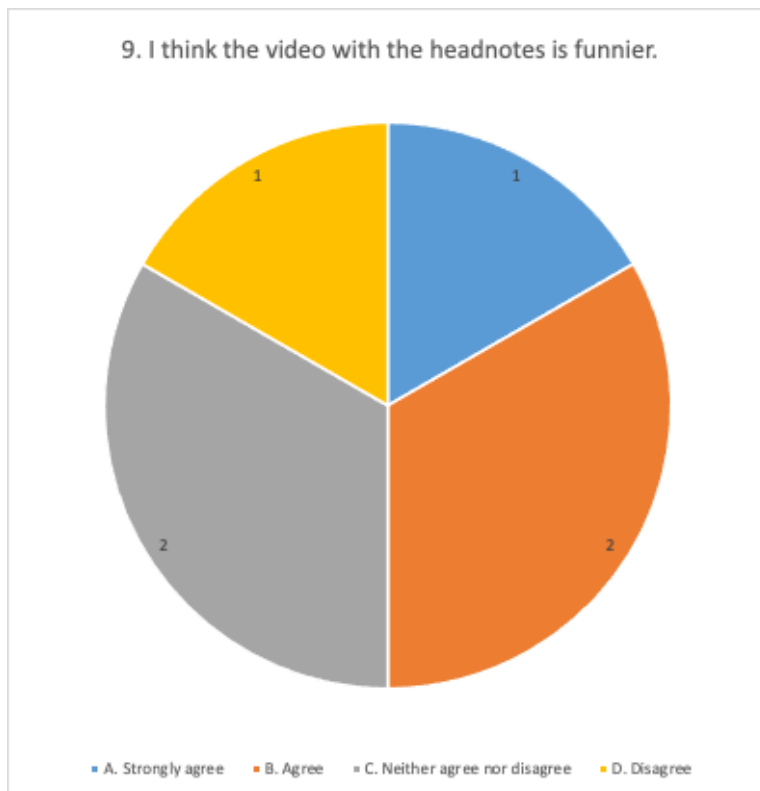
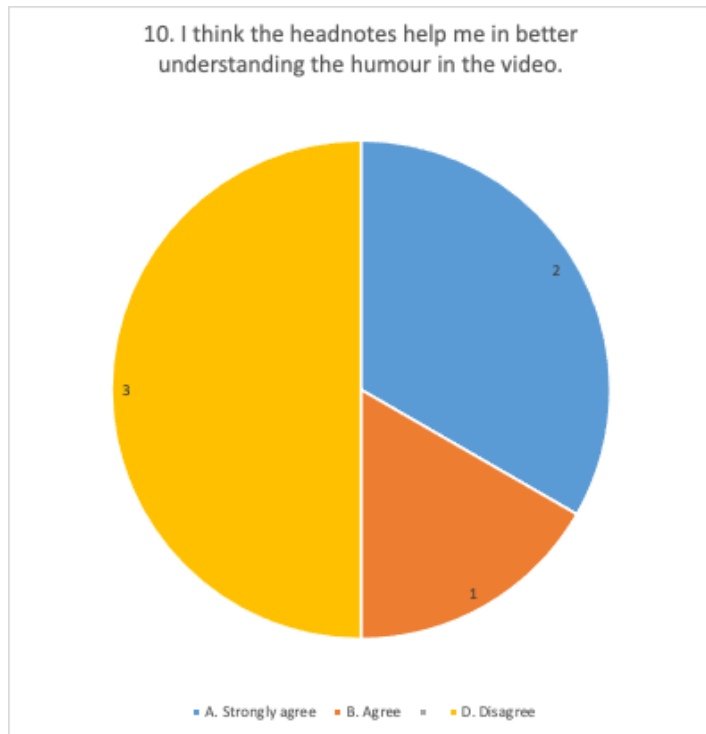


Figure 5.16: Responses to S10

With regards to the efficacy of headnotes in facilitating comprehension of cultural references, it was observed that three participants strongly agreed that headnotes were helpful, whereas two participants held a different view (as depicted in Figure 5.17). Moreover, as illustrated in Figure 5.18, five participants chose “agree” or “strongly agree” to the statement that the headnotes hindered their reading process of the subtitles, while half of the participants believed that they impeded their comprehension of present humour in the video (as shown in Figure 5.19). Conversely, when asked about the usefulness of headnotes for comprehending cultural references, only one participant agreed with their usefulness (Figure 5.20).

Figure 5.17: Responses to S11

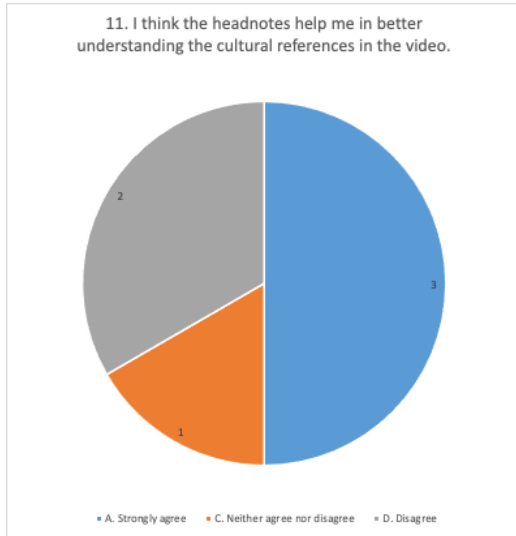


Figure 5.18: Responses to S12

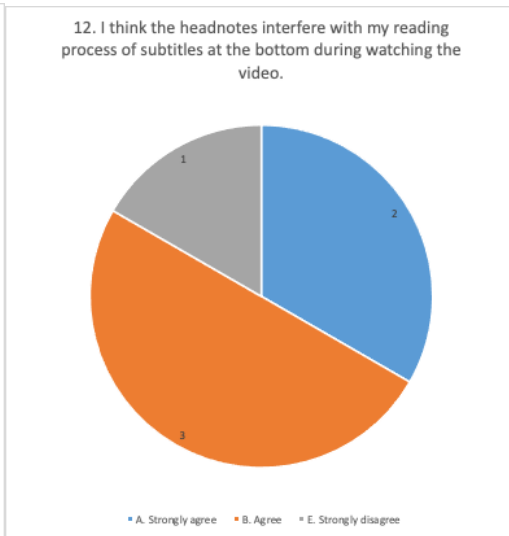


Figure 5.19: Responses to S13

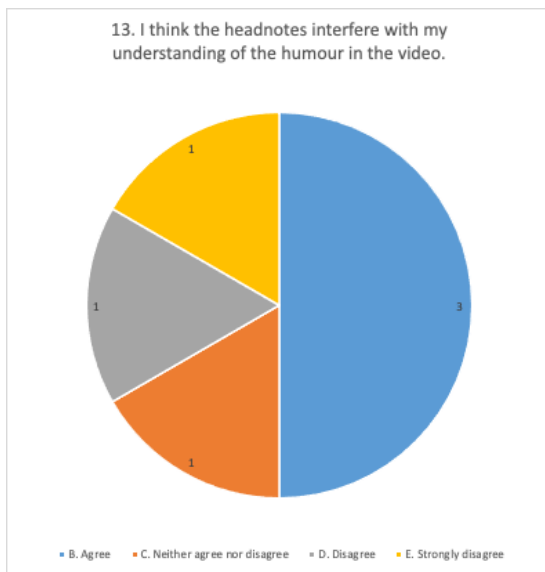
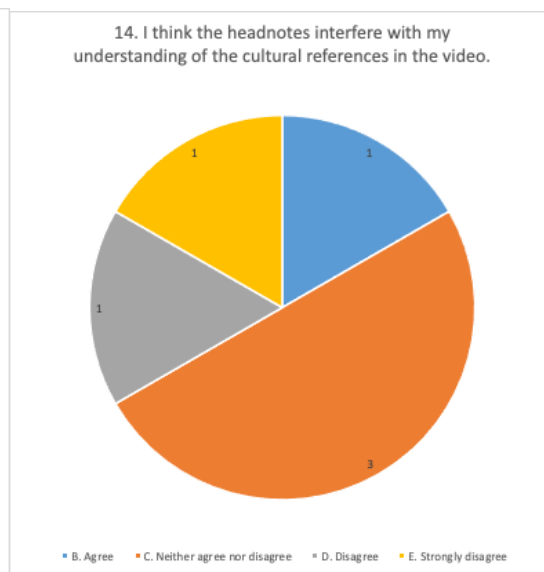
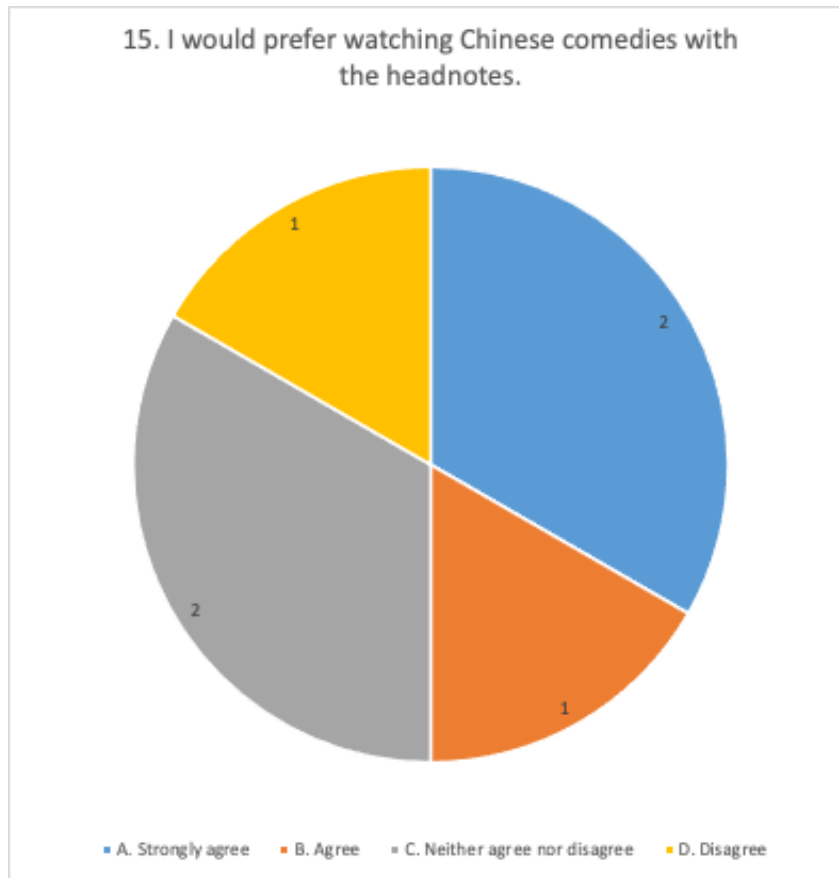


Figure 5.20: Responses to S14



The final statement was about participants' preference for watching videos with headnotes. Figure 5.21 reveals that three of them had a strong preference for this (P1, P3, P4), two were hesitant (P2, P5), and one was opposed to it (P6). As with Figures 5.15 and 5.16 above, these same three participants (P1, P3, P4) also showed positive attitude towards headnotes.

Figure 5.21 Responses to S15

To summarise the results of experimental condition 2, which combined SBS with PHN1, the six participants generally had a good understanding of the video content, despite not fully grasping all aspects according to the comprehension test. Participants' attitudes towards headnotes were mixed; some found them helpful for cultural references, while others saw them as a distraction from reading subtitles and understanding the humour. Three participants preferred videos with headnotes, two were hesitant, and one opposed them. Many participants felt they lacked sufficient time to read the headnotes, influencing their perceptions. To address this, the design was modified by slowing down the subtitle and headnote display speed following BBC guidelines (see §5.5) in an attempt to provide a longer display time for SBS and PHNs.

5.3.3 Condition 3: SBS+PHN2

In this condition, a total of 15 questions were posed. All six participants demonstrated familiarity with the humour or cultural references in the clips, as illustrated in Figure 5.22. Additionally, they all agreed that the corresponding videos were enjoyable to watch, as shown in Figure 5.23.

Figure 5.22: Responses to Q1

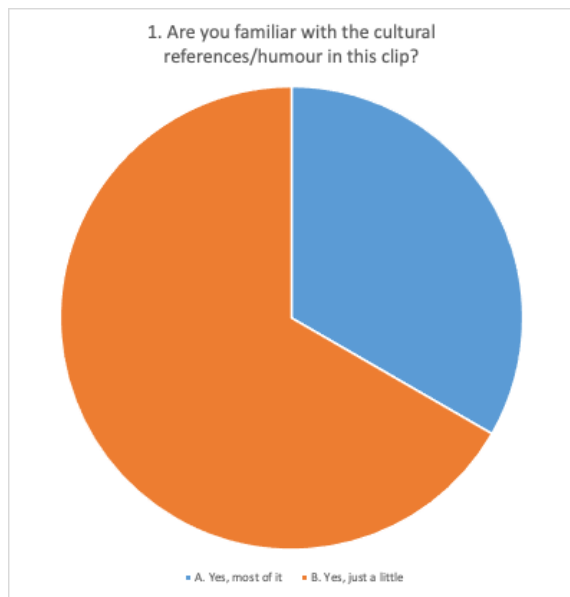


Figure 5.23: Responses to S6

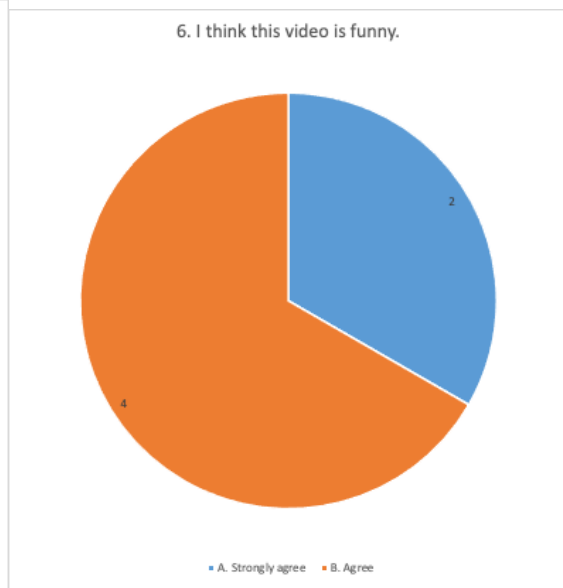


Table 5.7 presents the participants’ scores for Q2 to Q5, as well as the total score for humour comprehension in the videos, which was 19 out of 24.

Table 5.7: Scores on comprehension questions – condition 3

Condition 3 (SBS+PHN2)	P1	P2	P3	P4	P5	P6	Sum
Q2	1	0	1	1	1	1	5
Q3	0	1	1	1	1	0	4
Q4	1	1	1	1	0	1	5
Q5	1	1	0	1	1	1	5
Total	3	3	3	4	3	3	19

However, with regards to the reading process, four out of six participants indicated their inability to read both SBS and PHNs (as demonstrated in Figure 5.24), although four participants agreed that the headnotes are easy to comprehend

(Figure 5.25). Such conflicting viewpoints raises confusion over their opinions on the headnotes, given their reported inability to read them. This indicates that in the main experiment, longer reading time in SBS and PHNs should be provided to improve the validity of participants' responses. To address the problem of conflicting opinions, the reliability of all the collected responses were analysed in the main study.

Figure 5.24: Responses to S7

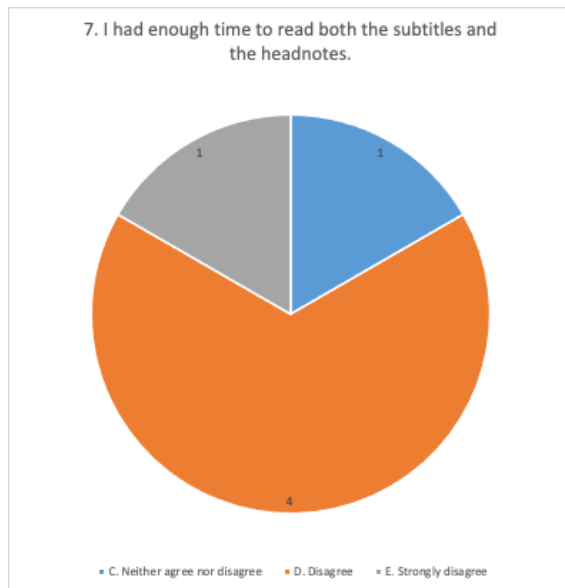
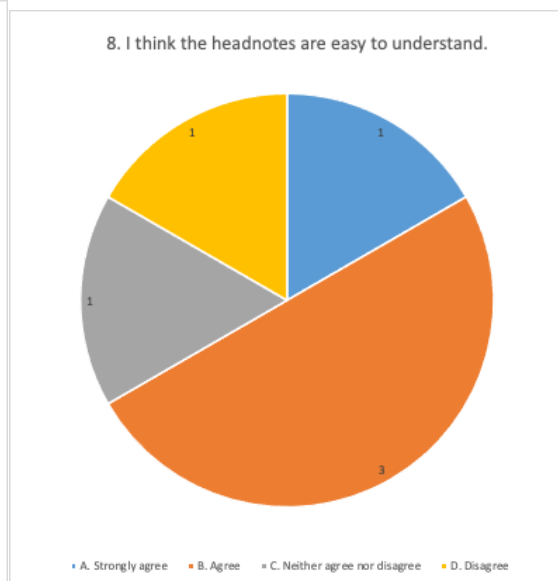


Figure 5.25: Responses to S8



As with condition 2, participants were asked to compare the headnotes they encountered during the study with subtitled videos typically encountered in their daily life in questions S9-S15. Figure 5.26 shows that three participants agreed that the video with headnotes is funnier, while two disagreed. The same numbers were reflected in the responses to S10, where three respondents deemed headnotes as helpful in enhancing humour comprehension, while two disagreed (Figure 5.27). However, a greater number of respondents (four out of six) agree that headnotes facilitate the comprehension of cultural references, whereas only two of them disagree with this statement (Figure 5.28).

Figure 5.26: Responses to S9

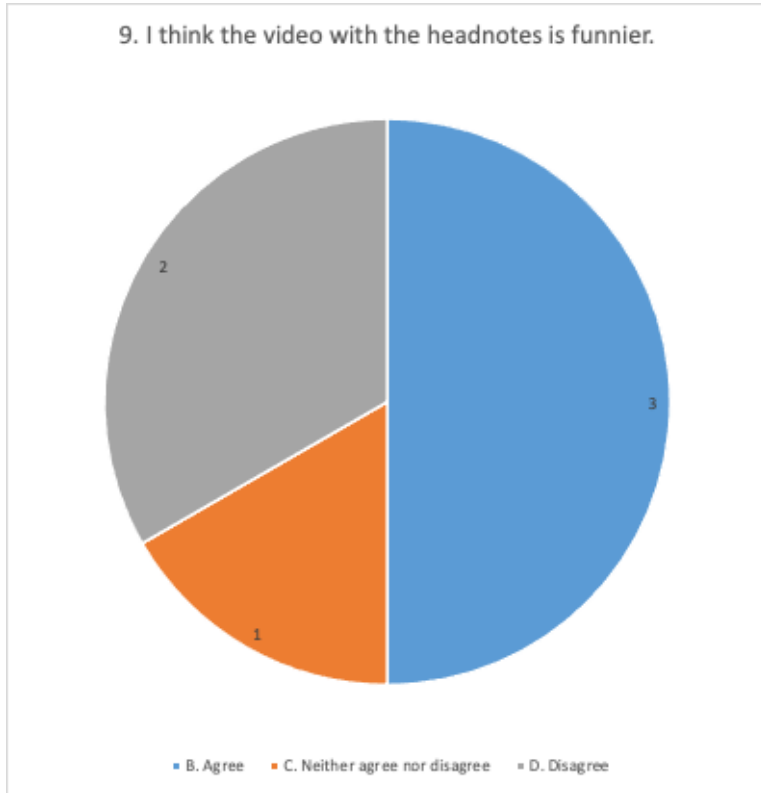


Figure 5.27: Responses to S10

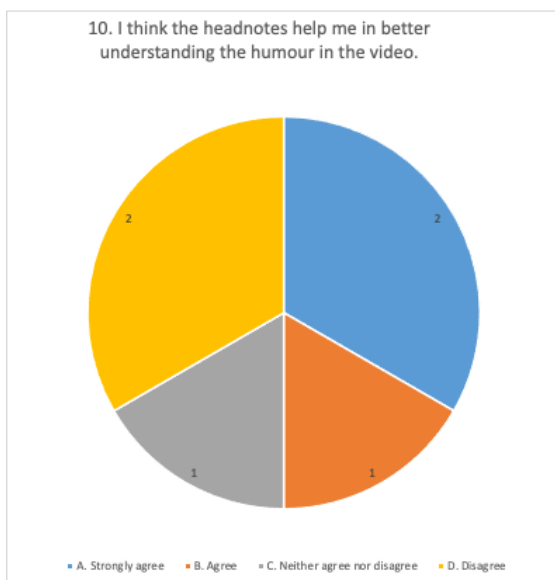
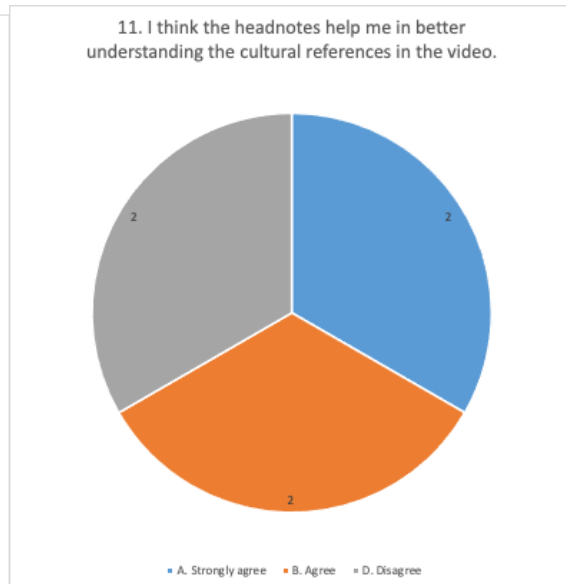


Figure 5.28: Responses to S11



Regarding the drawbacks of headnotes, Figures 5.29 and 5.30 indicate that most participants found headnotes hindered their reading process and comprehension

of humour. However, at least two participants explicitly stated that headnotes aided their understanding of cultural references (Figure 5.31). Therefore, while headnotes posed challenges in reading and humour comprehension, they were considered beneficial for understanding cultural references in the context of Chinese culture. This suggests that, despite the difficulties, headnotes may help enhance viewers' cultural comprehension.

Figure 5.29: Responses to S12

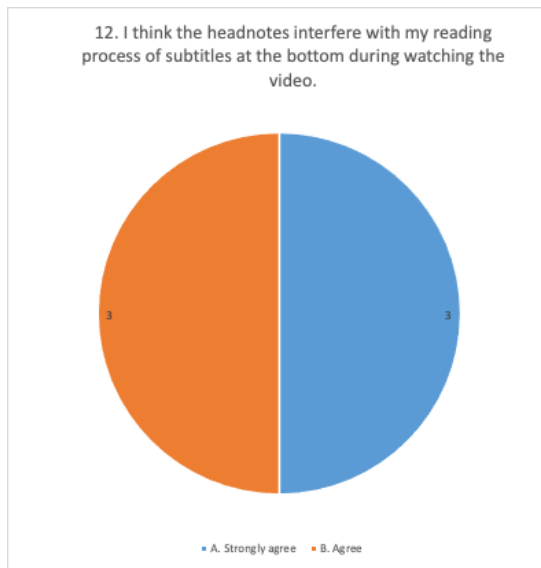


Figure 5.30: Responses to S13

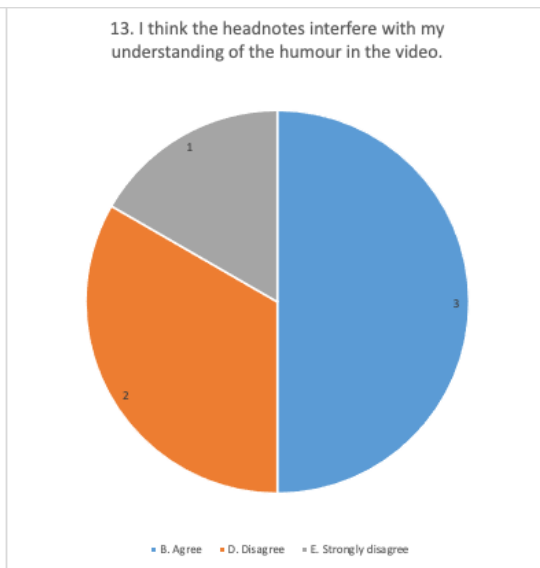
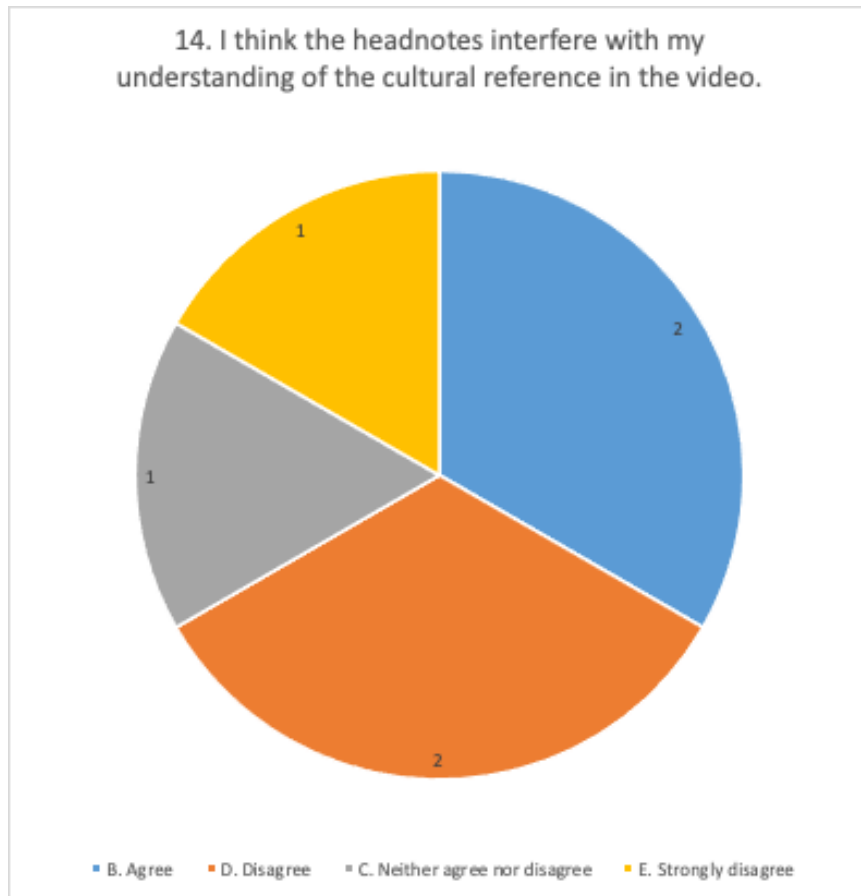
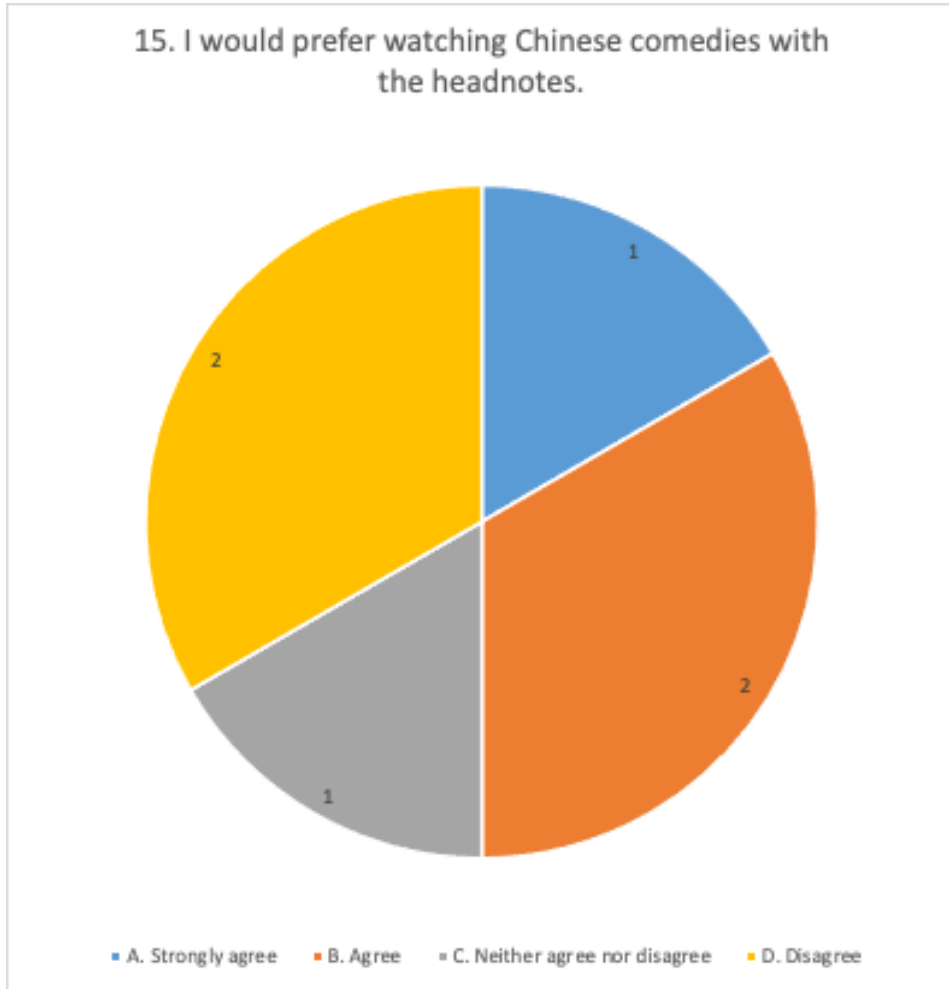


Figure 5.31: Responses to S14



Coincidentally, the responses to the final question in Condition 3 revealed a similar result to that of Condition 2, which asked participants about their preferences for watching videos with headnotes. Specifically, three participants showed a positive attitude and willingness towards the use of headnotes in videos (Figure 5.32).

Figure 5.32: Responses to S15



To conclude, in condition 3, all participants demonstrated familiarity with the humour and cultural references in the videos and agreed that the videos were enjoyable. However, while five participants reported difficulty reading SBS and PHNs, four agreed that the headnotes were easy to comprehend, indicating conflicting viewpoints. In comparing headnotes to subtitles, three participants thought headnotes made videos funnier and helpful for humour comprehension, while four agreed headnotes were helpful for understanding cultural references. Most participants found headnotes to be a hindrance to reading process and humour comprehension, but not to understanding cultural references. Three participants were positive towards the use of headnotes in videos. It was noted that the score for condition 1 (SBS only) was the highest (20), compared to the scores obtained in the other two conditions containing headnotes (19 and 18), but the

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difference was little, and its significance requires a more comprehensive analysis, which was conducted in the main study.

Therefore, based on the questionnaire data from the pilot study, it was decided to implement two changes for the main experiment. Firstly, the duration for which the headnotes are displayed on the screen should be extended to ensure that participants have sufficient time to read them. This is crucial for the purpose of improving participants' viewing experience. Secondly, it is recommended that SBS and PHNs be made as concise and easy to follow as possible to avoid interfering with participants' reading process. Some of them were too long in one line and should be divided into two lines to better accommodate participants. These changes were made to enhance the validity and reliability of the main experiment by ensuring that participants can effectively comprehend and respond to the relevant questions. The detailed modifications are presented in §5.5 where subtitles and headnotes were revised according to these results from the pilot.

5.4 Interview data

During the pilot study, semi-structured interviews were conducted after each participant had viewed the clips and completed the questionnaires. During these interviews, participants were asked to share their opinions on SBS, PHNs, videos, humour and cultural references presented to them. While a significant amount of open-ended feedback data was obtained from six participants, only a cursory analysis is presented here due to the preliminary nature of the pilot study⁶. See Appendix C for detailed interview questions.

The first set of interview questions, aligned with humour appreciation measurement, sought explicit responses about the perceived humour of the videos. Out of six participants, one found Dramatic GPS the funniest (P1), three rated Time

⁶ It should be noted that due to the small sample size, the interview data collected from the pilot was not coded using thematic analysis. Instead, it was summarised and compared for patterns among the six participants. However, the data from the main experiment was coded and analysed using NVivo (see Section 7.3).

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Flies highest (P2, P4, P6), and three favoured *Are You Asleep* (P3, P5, P6). Reasons varied, including clips being “very relatable” (P2, P4, P6), humour being “universal” (P2, P6), and the “acting being very good” (P1, P2, P4).

The second part of the interview questions collected open-form feedback on headnotes and subtitles. Three participants (P2, P5, P6) found headnotes “too distracting” and “difficult to read”, attributing this to slow reading speeds or lack of prior exposure. These participants also reported insufficient time to read SBS and PHNs in Condition 2 (§5.3.2), demonstrating consistency in their responses across different conditions and suggesting a correlation between their negative feedback and their experience with PHNs.

Conversely, participants P1, P3, and P4, who were accustomed to watching subtitles and headnotes in media like Crunchyroll, found them easy to read and beneficial for understanding Chinese cultural references. P3 remarked, “if I were learning Chinese, it would be beneficial to watch these comedies with headnotes explaining the culture”. Their positive responses align with their active engagement shown in the fixation data (see §5.2).

For example, in Clip 3 (*Time Flies*), P1 initially did not understand the character’s self-reference as a “dog” but gained clarity from the headnote explaining it as “idler, good-for-nothing”. P1 preferred PHN2 for its perceived clarity, noting, “they are more right to the point”, while finding PHN1 required converting sayings into meanings first. Conversely, P2 preferred PHN1, appreciating the English sayings and finding PHN2 more suited for those with less cultural knowledge.

Two participants (P5 and P6) who had difficulties in reading SBS and PHNs expressed a positive attitude towards subtitles. While P5 said that they were not used to watching subtitled content at all, they still stated a clear preference for the video with subtitles only (condition 1). P6 expressed a liking for the other two clips

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under condition 1 and 3 respectively, except for Clip 2(Dramatic GPS) and stated that the screen was “too close to the eyes and was tiring”.

In addressing the concept of tailoring headnotes to individuals (Q10), four participants initially did not grasp the differences between two PHNs. After explanation, three saw potential benefits in accommodating viewers’ cultural intelligence and personality traits, though P6 remained sceptical. This was addressed later by adding explanations on the differences of two PHNs in the interview.

Additional questions assessed understanding of humour and cultural references. For instance, P1 suggested substituting a Western celebrity for the Chinese comedian Xu Zhisheng to improve joke comprehension. Despite preferring headnotes, P6 found them distracting and preferred subtitles only, appreciating effective cultural explanation and humour in videos like Clip 1 (Are You Asleep).

The final question encouraged additional feedback. P1 expressed interest in more videos with subtitles and headnotes, while P6 reiterated headnotes’ distractive nature but acknowledged their educational potential. P3 remarked on the comedic style’s originality and unpredictability.

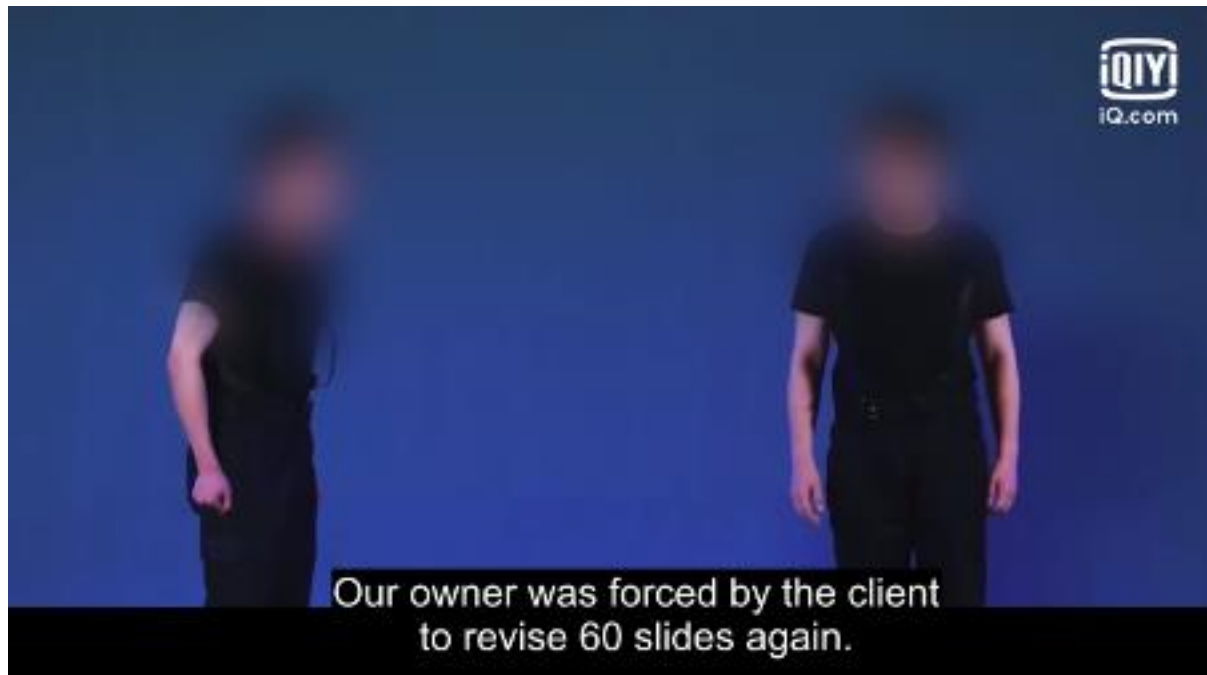
The interview feedback highlighted participants’ diverse opinions on headnotes, with some finding them distracting and others seeing educational value. The results helped refine the experimental procedure for the main study. Summarising these findings, the pilot study revealed the need for clear differentiation between PHN1 and PHN2, adjustments for participants’ reading speeds, and tailored interview questions to enhance data collection in the main study.

5.5 Results and modifications from the pilot study

In the pilot study, the humour comprehension scores based on the questionnaire responses (Q2-Q5) show that six participants achieved the highest scores under condition 1, SBS only. This indicates that participants were still able to understand cultural references and humour presented in Chinese, despite the absence of PHNs. However, it is important to note that these results have limitations in terms of representativeness and credibility due to the small sample size and the participants not completing a pre-task questionnaire. The results from the pilot study suggest that the overall method was effective, but certain modifications, particularly with respect to the display of SBS and PHNs, were necessary, as discussed and listed below.

First, certain issues were identified in the experimental procedure. During the experiment, P5 raised questions and removed their headphones while answering the questionnaire, potentially affecting the data collection. To address this, participants in the main experiment were explicitly instructed to avoid moving their gaze away from the screen or removing their headphones once the experiment began. Additionally, to help participants who may be unfamiliar with subtitled videos, a baseline video titled “Mane Mission” (Figure 5.33) was included. This two-minute video, featuring characters as the few remaining hairs on a person’s head protecting each other from falling off, was shown without any PHNs to familiarise participants to video-viewing with standard subtitles. Further adjustments were made to data collection, SBS, and PHNs, as detailed in the following sections.

Figure 5.33: The added baseline video “Mane Mission”



Eye-tracking Adjustments:

Regarding eye-tracking data, due to the low tracking ratio detected during the pilot for some participants, those wearing glasses or contact lenses with multiple powers were excluded from the main study to enhance data quality. They were asked about their vision in the pre-task questionnaire before the main experiment, and only those with standard glasses or vision were selected.

During the pilot study, eye-tracking measures, such as total and mean fixation durations within AOIs, were used to gather data on participants' engagement with visual stimuli. These measures provided valuable insights that were cross-referenced with questionnaire and interview data. This preliminary analysis informed the main study, where similar eye-tracking data were collected and compared with questionnaire and interview responses. Occurrences of mirth were observed via camera recordings and compared with participants' self-reported data to assess reactions to humorous moments in the video clips. Facial expressions captured during these instances were analysed alongside other collected data.

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Building on the pilot study, the main experiment incorporated more rigorous statistical analysis of eye-tracking data. This included comprehensive evaluations to determine the significance of observed differences, ensuring the reliability and validity of the findings. This progression from the pilot to the main study ensured a robust methodology and comprehensive analysis of participants' engagement and reactions.

SBS Adjustments:

The subtitle guidelines were modified to align with BBC standards, aiming for a slower display speed to facilitate better comprehension. This adjustment lowered SBS speed from Netflix's 20 characters per second (cps) to BBC's recommended range of 17 cps. Other formatting elements such as font colour (white), font type (Arial), and size remained unchanged. Additionally, one-line subtitles were converted to two lines using the line-breaking symbol “\N” to improve readability. For instance, a translated subtitle was reduced in sentence length and display speed, streamlined from nine words to seven, with display speed lowered from 20cps to 16cps.

PHNs Adjustments:

First, some lengthy PHNs were split into two lines for better readability and to prevent interference with the reading process. Second, the display duration of PHNs was increased, ensuring participants had sufficient time to read them while maintaining synchronisation with audiovisual elements. The language in PHNs also was made more concise, allowing for an extended display time. This adjustment aimed to facilitate a clearer understanding of the content without overwhelming the participants. For instance, specific headnotes had their display time extended by about one to two seconds. Third, underlining was added to create a stronger link between PHNs and corresponding SBS. Keywords in subtitles were explicitly underlined to prevent confusion. Most importantly, the translation strategy for PHNs was refined to differentiate between the two types. PHN1 employed domestication techniques, translating cultural references into familiar terms for viewers with low cultural adaptability. For example, “81 traffic lights” was

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explained as “jumping through hoops”, a familiar English phrase. In contrast, PHN2 used foreignisation techniques, retaining original cultural references for viewers with high cultural adaptability. The same example was explained as “significant difficulties, as 81 is a sacred number in Buddhism”, maintaining the original cultural context. These adjustments were made to ensure participants could clearly distinguish between PHN1 and PHN2, enhancing clarity and comprehension.

Questionnaire and Interview Adjustments:

Several changes were made to improve clarity and relevance for the main experiment. For example, a confusing question in the questionnaire was rephrased (“What was Ears’ request” in Clip 1(Are You Asleep) was changed into “What did Ears request to listen to?”). Additionally, two supplementary inquiries and the presentation of headnote screenshots were implemented in the interview. Following the newly added inquiry “Q19: How do you compare the two different headnotes?”, participants were presented with screenshots of the headnotes they had just viewed, allowing them to compare the displayed headnotes without the need to recall them from memory. In case they would fail to see any difference, a brief explanation was added (“Two versions of headnotes were presented in the clips. PHN1 was characterised by a focus on cultural expressions in the English language, while PHN2 offered explanations closer to the original culture.”). This was followed by another inquiry “Q20: Which one do you prefer?” to gather more specific information about participants’ preferences.

These modifications aimed to enhance participants’ viewing process of the videos, ensuring the study’s validity and reliability. By addressing issues identified in the pilot study, the research aimed to ensure the integrity and accuracy of the data collected in the main experiment. The adjustments sought to balance readability and comprehension without compromising the viewing experience, adhering to best practices in subtitle and headnote presentation.

Chapter 6

Findings and Data Analysis 1: Pre-task Questionnaire and Eye-tracking

6.1 Introduction

The main experiment took place in an office at DCU, using the same lab setup as the pilot study. While the procedure closely resembled the pilot study, as discussed in §5.5, it was refined to accommodate a larger sample size. A total of 40 participants, all native English speakers with normal or corrected-to-normal vision, completed the required procedures. To prevent bias, participants were only informed that the research pertained to subtitle reception at the beginning of the experiment, with details about the headnotes withheld until after the experiment.

Ethical approval was obtained from the Faculty Research Ethics Committee of the Humanities & Social Sciences at DCU. Participants received plain language information sheets and provided written consent before the experiment.

Several improvements were made based on feedback from the pilot study, including adjustments to the procedure, video clips, subtitles, PHNs, post-task questionnaires, and interviews. Key differences included adjusting the presentation speed of PHNs (from 20cps to 17cps), underlining keywords in PHNs, and splitting longer sentences into two lines. Other changes included adding a baseline video to familiarise participants with subtitled videos and refining the post-task questionnaires, as summarised in Section 5.5.

As in the pilot study, the Tobii T60XL eye tracker was used for data collection. Before viewing the clips, a nine-point calibration process was conducted for each participant. Participants watched the clips with headphones, answered post-task questionnaires, and participated in interviews.

This chapter begins with a detailed account of the participant selection process in Section 6.2, followed by an analysis of eye-tracking data in Section 6.3, covering AOIs, fixation data, attention distribution, and instances of mirth. Section 6.4 concludes with a summary of the results from the eye-tracking data analysis.

6.2 Pre-task questionnaire data

In order to recruit participants for the main experiment, a pre-task questionnaire was implemented, consisting of BFI-S and CQS. A research poster was disseminated both physically across the university campus and electronically through personal networks, thereby augmenting the pool of prospective participants through a snowball effect. Between early May and early July 2023, a total of 92 participants completed the pre-task questionnaire via Google Forms, which sought to categorise them into high- and low-scoring groups based on their CQS and BFI-S responses. However, only 80 of these participants indicated their willingness to further participate in the main experiment on the university campus. These 80 responses were considered valid for the initial reliability test for further participant selection. A two-factor ANOVA test was applied to the dataset of these 80 responses, yielding a Cronbach's alpha value of 0.88 as the result (see Table 6.1 for details). As mentioned previously in §4.6.2, Cronbach's α has been extensively applied in research to assess the internal reliability of responses gathered through questionnaires. With a threshold of 0.70 regarded as the minimum acceptable value, the obtained result of 0.88 in this research is considered highly satisfactory. This result signifies that the collected data are sufficiently reliable for analysis in the following phases of the study.

Table 6.1: The internal reliability results based on responses to the pre-task questionnaire (n=80)

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Responses from 80 participants	859.90	79.00	10.88	8.37	<0.01	1.28
24 pre-task questions	1186.92	23.00	51.61	39.71	<0.01	1.54
Error	2361.53	1817.00	1.30			
Total	4408.36	1919.00				
Cronbach's α	0.88					

To identify eligible participants from the pool of 80 responses, the following selection criteria were applied:

- a. Eligibility was determined based on their responses to questions regarding (1) their willingness to participate in the main experiment at DCU; (2) a complete lack of proficiency in the Chinese language; (3) absence of bifocal/varifocal glasses and contact lenses.
- b. Inclusion in the study was contingent upon their completion of questions regarding: (1) BFI-S; (2) CQS.

As previously discussed in §4.4.3, significant correlations between the Big Five personality traits (Q1 to Q5) and CQ (Q6 to Q25) were discovered (Ang, Van Dyne and Koh, 2006; Wilson *et al.*, 2013). Specifically, the personality traits of openness, conscientiousness, extroversion, and agreeableness (which correspond to Q1 to Q4) exhibited positive associations with CQ and cognitive engagement, while neuroticism (Q5) displayed a negative relationship. Given this negative correlation between neuroticism and CQ, a median score of 3 on Q5 (neuroticism) was selected as a threshold to differentiate participants with varying levels of neuroticism. This classification aimed to create distinct groups for analysis based on their emotional stability, which is crucial for understanding cultural adaptability.

Following this rationale, the median score of 3 on Q5 was used as a starting point to classify participants into high- and low-scoring groups, and the mean and

median scores for both Q1 to Q4 and the remaining questions (Q6-25) were then computed (as listed below in Table 6.2). From the 80 collected responses, applying mean scores as the classification criterion led to the identification of 47 eligible participants, whereas using median scores resulted in the classification of 51 participants. Therefore, the median values of 3 on Q5, 17 on Q1-4, and 96 on Q6-25 were determined as thresholds respectively to gain a larger pool of participants. This approach ensured that the participant pool was effectively stratified based on their levels of cultural adaptability and personality traits.

Table 6.2: Mean and median scores from 80 responses

Q1-4	Mean	Median
	16.93	17
Q6-25	Mean	Median
	94.45	96

Based on the median scores, the criteria for classifying participants into different groups were defined in Table 6.3: participants would be categorised into the group of Persona 1 and the low-scoring group if first, their responses to Q5 exceeded the median score 3, and second, if the sum of their scores on Q1 to Q4 was less than 17, in addition to their combined scores on the CQS questions (Q6-Q25) being less than 96; the designation of Persona 2 and the high-scoring group participants are those with scores at 3 or lower on Q5, but scores equal to or higher than 17 and 96 on the other scales.

Table 6.3: Group classification threshold

Persona	Score group	BFI-S score		CQS score
		Q5	Q1-4	Q6-25
Persona 1	Low-scoring	>3	<17	<96
Persona 2	High-scoring	≤3	≥17	≥96

As per the discussions in Section 4.4.4, this study created two distinct personas: Persona 1 and Persona 2. Persona 1 was assigned to the group of participants with low scores, corresponding to low cultural intelligence, while Persona 2 was associated with high scores of cultural intelligence. Consequently, responses from participants whose scores fell in the middle range (neither low nor high) were excluded from the analysis. This led to the selection of a total of 51 responses meeting the stipulated criteria and allowing for classification into either the low- or high-scoring group. Following communication with them, 11 participants could not or did not wish to take the experiment, resulting in a final group of 40 individuals (22 in the low-scoring group and 18 in the high-scoring group) attended the experiment and completed all aspects of the study, encompassing a three-step process: viewing four video clips (including a baseline and three research clips), responding to three post-task questionnaires, and participating in a semi-structured interview, which constituted the final data sample for analysis.

As shown in Tables 6.4 and 6.5, detailed scores from 40 participants and their groups are illustrated, showing 22 in the low-scoring group and 18 in the high-scoring group individually. These scores were not disclosed to participants.

**Table 6.4: Low-scoring group with their pre-task questionnaire scores
(n=22)**

Participant	Group	Scores: Q1-4	Score: Q5	Scores: Q6-25
P02	Low	16	4	93
P03	Low	16	5	94
P04	Low	13	4	72
P06	Low	15	4	90
P07	Low	11	5	93
P09	Low	15	5	87
P10	Low	15	5	88
P12	Low	15	5	83
P14	Low	16	4	93
P15	Low	15	5	61
P16	Low	16	5	91
P20	Low	12	5	81
P21	Low	15	4	83
P23	Low	14	4	81
P26	Low	14	4	79
P27	Low	16	4	85
P28	Low	14	5	93
P29	Low	16	5	95
P35	Low	15	5	94
P36	Low	15	5	80
P37	Low	12	4	88
P38	Low	14	4	81

Table 6.5: High-scoring group with their pre-task questionnaire scores (n=18)

Participant	Group	Scores: Q1-4	Score: Q5	Scores: Q6-25
P01	High	17	3	106
P05	High	18	2	107
P08	High	19	3	105
P11	High	20	2	106
P13	High	18	3	104
P17	High	18	3	116
P18	High	17	3	103
P19	High	20	3	117
P22	High	18	3	115
P24	High	20	2	121
P25	High	17	2	103
P30	High	18	2	118
P31	High	19	2	127
P32	High	20	3	113
P33	High	17	2	96
P34	High	20	2	106
P39	High	17	3	106
P40	High	19	2	97

However, out of the group of 40 recruited participants, data from six individuals were omitted due to their eye-tracking ratios falling below the 70% threshold (see details in Table 6.6 in §6.3). This threshold was chosen based on prior eye-tracking investigations and, consequently, was applied consistently in both the pilot study (see §5.2) and the main experiment. As a result, the data analysis for this chapter is based on the data from the remaining 34 participants, 20 from the low-scoring and 14 from the high-scoring group. In the next sections, the collected data including specifics of their tracking ratios and eye movements are elaborated.

6.3 Eye-tracking data

As discussed in section 5.2 regarding the pilot study, only data featuring a tracking ratio above 70% was regarded as valid, a practice consistent with recommendations from established studies (e.g., O'Brien, 2009; Hu, 2020). This threshold has been maintained for the main experiment to ensure consistency in the process of data collection and analysis. As depicted in Table 6.6, among all the qualified 40 participants who completed the main experiment, six (P02, P11, P19, P24, P29, P34) had tracking ratios below the threshold. Consequently, the data collected from them, including eye tracking, post-task questionnaires, and interviews, were excluded from the analysis, leaving a total of 34 valid samples.

The eye-tracking data collection and analysis were conducted with a particular focus on participants' mean duration of fixations on each AOI during viewings under conditions of subtitles (SBS), PHN1, and PHN2. The objective behind the analysis of the eye-tracking data was to substantiate the engagement level of participants with the PHNs throughout the duration of their video-viewing sessions, thereby ensuring a high level of validity for the data collected on comprehension and humour. Furthermore, an analysis of the video recordings capturing the facial expressions of the participants was conducted. This analysis aimed to methodically observe and document instances of mirth, thereby contributing to a comprehensive investigation into humour appreciation. The triangulation of eye tracker, questionnaire and interview was to ensure the validity of collected data and to gain a comprehensive understanding of participants' perceptions. A deeper insight into the influence of subtitles on comprehension emerges when examining the correlation between participants' comprehension levels and their engagement with reading the subtitles. The significance of subtitles in enhancing comprehension or reading on the screen can only be accurately assessed when the research indicates whether the participants genuinely engaged with reading the subtitles.

Table 6.6: Viewing sequences and eye-tracking ratios of 40 participants

Viewing Sequence of Clips				
1	A1	D2	T3	83%
2	A2	D1	T3	42%
3	A3	D2	T1	90%
4	D1	A2	T3	91%
5	D2	A3	T1	86%
6	D3	A1	T2	96%
7	T1	A2	D3	94%
8	T2	A1	D3	83%
9	T3	A2	D1	88%
10	A3	D1	T2	98%
11	T1	D2	A3	58%
12	A1	D3	T2	88%
13	D2	T1	A3	82%
14	T2	D3	A1	87%
15	T3	D1	A2	97%
16	D1	A3	T2	96%
17	A3	T1	D2	97%
18	A2	D3	T1	93%
19	D3	T2	A1	58%
20	T3	A1	D2	96%
21	A2	T3	D1	88%
22	A1	T2	D3	93%
23	D1	T3	A2	84%
24	D2	T3	A1	17%
25	T2	A3	D1	79%
26	T1	A3	D2	98%
27	D3	T1	A2	84%
28	D1	T2	A3	92%
29	T3	D2	A1	59%
30	A2	T1	D3	95%
31	A1	T3	D2	85%
32	T1	D3	A2	79%
33	D2	A1	T3	89%
34	T2	D1	A3	69%
35	A3	T2	D1	95%
36	D3	A2	T1	98%
37	T1	D2	A3	84%
38	A2	D1	T3	96%
39	D2	T3	A1	86%
40	D3	T2	A1	86%

6.3.1 AOIs

As with the pilot study, it is essential to define AOIs for the main experiment to extract valid eye-tracking data before delving into the analysis. In each video clip, the conditions of PHN1 and PHN2 encompass a compilation of three to four headnotes, cumulatively accounting for a total of 11 PHNs for three clips. These headnotes constitute the central elements subjected to analytical scrutiny. Furthermore, the temporal extent to which these headnotes are visibly presented on the screen is quantified and categorised as AOIs for the purpose of this investigation. As conducted in the pilot study (see §5.2), the duration of each headnote was deemed as an AOI starting from the initial second of its appearance to approximately three seconds after its disappearance to facilitate a precise analysis of participants' engagement with them. This temporal definition was established to accommodate variances in individual reading velocities and to guarantee the capture of participants' visual focus from the inception of the headnote's presence on-screen to slightly beyond its disappearance. AOIs are designed to approximate the dimensions of the subtitle or headnote area, with a marginally larger size to account for potential errors in visual angle and the peripheral vision of participants. The tag names (see Figure 6.1) assigned to these AOIs derived from the cultural elements featured within the headnotes. In practice, a rectangle box slightly bigger than the area of headnotes was drawn to indicate the defined AOIs on the software Tobii Pro Lab, each annotated with a designated tag name.

For example, as shown in Figure 6.1, the headnote explaining the term “Hongbao” in the subtitles from Clip 1 (Are you asleep) was tagged as “HONGBAO” and was tracked as an AOI for a timespan of around four seconds with a coverage size of the shown rectangle. In total, 11 headnotes and their corresponding subtitle areas in three clips were determined as AOIs, with their tag names and time durations listed in Table 6.7.

Figure 6.1: Example of defined AOIs (HONGBAO)

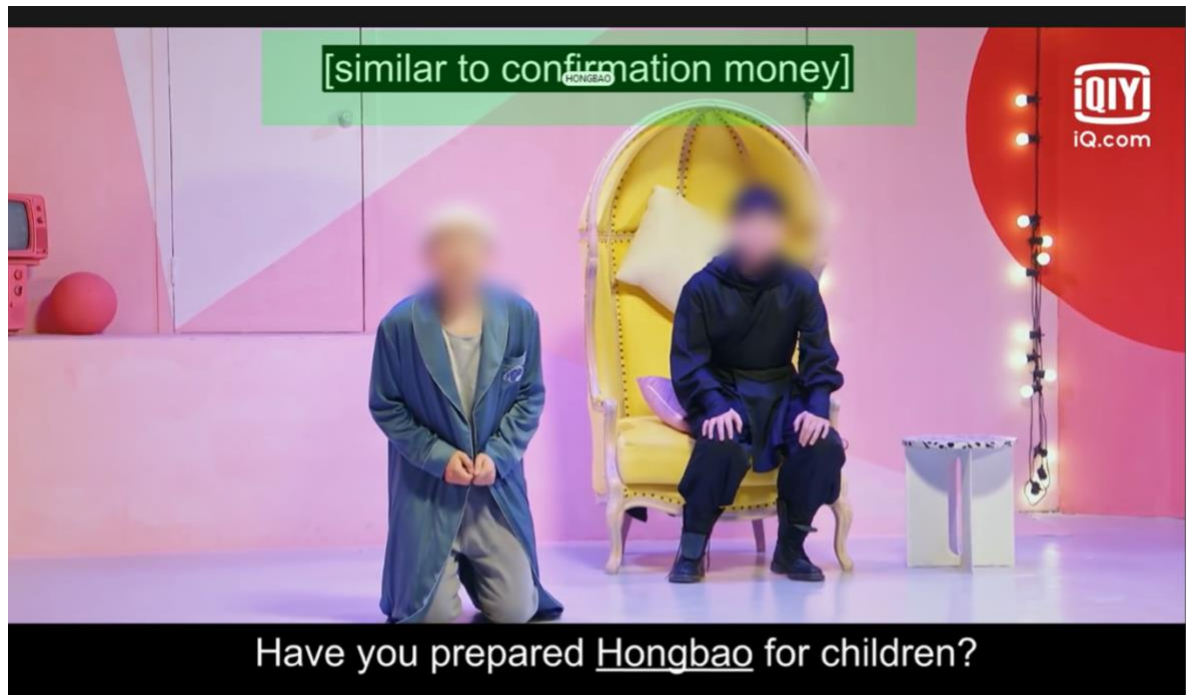


Table 6.7: 11 Defined AOIs in total

Clip	AOI	Timestamp (MM:SS:MS)
Are you asleep (Clip1)	TOFU	01:24:99 - 01:27:15
	XIANGSHENG	02:44:73 - 02:48:40
	HONGBAO	05:09:57 - 05:12:88
Dramatic GPS (Clip2)	GUANYIN	01:37:59 - 01:41:77
	81	01:53:05 - 01:59:89
	GAOJIA	02:27:93 - 02:31:12
	ZIWEI	02:56:11 - 02:58:88
Time flies (Clip3)	GOU	00:09:32 - 00:11:56
	PENGYOUQUAN	00:46:40 - 00:48:48
	WUJING	01:51:80 - 01:53:40
	GUANGGUNJIE	04:59:28 - 05:04:08

6.3.2 Mean fixation durations

As discussed in Section 4.5.3 regarding the minimum valid data of fixation durations and based on previous literature as well as the mechanisms of Tobii software, the threshold for minimum fixation durations in this research was set at 60 ms. This threshold ensures participants' meaningful visual engagement, thereby enhancing the accuracy and relevance of the collected eye-tracking data.

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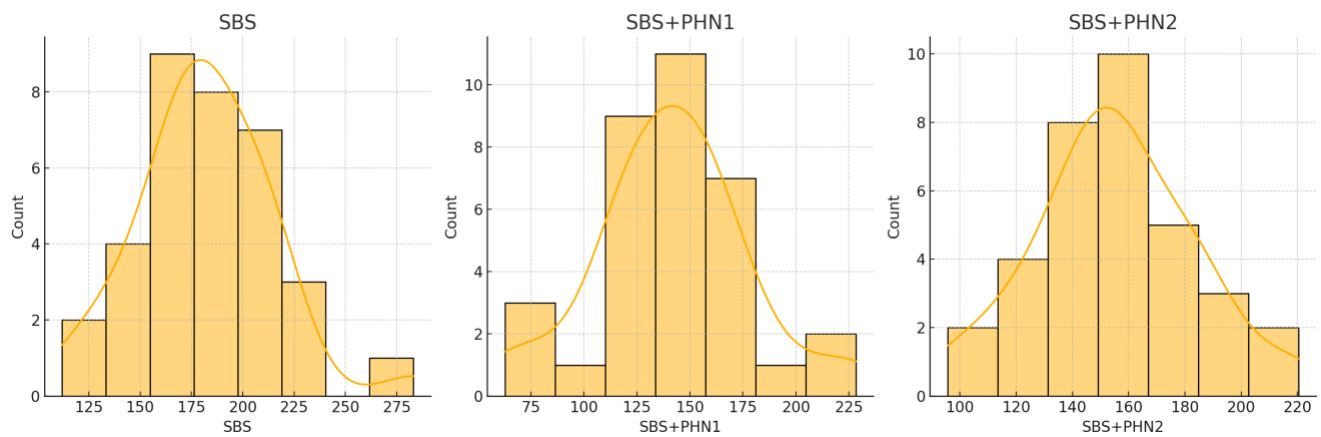
To assess the extent of participants' engagement with the subtitle area and headnote area, an analysis of their mean fixation durations on each AOI was conducted and the results were summarised in Table 6.8. For example, as detailed in Table 6.6, P01 viewed the video clips in the sequence of Clip 1 (Are you asleep) featuring only subtitles, followed by Clip 2 (Dramatic GPS) with PHN1, and concluded with Clip 3 (Time flies) that included PHN2. The mean fixation duration of P01 on a total of 11 AOIs across 3 conditions was calculated and presented in Table 6.8. Specifically, P01 exhibited an average fixation duration of 165 ms on the subtitle area in Clip 1 without headnotes. Regarding PHN1, P01's mean fixation duration, computed across four headnote AOIs in Clip 2 (labelled as "GUANYIN", "81", "GAOJIA", "ZIWEI"), was 145.25 ms. For PHN2, the mean fixation duration was derived from four headnote AOIs in Clip 3, namely AOI tags of "GOU", "PENGYOUQUAN", "WUJING", "GUANGGUNJIE", and it averaged at 158 ms. The different levels of engagement across the AOIs offer valuable insights into how participants interact with various elements of the visual content.

Table 6.8: Participants' mean duration of fixations on AOIs under 3 conditions (n=34)

Mean fixation durations (milliseconds)			
Participant	SBS	SBS+PHN1	SBS+PHN2
P01	165	145.25	158.00
P03	202	126.50	159.50
P04	185	194.33	186.40
P05	220	140.75	156.75
P06	220	155.25	157.80
P07	206	80.67	172.40
P08	170	62.75	155.60
P09	163	136.00	134.80
P10	210	148.50	182.50
P12	198	165.50	184.80
P13	177	125.50	213.33
P14	174	104.25	178.00
P15	192	163.00	95.60
P16	283	171.00	190.75
P17	189	228.25	162.00
P18	202	162.00	184.60
P20	206	148.50	143.80
P21	112	118.00	123.00
P22	212	138.67	144.40
P23	187	120.67	146.60
P25	178	155.67	177.25
P26	176	142.75	153.25
P27	140	115.00	125.40
P28	177	163.00	159.50
P30	145	118.67	116.60
P31	156	165.25	156.40
P32	163	140.67	139.75
P33	135	116.25	99.00
P35	154	114.75	141.00
P36	184	179.00	145.60
P37	170	142.25	149.50
P38	224	221.00	220.40
P39	173	130.67	139.00
P40	124	67.67	117.20

The analysis of the mean fixation duration data from the three conditions (SBS, PHN1, and PHN2) commenced with a test for normality distribution. Figure 6.2 illustrates this normal distribution, as evidenced by the p-values surpassing the 5% threshold (0.38, 0.36, 0.79), thus satisfying one of the key assumptions for conducting further statistical tests.

Figure 6.2: Normality results of mean fixation durations from SBS, PHN1, PHN2



Subsequently, a one-way ANOVA test was employed to ascertain if there were significant differences among the means of fixation durations of SBS, PHN1, and PHN2. Table 6.9 presents the results of this test, and the p-value was found to be significantly lower than 0.05. This result led to the rejection of the null hypothesis, suggesting the presence of statistically significant differences between the means of at least two of the subtitling conditions under study.

Table 6.9: ANOVA results of mean fixation durations from SBS, PHN1, PHN2

ANOVA					
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>
Between conditions	28307.27	2	14153.63	13.31	<0.05

To pinpoint the specific conditions between which these differences occur, a post hoc analysis, Tukey’s HSD test, was conducted following the ANOVA. Tukey’s HSD is a widely used method for multiple comparison testing, and the results are detailed in Table 6.10, which furthers the analysis of the fixation duration data across different pairs of subtitling conditions.

Table 6.10: Tukey’s HSD results of mean fixation durations from SBS, PHN1, PHN2

Tukey's HSD					
Comparison	Mean Difference	p-value (adjusted)	Lower CI	Upper CI	Reject Null Hypothesis
PHN1 vs. PHN2	13.60	0.20	-5.22	32.42	FALSE
SBS vs. PHN1	-40.12	0.00	-58.94	-21.30	TRUE
SBS vs. PHN2	-26.52	0.00	-45.33	-7.70	TRUE

According to these results, the null hypothesis of equal means is rejected for pairs of SBS and PHN1 and PHN2 but not between headnotes. This means that statistically significant differences were found between conditions of subtitles and headnotes, but not between headnotes themselves. This outcome not only corroborates the earlier conclusions drawn from the ANOVA test but also provides a more detailed understanding of the relationships between the conditions by establishing that under subtitle and headnote conditions, participants’ mean fixation durations are found to differ significantly.

The rejection of two null hypotheses indicates distinct variations in how participants interacted with and processed the subtitles and two types of headnotes. This differentiation in engagement levels can be critical for understanding viewer behaviour, preferences, and the effectiveness of different types of visual information presented in the study.

Based on the data analysis results presented above, some trends emerge in terms of the engagement with different AOIs from all the participants:

1. SBS > PHN1: Their mean fixation durations for SBS are greater than that for PHN1;
2. SBS > PHN2: Their mean fixation durations for SBS also exceed that for PHN2;
3. PHN1 \approx PHN2: The mean fixation durations for PHN1 and PHN2 are similar.

These patterns suggest several insights. Participants focused more on SBS, indicating that subtitles may be either more captivating or demand more attention due to containing critical narrative information. The longer fixation on subtitles might also reflect a general preference and familiarity with this format. Differences in how viewers interacted with subtitles and headnotes could arise from factors such as content nature and format familiarity. Subtitles typically require immediate viewer engagement to follow the narrative in the video. Consequently, viewers might prioritise understanding the story conveyed by the subtitles over the supplementary information in headnotes. Furthermore, cultural and habitual factors may predispose viewers to devote more attention to reading subtitles than headnotes.

The similar time spent on PHN1 and PHN2, despite their designed differences, is unexpected. To examine this further, the mean fixation durations were normalised per character for both headnotes (see Appendix G). The calculation was performed by dividing the total character count of the headnote by the average fixation duration observed across all participants and all video clips under two headnote conditions. For example, in Clip 1, one of AOIs (PHN1 of Tofu brain: ‘a jelly-like dish’) contains 15 characters including the hyphen. As P15’s mean fixation duration on this AOI is 200ms, then the normalised fixation duration is calculated as $200/15$, resulting in approximately 13.33ms per character.

The analysis revealed a distinct contrast: viewers engaged with PHN1 longer than with PHN2 on a per-character basis. This was supported by statistical tests—the

Mann-Whitney U test and the t-test—that showed significant differences with p-values below 0.05. This suggests a more complex interaction between engagement and content presentation, as the mean fixation durations (in Table 6.10) for PHN1 and PHN2 were tested similar, but significantly different when normalised per character: PHN1 (5.76 ms) and PHN2 (3.62 ms).

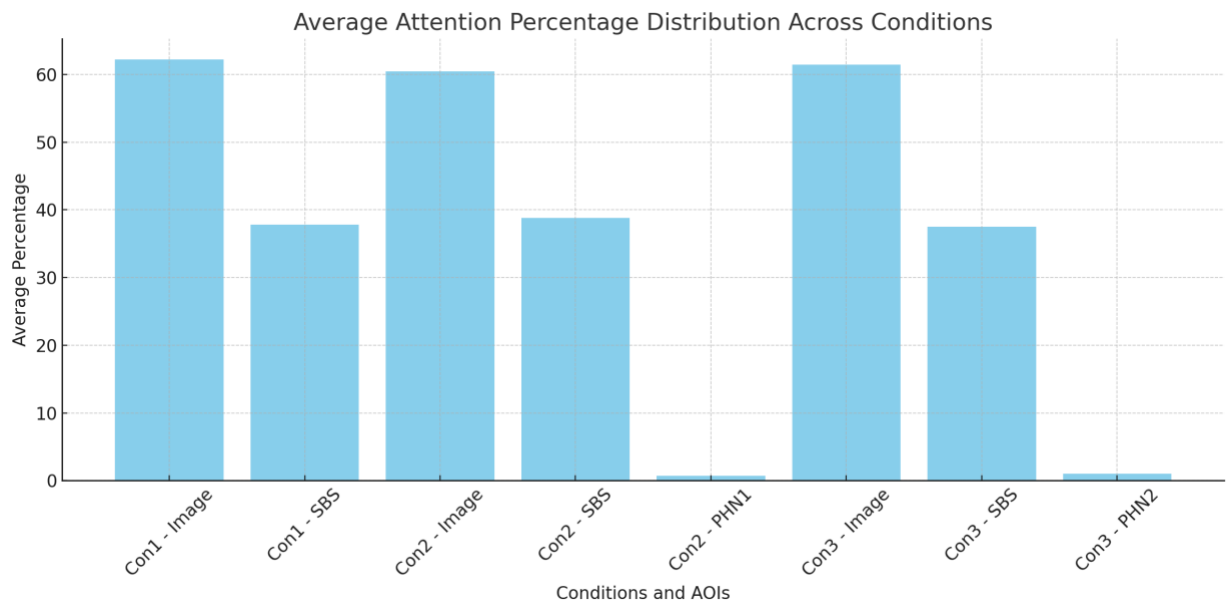
There are a few possible reasons to explain this. First, perhaps PHN1 texts, being either shorter or denser, led participants to spend more time per character. This could mean that, although the total fixation times were similar, the per-character engagement was less efficient for PHN1. Additionally, the content in PHN1 might be more challenging to read or understand than in PHN2, leading to longer per-character fixation durations. This challenge could stem from vocabulary, sentence structure, cultural or conceptual difficulty, which may not necessarily increase the overall fixation time but may affect the time spent per character. Alternatively, PHN2's overall longer text (about 1.65 times longer than PHN1 on average) might have left viewers rushed in reading them, resulting in less time spent per character. The shorter time spent on PHN2 could simply be because participants did not have enough time to read or finish PHN2. As PHN2 are longer than PHN1 while given the same duration of time, participants may have to rush or may not finish reading PHN2, leading to shorter fixation durations per character compared to PHN1.

6.3.3 Attention Distribution Analysis

Attention distribution was evaluated using total fixation durations data to validate the eye-tracking results and to assess participant engagement across different screen areas (see detailed data in Appendices H1 to H3). The AOIs defined for this study included the image area, the subtitle area (SBS), and the two headnote areas (PHN1 and PHN2). As discussed in Section 4.5.4, prior AVT research has consistently demonstrated that subtitles often capture a significant portion of visual attention, with some studies indicating that they account for approximately 37% to 84% of total viewing time (Cambra et al., 2014; Jensema et al., 2000). The findings in this research align with this trend, as participants exhibited a greater allocation of attention to the SBS compared to the headnotes, reinforcing the central role of subtitles in facilitating audiovisual comprehension.

Table 6.11 summarises the average percentage distribution of attention across the various AOIs under different conditions (SBS-only, SBS + PHN1, SBS + PHN2). The results indicate that participants consistently allocated the most attention to the image area, with over 60% of their total viewing time spent on this AOI across all three conditions. The subtitle area also attracted a considerable share of visual attention, with approximately 36% across the conditions. In contrast, the attention devoted to PHNs was significantly lower, with PHN1 capturing only 0.72% and PHN2 capturing 1.02% of total viewing time. These findings illustrate that while the inclusion of PHNs slightly shifted attention away from the subtitle area, the image and subtitle areas remained the primary focal points.

Table 6.11: Attention distribution across conditions (Image VS SBS VS PHNs)



A one-way ANOVA was conducted to assess the statistical significance of differences in attention distribution across the three conditions. The analysis yielded the following results:

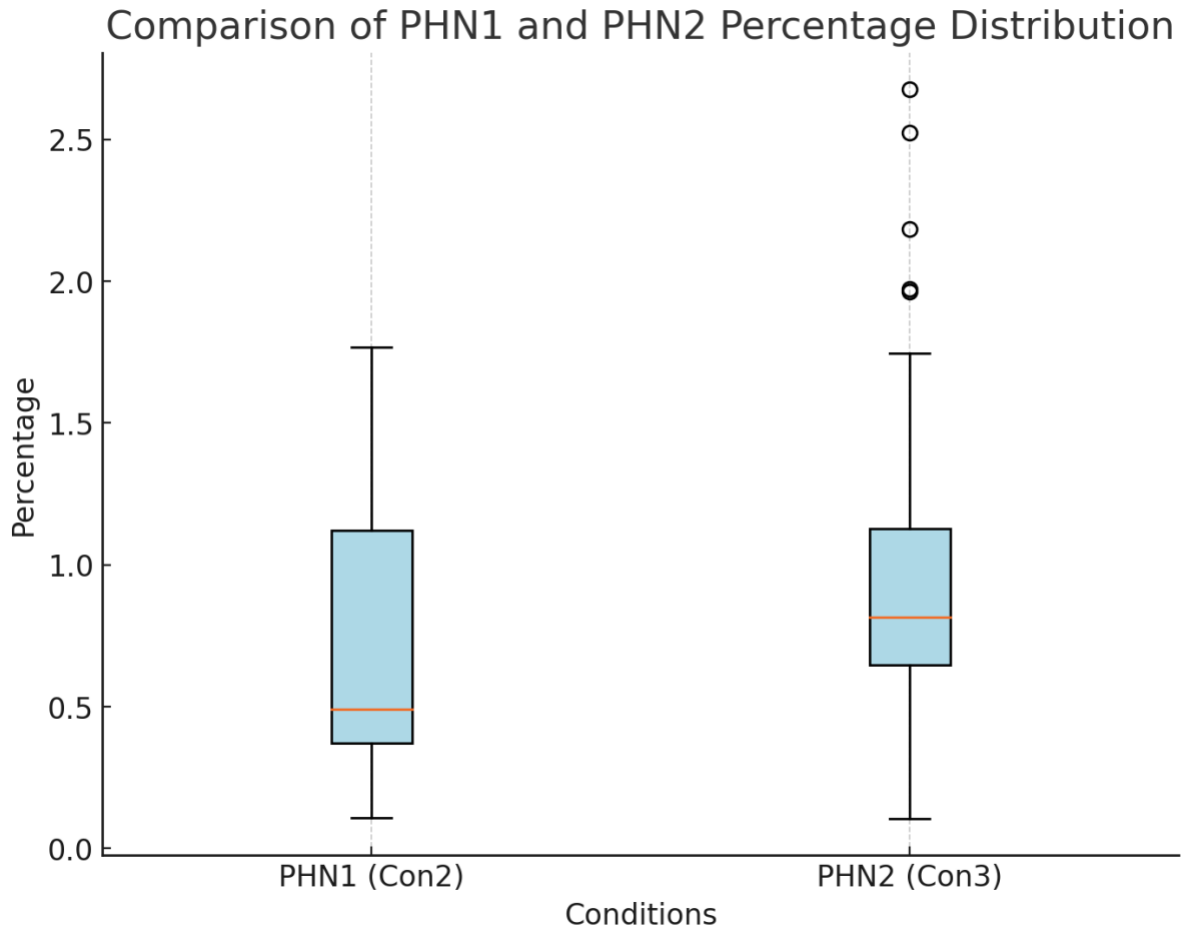
Image area: The F-statistic was 0.217, with a p-value of 0.805, indicating no statistically significant differences in attention distribution across the three conditions for the image area.

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SBS area: The F-statistic was 0.134, with a p-value of 0.875, similarly showing no statistically significant differences in attention allocation across the conditions for the subtitle area.

Since the p-values for both the image and subtitle areas were well above the standard significance threshold (0.05), we failed to reject the null hypothesis, confirming that there were no significant variations in attention distribution across conditions for these two AOIs. These results suggest that participants maintained a relatively stable pattern of attention towards the image and subtitle areas regardless of the presence or absence of PHNs.

Further analysis was performed to investigate potential differences in attention distribution between PHN1 and PHN2. The one-way ANOVA revealed a statistically significant difference in fixation durations between these two conditions (p-value = 0.032), suggesting that participants' engagement with PHN2 differed from their engagement with PHN1. As shown in Table 6.12, the analysis indicated that PHN2 exhibited a broader range of attention distribution, potentially due to its longer text content and the varying reading speeds among participants. This variability, as evidenced by the presence of outliers, may have contributed to the observed significant differences in attention allocation.

Table 6.12: Attention percentage comparison: PHN1 VS PHN2

These results show that PHN1 and PHN2 captured only a small proportion of the total attention compared to the image and SBS areas, which dominated the visual attention landscape. The significant difference between PHN1 and PHN2 suggests that while both types of headnotes attracted less attention overall, PHN2 tended to evoke more variable engagement, possibly due to its lengthier content and the need for more cognitive effort to process. The data implies that viewers may have spent more time reading PHN2 due to its more detailed cultural explanations, whereas PHN1, being shorter and more familiarised, required less processing time.

These findings are consistent with the idea that subtitles serve as the primary text element in audiovisual content, while additional textual elements such as headnotes attract limited but targeted attention. The fact that no significant differences were found for the image and SBS areas across conditions supports the

view that the introduction of PHNs did not drastically disrupt the overall attention distribution patterns.

The attention distribution analysis, based on participants' total fixation durations, confirms that subtitles continue to play a central role in viewers' visual engagement, even when additional textual elements like PHNs are introduced. The observed differences between PHN1 and PHN2 indicate that attention allocation may be influenced by factors such as text length, content familiarity, and reading speed. The broader spread in attention for PHN2 suggests that longer and more detailed headnotes may require viewers to allocate additional cognitive resources, potentially affecting the balance between processing effort and cognitive effects.

The results also highlight the importance of considering how different types of textual elements interact in subtitling practices, suggesting that careful design of PHNs is necessary to optimise viewer engagement without detracting from the main content.

In summary, the eye-tracking data reveal a complex interplay between content significance, viewer habits, and the characteristics of on-screen text in shaping engagement patterns. The findings indicate that participants allocated more attention to subtitles and, when normalised per character, to PHN1, suggesting that these elements may have been more accessible or required less effort compared to PHN2. These results underscore the need to look beyond straightforward assumptions about attention distribution and consider factors such as familiarity with text types and reading demands. The reasons behind these observed patterns will be further explored through the triangulation of eye-tracking data with questionnaire and interview results in subsequent sections. This approach aims to provide a deeper understanding of how viewers engage with different types of on-screen text, as discussed further in Chapter 7.

6.3.4 Observed mirth

While recording participants' eye movements using the eye tracker, their facial expressions were also recorded to observe occurrences of mirth. As discussed before in §4.3.1, "mirth" in this study is used to describe a range of expressions that vary in intensity according to the emotional response of the participants. These expressions begin with a subtle or "faint smile" and can escalate to "a broader smile" (Martin, 2017, p. 155). As the emotional intensity of the participants increases, these expressions can further develop into more noticeable responses, such as "audible chuckling", and can even lead to bursts of laughter (ibid.). Essentially, mirth represents the spectrum of facial expressions and bodily reactions that signify amusement or joy in humorous contexts. Using the integrated camera in the eye-tracking device, the study captured participants' displays of mirth which are documented in Appendix I⁷. Only their observed mirth is noted and numbered, without showing screenshots of any participant's face or facial expression.

In Appendix I, the data captured at specific timestamps indicate whether observed mirth was present or absent in relation to the 11 AOIs associated with the headnotes. The letter "N" is used to signify "no" (absence of mirth), while "Y" represents "yes" (presence of mirth). This provides a detailed account of participants' emotional responses at precise moments during the viewing of the headnotes. Importantly, these AOIs are not only linked to headnotes, but also connected to the aspect of humour appreciation, as they are deemed humorous and have the potential to elicit mirth in participants. When participants exhibit mirth while viewing these specific AOIs, it suggests that they may find the video clips containing these particular AOIs amusing. In other words, the display of mirth in response to these AOIs serves as an overt indicator of the participants' humour appreciation, to be cross-referenced with the data collected from the questionnaire and interview in the following steps. The triangulation of data, the observed mirth

⁷ Note that this research accounted exclusively for discernible and overt manifestations of mirth, given that microexpressions fall outside the scope and methodological capacity of this study. All instances of mirth documented in this study were directly observed by the researcher through unaided visual inspection. However, it is possible that certain subtle expressions of mirth might have eluded detection or enumeration.

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and some questions from the other two methods, is to address RQ1 (*Is the appreciation of humour affected by the use of PHNs?*).

Table 6.13 provides a summarised overview of 34 participants' display of mirth under three different subtitling conditions. A general trend is observed: participants demonstrated a limited amount of mirth in reaction to AOIs displayed on the screen. Evident mirth was only displayed by a few participants, with most showing no or minimal mirthful responses. The comparatively lower incidence of mirthful reactions may imply differences in viewer engagement and content interpretation across the three subtitling conditions. This variation could be attributed to some participants' disposition to express visible mirth, while others might be more restrained or simply did not find the content funny.

Table 6.13: Summary of participants' displays of mirth across AOIs

Observed mirth Participant	No			Yes		
	SBS	PHN1	PHN2	SBS	PHN1	PHN2
P01	2	1	0	1	3	4
P03	2	2	1	2	2	2
P04	3	4	2	0	0	2
P05	1	2	0	3	1	4
P06	1	2	3	3	2	0
P07	2	2	2	1	2	2
P08	1	2	2	3	1	2
P09	2	2	3	2	2	0
P10	2	4	3	2	0	0
P12	3	4	4	0	0	0
P13	1	3	3	3	0	1
P14	1	0	1	3	3	3
P15	1	2	2	3	2	1
P16	3	3	2	0	1	2
P17	2	3	3	2	1	0
P18	1	1	2	3	2	2
P20	4	3	3	0	1	0
P21	4	3	4	0	0	0
P22	3	4	3	0	0	1
P23	1	1	2	3	2	2
P25	4	3	4	0	0	0
P26	2	1	3	2	3	0
P27	2	4	3	2	0	0
P28	3	4	3	1	0	0
P30	0	1	2	4	2	2
P31	2	3	3	1	1	1
P32	1	0	1	2	3	4
P33	3	1	1	1	3	2
P35	1	2	2	3	2	1
P36	3	3	3	1	0	1
P37	3	3	3	1	1	0
P38	4	3	3	0	0	1
P39	3	2	3	0	2	1
P40	1	1	1	3	3	2
Mean	2.118	2.324	2.353	1.618	1.324	1.265
Sum	72	79	80	55	45	43

To explore deeper into whether the display of mirth varied significantly under three distinct conditions, a Friedman's test was applied, utilising the data from Table

6.13. The Friedman test is a non-parametric statistical test used to detect differences in treatments across multiple test attempts. The results are presented as $\chi^2(1) = 13.99$, $p = 0.02$. Since the p-value is less than 0.05, we reject the null hypothesis of the Friedman test, which suggests that there are no differences among the conditions. Therefore, this indicates that the differences in the display of mirth across the three conditions (SBS, SBS+PHN1, SBS+PHN2) are statistically significant.

Following this, a post-hoc Conover's test, a non-parametric method used for pairwise comparisons, was conducted. The results show that all the p-values between the three subtitling conditions are below 0.05. This suggests that we can reject the null hypothesis, which states that there is no difference in mirth between the three conditions. Consequently, we accept the alternative hypothesis, which posits that there are significant differences in the observed displays of mirth between any two of the conditions. Therefore, the variations in mirth displayed under three different conditions are considered distinct from each other from a statistical standpoint.

To put it simply, the patterns of observed mirth show similar patterns to those of the mean fixation durations. Regarding the participants' appreciation of humour, the analysis showed:

1. SBS>PHN1: participants showed more mirth under the condition of SBS than PHN1;
2. SBS>PHN2: participants showed more mirth under the condition of SBS than PHN2;
3. PHN1>PHN2: between the headnotes, participants showed more mirth under PHN1 than PHN2.

This result provides a partial and initial answer to RQ1 (*Is the appreciation of humour affected by the use of PHNs?*) by showing that different conditions have an impact on how much participants laughed, indicating humour appreciation

decreases with the use of PHNs. Specifically, participants showed less mirth with PHN1 and even less with PHN2, compared to only subtitles on the screen. As shown in Table 6.14, this contradicts Hypothesis 1 that humour appreciation is higher with PHNs than with subtitles alone, leading to the rejection of sub-hypotheses H1.1 and H1.2. On the other hand, the data confirms H1.3, showing that humour appreciation is higher with PHN1 than with PHN2.

Table 6.14: Testing of Hypothesis 1

×	Hypothesis 1: The level of appreciation in humour is higher with the use of PHNs than subtitles only.
×	H1.1: The level of appreciation in humour is higher with the use of PHN1 than subtitles only.
×	H1.2 The level of appreciation in humour is higher with the use of PHN2 than subtitles only.
√	H1.3 The level of appreciation in humour is higher with the use of PHN1 than PHN2.

However, it is important to note that the observation of mirth was used for triangulation and to support the questionnaire data. This result here will be further analysed and tested in conjunction with the questionnaire data in Section 7.2.

In summary, when considering the AOIs on the screen, which encompass both headnotes and subtitles, it is observed that only a few participants displayed mirth during the viewing. Furthermore, the study identifies a statistically significant variation in mirth expression among participants subjected to three subtitling conditions. The introduction of headnotes correlates with a diminished manifestation of mirth; participants exhibited the highest frequency of observed mirth in the condition of subtitles alone, with a sequential decrease in conditions of subtitles with PHN1 and subsequently PHN2. This suggests that the incorporation of headnotes could exert some negative impact on participants' appreciation of humour within the video content.

6.4 Summary of results for eye tracking data

From the analysis of the eye tracking data, several results are noted regarding participants' engagement with subtitles and headnotes and their humour appreciation in watching videos. First, the results reveal a higher level of

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engagement with subtitles over headnotes of PHN1 and PHN2 from participants. The heightened attention given to subtitles likely stems from their importance in delivering key dialogue and information that viewers typically prioritise. This focus may also be influenced by a habitual preference for subtitles over headnotes as participants may not be used to having headnotes on the video.

Second, the analysis revealed that participants engaged with both types of headnotes, PHN1 and PHN2, to a comparable degree, as indicated by their similar mean fixation durations observed. However, when this fixation data was normalised per character, a discernible difference emerged: participants allocated a longer duration of attention to each character in the PHN1 condition compared to PHN2. This suggests a deeper level of engagement with the text of PHN1 when examining the attentional investment on a more granular level. This difference can be attributed to the overall longer text of PHN2. Since PHN2 generally contains more characters in the text, participants may have adopted a faster reading pace to cover the additional content within the same viewing period. As a result, the same amount of time spent on PHN2 is divided by more characters, leading to a shorter time allocated per character. This faster reading pace likely reduces the depth of engagement with each character in PHN2 compared to PHN1, where the text is more concise.

Moreover, the study found significant statistical differences in the expressions of mirth across three subtitling conditions, indicating that the presence of headnotes affects participants' observed humour appreciation during the viewing. Despite the additional length of PHN2, which could theoretically require more time to read and understand, viewers continued to focus primarily on the subtitles. Their consistent attention to the subtitles may have inadvertently reduced their ability to fully appreciate the humour in the video content. The presence of more extensive headnotes, particularly PHN2, might have divided their attention on the screen and hence reduced the amount of observed mirth. This finding suggests that while participants tried to follow the headnotes, their enjoyment of humour was influenced more by their focus on the subtitles and the content's visual aspects than

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by the information provided in PHNs. It is possible that divided attention between subtitles and headnotes influenced their humour responses.

In conclusion, in this chapter, the eye-tracking data was collected to primarily confirm that participants were actively engaging with both subtitles and headnotes to verify the validity of the questionnaire and interview data. The results offer preliminary insight into participants' attention allocation under different subtitling conditions and their observed humour appreciation responses, particularly in humour-centric video content. As further explored in Chapter 7, additional analysis through questionnaires and interviews was conducted to delve deeper into participants' reception of humour appreciation and comprehension, and of subtitles and headnotes. Additionally, the eye-tracking findings are compounded with other data sets, including participants' feedback and humour comprehension assessments.

Chapter 7

Findings and Data Analysis 2: Questionnaires and Interviews

7.1 Introduction

In this chapter, the data collected through post-task questionnaires and interviews are analysed and presented. Specific research questions and corresponding hypotheses are tested, which are subsequently examined through data analysis. Section 7.2 focuses on the results derived from the post-task questionnaire data, while detailed insights from the interview responses are provided in §7.3. Finally, the chapter presents findings and subsequent discussions, as detailed in §7.4.

7.2 Post-task questionnaire data

This section details the analysis and summary of data obtained from the post-task questionnaires, which were administered following the viewing of each video. In a similar manner to the organisation for the section on eye-tracking data, this section is structured around the three subtitling conditions presented to participants. As discussed in §4.4.4, PHN1 (domestication) focuses more on offering cultural expressions in the English language, for participants from the low-scoring group, while PHN2 (foreignisation) presents explanations that preserves more humour or cultural references in Chinese for those from the high-scoring group based on the tests of CQS and BFI-S. While the experiment conditions are presented here in the order of condition 1 (SBS), condition 2 (SBS+PHN1), and condition 3 (SBS+PHN2), participants did not necessarily view the videos in this specific order; instead, the order was randomised for each participant (refer to Table 6.6 in Section 6.3 for individual viewing orders). In particular, as summarised in Table 7.1, different

numbers of participants watched three clips under three subtitling conditions. For instance, under the condition of SBS only, 11, 11, and 12 participants watched clips 1 to 3 respectively.

Table 7.1: Summary of numbers of participants under each clip and condition

Sum	Clip 1 (Are you asleep)	Clip 2 (Dramatic GPS)	Clip 3 (Time flies)
SBS	11	11	12
SBS+PHN1	11	12	11
SBS+PHN2	12	11	11

In this section, we delve into the responses gathered from participants as they engaged with three subtitling conditions, examining their perceptions of each condition. By exploring the details of these conditions, we aim to uncover participants' insights on PHNs in terms of humour comprehension and appreciation (RQ1 and RQ2).

Across three subtitling conditions, the questionnaires consisted of a varying number of questions and statements, ranging from 12 under SBS only condition, to 15 under SBS along with PHN1 and PHN2. For each condition, Q1 was regarding participants' self-reported familiarity level with the presented cultural references/humour in the clips, Q2 to Q5 were designed to evaluate participants' comprehension of humour within the videos, while the rest consisting of statements (S6 to the end) focused on their attitudes towards the videos, SBS, and PHNs (in conditions PHN1 and PHN2). It should be stressed that under the first condition of SBS only, 11, 11, and 12 participants watched clips 1 to 3 respectively, resulting in different numbers of answers for each condition and clip (see Table 7.1).

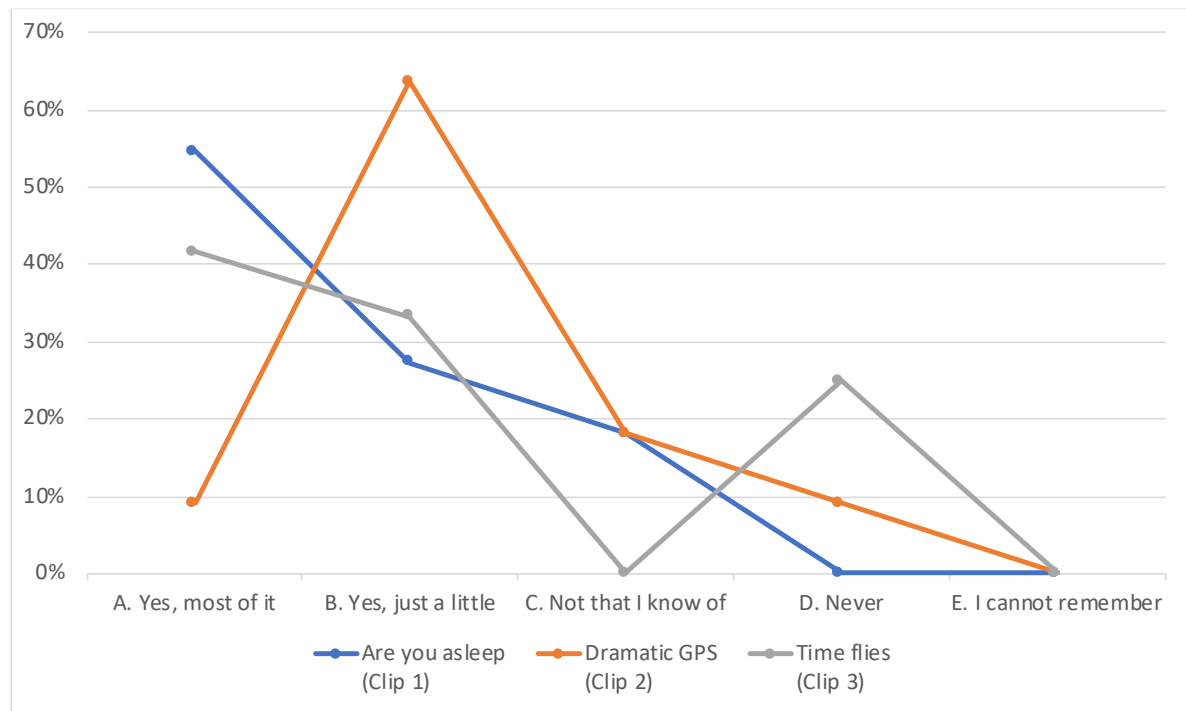
7.2.1 Self-reported familiarity level

The first question (Q1: Are you familiar with the cultural references/humour in this clip?) was the same across all the post-task questionnaires, and its purpose was to gauge participants' familiarity levels with the Chinese-specific cultural humour presented in three clips. This was designed to assess their understanding of the embedded cultural references and humour. The data reveals a certain familiarity level with the humour presented in the clips.

◇ Condition 1: SBS

As detailed in Figure 7.1, for Clip 1 (Are you asleep), six out of eleven participants (around 55%) indicated that they were familiar with most of the cultural references or humour presented, while the remaining five participants selected either “just a little” or “not that I know of”. Regarding Clip 2 (Dramatic GPS), seven participants (64%) indicated a modest degree of familiarity by selecting “just a little” in response to the question. Additionally, three participants expressed that they found the humour to be quite novel, with two of them opting for “not that I know of”, and one participant (9%) stating that they had “never” encountered it before. Notably, only one participant considered themselves familiar with “most of” the humour presented in this clip. For Clip 3 (Time flies), a relatively balanced distribution emerged: five of the twelve (42%) participants believed they were familiar with “most of” the humour in the video, while the remaining seven (58%) indicated being “just a little” familiar or having never seen it before.

Under the SBS condition, participants generally found Clip 2 to be the most novel in terms of humour and cultural references, while Clips 1 and 3 had a mix of familiar and unfamiliar elements for the participants.

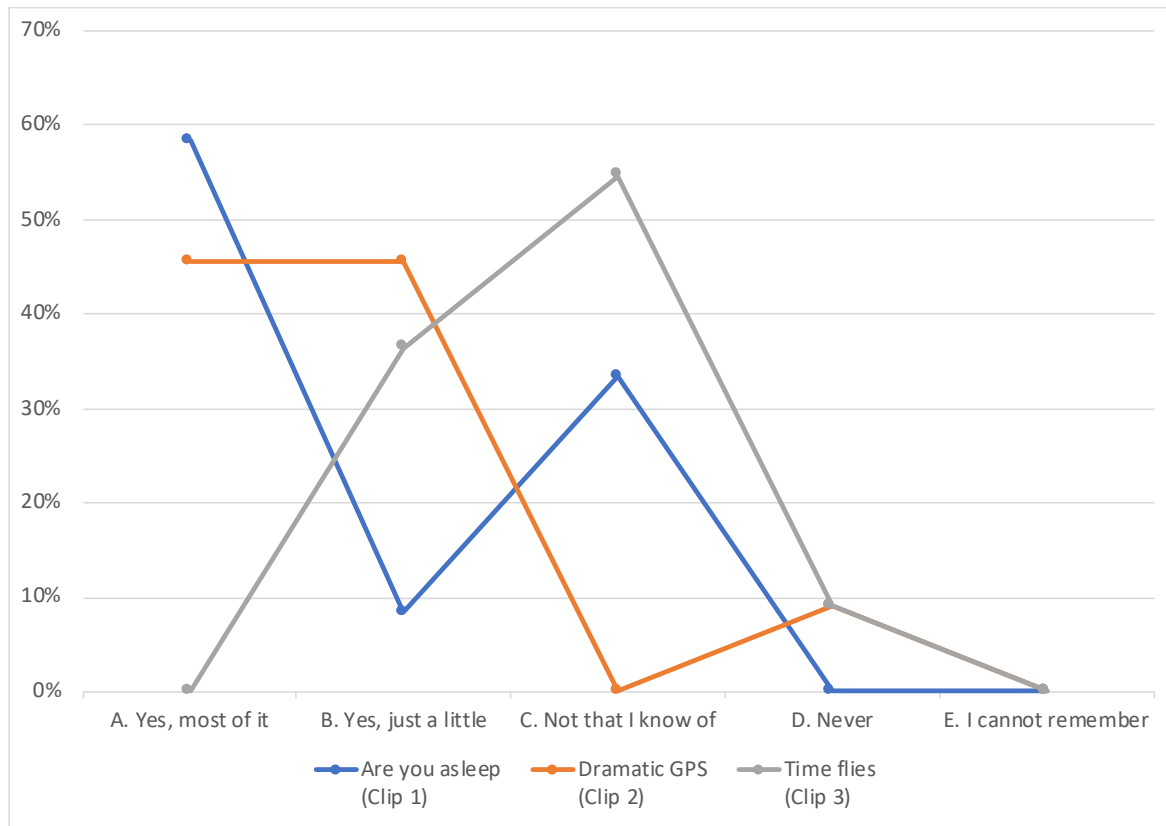
Figure 7.1: Summary of responses to Q1 in percentile (SBS)

◇ Condition 2: SBS+PHN1

Under this condition, 11, 12, and 11 participants watched clips 1 to 3 respectively. As depicted in Figure 7.2, during the viewing of Clip 1, seven participants (58%) expressed their belief that they were acquainted with “most of” the humour in it, while the remaining five (41%) indicated either limited familiarity or none at all. In Clip 2, participants were almost evenly divided between those who considered themselves familiar with “most of it” (five) and those who felt they were only “just a little” (five) familiar with the content. Only one participant reported having “never” encountered it before. In contrast, Clip 3 saw the majority of seven participants (64%) characterising the humour as entirely new to them, with only four participants (36%) expressing some degree of prior exposure to similar humour.

The SBS+PHN1 condition reflected a similar trend to the SBS condition, with an even split in the second clip’s familiarity levels, and a majority found “Time flies” to be entirely new.

Figure 7.2: Summary of responses to Q1 in percentile (SBS+PHN1)



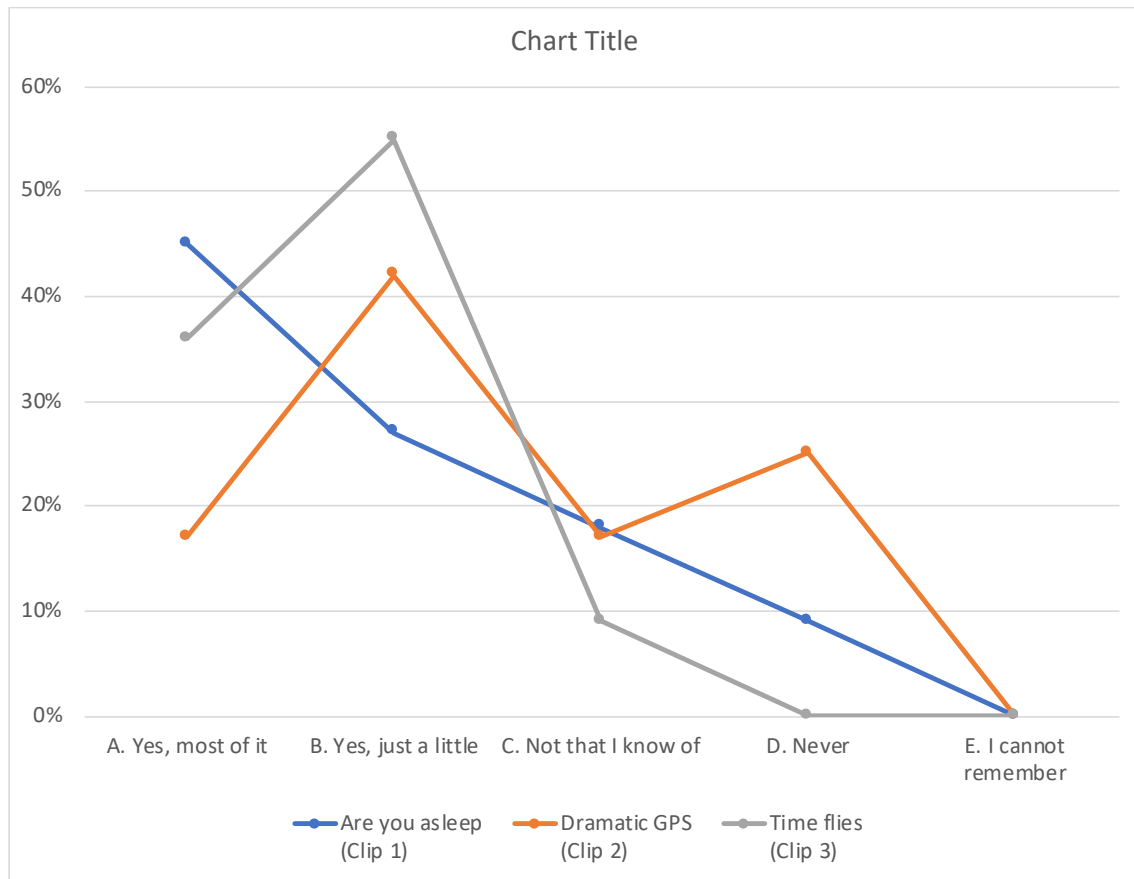
◇ Condition 3: SBS+PHN2

Figure 7.3 provides insights into the responses gathered under the SBS+PHN2 condition. For Clip 1, three participants (27%) asserted that the humour or cultural references therein were unfamiliar to them as they selected “never” or “not that I know of”, while an equivalent proportion of them acknowledged being “just a little” familiar with it. In contrast, almost half of the participants (five) considered themselves rather familiar with “most of it” in the clip. In the case of Clip 2, an equal number of five participants (42%) expressed limited or zero knowledge of the presented video, with only two participants (17%) claiming the highest level of familiarity. For Clip 3, none of the participants had prior exposure to the video, with seven participants (64%) indicating a limited degree of familiarity, and the remaining four (36%) reporting no familiarity at all.

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In the SBS+PHN2 condition, responses suggested a better acquaintance with "most of" the humour in the first clip, but the subsequent clips revealed a dominant trend of unfamiliarity or limited recognition.

Figure 7.3: Summary of responses to Q1 in percentile (SBS+PHN2)



Across different conditions, the findings highlight a significant lack of exposure to Chinese cultural humour among the participants. This gap not only validates the relevance of the study but also enhances the importance of further inquiry into how English-speaking audiences comprehend and appreciate humour rooted in Chinese culture.

7.2.2 Comprehension test

The first section of the questionnaire (Q2-5) relating to comprehension testing was applied to seek answers for *RQ2: Is the comprehension of humour affected by the use of PHNs?*

Specifically, it is divided into the following:

Hypothesis 2: The level of comprehension in humour is higher with PHNs than with subtitles only.

Building upon the assumption of Hypothesis 2's validity and recognising the distinction between PHN1 and PHN2, where PHN1 is characterised by more concise, localised text offering cultural expressions in English, and PHN2 by its comprehensive informational depth with more authentic and source-culture-retentive explanations, a set of more detailed hypotheses can be posited:

H2.1 The level of comprehension in humour is higher with PHN1 than SBS.

H2.2 The level of comprehension in humour is higher with PHN2 than SBS.

H2.3 The level of comprehension in humour is higher with PHN1 than PHN2.

In the post-task questionnaires, questions Q2 to Q5 serve the purpose of assessing participants' comprehension of the video content, irrespective of whether they viewed it with PHNs or SBS only. These questions (see Appendix B1-B3) encompass various aspects, including cultural references and humour, and remained consistent across all three conditions. For example, in the case of Clip 3, question Q4 "What is the icon for 'like' on WeChat?" necessitates participants to find clues and grasp the humour conveyed through the provided video scene. Similarly, Q5 "What fruit was used to symbolise 'gossip' in Chinese?" requires participants to comprehend the cultural references presented in both the subtitles and the context of the video.

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Among the 34 participants, each received one point for every correct response, contributing to their cumulative scores for each condition across the three clips, as shown in Tables 7.2 to 7.4. Using a five-point Likert scale, incorrect answers were given a score of 0.5 as attempt scores, and the option “E. I cannot remember” received a score of zero. This design aimed to encourage participants to engage attentively with the clips. Before each experiment, participants were verbally instructed to make their best attempts at answering all questions rather than selecting option “E”. Notably, participants were unaware of the scoring system, a measure intended to deter them from choosing option “E”.

It is important to reiterate that not all conditions necessarily contained the same number of participants (specific numbers are indicated in Tables 7.2, 7.3, and 7.4), as six invalid responses were excluded based on their low eye tracking ratios (see §7.3). Nevertheless, the total number of participants across all three conditions consistently remains at 34 as the dataset sample.

◇ Condition 1: SBS

Table 7.2 details participant responses under Condition 1, where only SBS were provided. For the first video segment, eight of eleven participants (72.73%) correctly answered Q2, indicating a substantial level of comprehension for Clip 1. The comprehension efficacy improved for Clip 2, with ten out of eleven participants (90.91%) providing correct answers. Clip 3 exhibited the highest comprehension, with eleven out of twelve participants (91.67%) answering correctly, and a complete consensus was achieved in Q5, where all participants correctly understood the content.

However, it is noteworthy that comprehension for one specific Q5 in Clip 1 was much lower, with only two out of eleven participants (18.18%) providing the correct answer. On average, when considering the correctness rate, Clip 3 had a higher average comprehension rate (91.67%) relative to the other clips under the SBS-only condition. This suggests that while SBS can be effective in conveying humour,

comprehension levels can fluctuate depending on the content, warranting a comparison with other subtitling conditions.

Table 7.2: Correct responses and rates (SBS)

Correct responses	n=	Q2	Rate	Q3	Rate	Q4	Rate	Q5	Rate	Average
Are you asleep (Clip 1)	11	8	72.73%	10	90.91%	8	72.73%	2	18.18%	63.64%
Dramatic GPS (Clip 2)	11	10	90.91%	10	90.91%	10	90.91%	6	54.55%	81.82%
Time flies (Clip 3)	12	11	91.67%	10	83.33%	11	91.67%	12	100.00%	91.67%

◇ Condition 2: SBS+PHN1

Under the second condition, as detailed in Table 7.3, an examination of the correct responses reveals a pattern of comprehension across the clips. For each clip, at least one question achieved a higher rate of correct answers, indicating a clear transmission of certain humour elements. For example, in Clip 1, Q3 reached 90.91%; in Clip 2, Q2, Q3, and Q4 each achieved the same rate; and in Clip 3, Q2, Q4, and Q5 reached almost 92%. However, this result mirrored the one from the first condition in that the lowest correctness rate was recurrently observed in the responses to Q5 for Clip 1, where only about 17% of participants identified the correct answer. This suggests a consistent challenge in conveying the humour or cultural references effectively in this clip. Furthermore, the analysis shows that the average correctness rate for Clip 3 was marginally higher compared to the other clips within this condition, followed by the one recorded for Clip 2. This consistency in participant comprehension across two conditions suggests that certain aspects of the humour in Clip 3 were more universally accessible or effectively communicated through the subtitles and additional notations provided.

Table 7.3: Correct responses and rates (SBS+PHN1)

Correct responses	n=	Q2	Rate	Q3	Rate	Q4	Rate	Q5	Rate	Average
Are you asleep (Clip 1)	12	10	83.33%	12	100.00%	8	66.67%	2	16.67%	66.67%
Dramatic GPS (Clip 2)	11	10	90.91%	6	54.55%	11	100.00%	10	90.91%	84.09%
Time flies (Clip 3)	11	9	81.82%	10	90.91%	8	72.73%	11	100.00%	86.36%

◇ Condition 3: SBS+PHN2

As detailed in Table 7.4, the highest correctness rate achieved for Clip 1 reached around 82% for both questions Q3 and Q4. Conversely, in the other clips, participants achieved perfect scores for either Q2 or Q5. In the context of the SBS+PHN2 condition, the lowest correctness rate for Q5 within Clip 1 was once again notably low, standing at 18%, with only two participants selecting the correct answer.

Based on Table 7.4, for the SBS+PHN2 condition, we observe varying comprehension rates among the clips. Clip 1 shows a peak correctness rate of 82% for Q3 and Q4, but a notably low rate of 18% for Q5, suggesting difficulties in understanding specific content or humour. In contrast, other clips show instances of complete comprehension, with some questions achieving 100% correctness rates. Clip 3, in particular, had the highest average correctness rate at 89%, indicating its humour was more accessible or effectively communicated. The high comprehension rates for Clip 3 suggest that its comedic elements or cultural references were more universally understood, possibly due to simpler or more effective subtitles and headnotes.

The consistent difficulty with Clip 1 raises questions about the complexity of its comedic elements and whether they were challenging to translate or explain. A potential reason for the low correct response rate in Q5, “Why didn’t he sleep after all?” could be the confusion caused by the multiple-choice options. Both choices A

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(Because his hormones are in disorder.) and B (Because he wants some time to himself.) occurred in the video, but B is more correct from the overall context, potentially confusing participants. This result underscores the challenge of translating humour. While Clip 3's higher comprehension rates indicate effective communication, the persistent low rates for Clip 1 highlight the difficulties in this process.

Table 7.4: Correct responses and rates (SBS+PHN2)

Correct responses	n=	Q2	Rate	Q3	Rate	Q4	Rate	Q5	Rate	Average
Are you asleep (Clip 1)	11	8	72.73%	9	81.82%	9	81.82%	2	18.18%	63.64%
Dramatic GPS (Clip 2)	12	12	100.00%	6	50.00%	10	83.33%	8	66.67%	75.00%
Time flies (Clip 3)	11	10	90.91%	10	90.91%	8	72.73%	11	100.00%	88.64%

For Q4 in Clip 3, the data revealed that SBS alone resulted in 91.67% correct responses, whereas both PHN1 and PHN2 conditions yielded only 72.73%. This suggests that the additional headnotes, while useful for providing cultural context, may have distracted viewers from key visual elements. This finding is supported by research on cognitive aspects in AVT, such as Kruger and Kruger (2017), who discussed how multitasking in the context of subtitling can increase cognitive load, particularly when viewers must simultaneously process images, audio, and text.

As highlighted by D'Ydewalle and De Bruycker (2007), subtitle reading inherently divides attention between the image and the text, which can influence how well viewers process visual information. This division of attention could explain why SBS-only viewers performed better on Q4 in Clip 3, which relied on an image of the video scene for comprehension. Szarkowska and Gerber-Morón (2018) similarly demonstrated that faster subtitle speeds can limit a viewer's ability to process visual elements, which might have occurred with the more text-heavy PHN1 and PHN2 conditions. The lower comprehension rates under the PHN conditions indicate that the added textual information may have shifted focus away from

visual cues, which were essential for answering this question. This aligns with Szarkowska and Gerber-Morón's (2018) study, which showed that the interaction between textual and visual elements can lead to cognitive overload when subtitles contain too much information, reducing viewers' ability to process visual content effectively.

In summary, the analysis of participant responses across the three subtitling conditions reveals a clear pattern in comprehension results. Q5 of Clip 1 consistently yielded the lowest correct response rate, with only two out of the eleven or twelve participants selecting the correct answer across all conditions. This suggests that participants had inherent difficulty understanding the humour or cultural references in this particular clip, regardless of whether they viewed it with SBS or PHNs. The complexity of the content, combined with the multiple-choice options, may have posed challenges for participants in fully comprehending the scene, particularly because the nuanced humour required more interpretive thinking.

Conversely, Q5 of Clip 3 consistently garnered the highest correct response rate across all conditions, demonstrating participants' strong understanding of both the humour and cultural references. This implies that the comedic elements and references in Clip 3 were communicated effectively, whether through standard SBS or supplemented with PHN1 or PHN2. The relative success of Clip 3 could be attributed to its more straightforward humour or cultural references, which participants found easier to grasp, whether aided by subtitles alone or with the added context provided by the PHNs. This consistency in comprehension suggests that the subtitling and annotation strategies employed in Clip 3 were more accessible and better aligned with participants' cognitive processing, thereby facilitating a fuller understanding.

However, the findings from Q4 of Clip 3 indicate that while PHNs can be valuable for offering cultural context and explaining humour, they may inadvertently interfere with the processing of visual humour. This supports previous research in

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AVT, which has noted that subtitles can divide viewers' attention between reading and interpreting visual information (Szarkowska and Gerber-Morón, 2018). By adding more textual explanations through PHNs, the study may have unintentionally disrupted participants' reading process, thus reducing their ability to focus on visual cues effectively.

The contrast between the two clips highlights the varying degrees of difficulty in translating and conveying humour, with Clip 1 requiring more intricate comprehension and Clip 3 benefiting from a clearer, more relatable subtitling approach.

In conclusion, the data from this experiment underscore the complexities of integrating PHNs with subtitles. While PHNs enrich cultural and contextual understanding, they also introduce the risk of distracting from key visual elements, especially when humour is conveyed visually. Future research in AVT should continue to explore methods of harmonising visual and textual information to ensure both components contribute to a cohesive viewing experience without overloading the viewer.

7.2.2.1 Statistical testing

The study collected responses under three subtitling conditions across three video clips, and conducted Shapiro–Wilk tests to check the normality of the distribution for each variable. This preliminary analysis was critical for determining the suitability of parametric or non-parametric tests for the continuous dependent variables.

Initially, the study aimed to use repeated measures ANOVA (rANOVA) to assess statistical differences in comprehension scores (Q2 to Q5), given that the within-subjects design involved multiple treatments (three subtitling conditions). rANOVA typically requires independent observations, a normally distributed sample, and homogeneity of variance (Mellinger and Hanson, 2017, p. 137). Since

all participants were tested under three conditions, the independence assumption was already met, but normality and homogeneity of variance still required testing.

Based on the sample data collected for responses from Q2 to Q5 in the questionnaires, a normality test was performed using SPSS. As listed in Table 7.5, the results of Shapiro-Wilk tests were less than the significance level of 0.01, indicating a deviation from the normal distribution and that the assumption of normal distribution within the sample data was not satisfied.

Table 7.5: Normality test results for responses to comprehension test (Q2-Q5)

Tests of Normality	Shapiro-Wilk Statistics	df	Sig
Total scores	0.83	102	<0.01
Conditions	0.79	102	<0.01
Clips	0.79	102	<0.01

In this case, while the independence of observations was met, normality testing results indicated deviations from a normal distribution, violating rANOVA's normality assumption. Consequently, the study shifted towards a non-parametric approach, employing Friedman's test to analyse the impact of subtitling conditions on comprehension without assuming normality (Mellinger and Hanson, 2017). Similar to parametric rANOVA, this test assumes that each participant is under multiple measurements, either in distinct treatment conditions or at different time points, with each participant's measurements being independent (ibid.). The Friedman's test was conducted on 34 participants to examine the effects of the three subtitling conditions on their comprehension scores, with each participant tested under each condition once. The results were as follows: Clip 1, $\chi^2(1) = 2.65$, $p = 0.27$; Clip 2, $\chi^2(2) = 0.93$, $p = 0.63$; Clip 3, $\chi^2(3) = 0.08$, $p = 0.96$. These results did not yield statistically significant differences between any two of the three conditions (p values > 0.05). Therefore, we fail to reject the null hypothesis that there is no difference in comprehension scores across the three subtitling

conditions. This indicates that the different subtitling conditions did not lead to a statistically significant difference in participants' comprehension.

Furthermore, with the nonparametric data, the sample dataset was also tested through Spearman's analysis to assess the correlation between the subtitling conditions and the total scores of Q2-Q5. A Spearman's rank correlation test measures the strength and direction of the association between two variables while accommodating non-linear relationships (Saldanha and O'Brien, 2014). As a result, a negative correlation ($r_s = -0.13$, $p = 0.19$) was observed, indicating a relationship that moves in opposite directions. This implies that as the subtitling condition transitions from one to three, the total scores decrease. In other words, under condition 1 of SBS only, participants' scores on the comprehension test tend to be the highest, with a gradual decline under condition 2 (SBS+PHN1) and condition 3 (SBS+PHN2). However, it is important to note that with a p-value of 0.19, the correlation is not statistically significant at the conventional significance level of 0.05. This means that the negative correlation observed may exist, but it is not strong enough to be considered statistically meaningful in the context of the sample data.

7.2.2.2 Discussions on the results of comprehension test

The examination of the comprehension test data (Q2-Q5), aimed at evaluating humour comprehension under three different subtitling conditions, indicated a departure from the assumption of a normal distribution. Consequently, the application of Friedman's test did not produce significant results. This deviation from normality precluded the use of rANOVA and any subsequent post hoc analyses. Despite this, it is crucial to recognise that, based on Spearman's correlation analysis, the absence of statistical significance does not entirely negate the possibility of a weak association between the variables. For instance, an observable pattern indicated a decline in comprehension test scores as the subtitle conditions transitioned from SBS through PHN1 to PHN2. Additionally, a consistent trend across the three subtitling conditions was noted, where Q5-Clip 1

consistently received the fewest correct responses, in contrast to Q5-Clip 3, which had the highest.

These non-significant findings might be partially attributed to the study's relatively limited sample size. Despite enlisting 34 participants, each subtitling condition, viewed by only 11 or 12 participants per clip, may have lacked the statistical robustness to facilitate meaningful comparisons across the conditions. This limitation highlights the potential benefits of expanding the participant base in future research to enhance the analytical power and yield more definitive insights into the impact of different subtitling conditions on humour comprehension.

The absence of statistically significant differences might suggest that the varied subtitling conditions did not significantly impact viewers regarding comprehension of humour and cultural references, regardless of the inclusion of PHNs. This outcome, while unexpected, could indicate that viewers are capable of understanding cultural references in foreign-language videos with just basic English subtitles, without the need for additional explanations from PHNs.

According to Sasamoto, Doherty and O'Hagan (2021), viewers were able to effectively process impact captions, a form of subtitles designed to enhance engagement and comprehension through multimodal information. Their study found that these captions did not significantly enhance or impede comprehension but rather showed individualised effects on viewer engagement and retention. This finding suggests that in this research, the presence or absence of PHNs, may not universally affect all viewers regarding their understanding, as viewers can assimilate the basic content provided by subtitles effectively. This perspective aligns with the finding that the speed of subtitles does not significantly affect comprehension (Szarkowska and Gerber-Morón, 2018), further supporting the idea that basic subtitles can suffice for understanding without the need for additional headnotes. By examining the detailed behaviour and attention patterns of viewers, Sasamoto, Doherty and O'Hagan (2021), highlight the capacity of viewers to process subtitled content without substantial additional cognitive load.

This reinforces the notion that viewers can manage cultural references and other complex information through basic subtitles alone.

Moreover, the comprehension test results indicate that participants tend to grasp the overall narrative and thematic content of the videos, including cultural references and humour, rather than fixating on understanding specific phrases. This underscores the vital role of contextual and visual information in multimedia comprehension, especially when dealing with culturally or linguistically complex material. This finding aligns with the communicative principle of relevance theory (see Section 3.3), which emphasises the balance between cognitive effort and cognitive effects in the interpretation of communication. According to this principle, effective communication requires that the information provided justifies the cognitive effort needed to process it, producing sufficient cognitive effects.

However, texts like PHNs cannot be fully interpreted merely by decoding content and making inferences about cognitive import conveyed through various semiotic resources. Instead, the richness of PHNs demands engagement with a broad spectrum of vivid mental images that activate perceptual, emotional, or sensorimotor mechanisms. Consequently, not all intended meanings are equally apparent, and readers will draw their own conclusions based on their personal engagement with the material.

7.2.3 Attitude test

To assess the internal reliability of the Likert scales, Cronbach's alpha coefficient was computed. In our dataset, responses from 34 participants were gathered on both a 7-item (S6-S12) and a 10-item (S6-S15) Likert scale questionnaire designed to gauge their attitudes towards subtitles and PHNs accordingly. Participants were required to express their agreement or disagreement with each statement using a 5-point scale, ranging from "strongly agree" to "strongly disagree", with scores assigned values from 5 to 1.

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The calculation of Cronbach's alpha aimed to ascertain the consistency among participants' responses across the questionnaire items. It is important to note that some questionnaire items were framed positively, while others were formulated in a negative manner (e.g., S11 and S12 in condition SBS, and S12, S13, and S14 in other conditions). Consequently, scores for negatively framed items were reversed before computing Cronbach's alpha. For instance, in the case of S6 for SBS condition, "I think this video is funny", a score of 5 corresponded to option "A. Strongly agree", while for S11, "I think the subtitles interfere with my understanding of the humour in the video", a score of 5 was assigned to "E. Strongly disagree".

The results for Cronbach's alpha across the three experimental conditions were computed using SPSS and listed in Table 7.6. Notably, all the alpha values exceeded the widely accepted threshold of 0.7. This signifies a high degree of internal consistency among the items on the scale, thus providing strong support for the reliability of the gathered responses. This robust internal consistency serves as a solid foundation for the subsequent data analysis in this study.

Table 7.6: Results for Cronbach's alpha

Condition	Cronbach's Alpha	Items
SBS	0.73	S6-S12
SBS+PHN1	0.88	S6-S15
SBS+PHN2	0.87	S6-S15

The responses gathered from the attitude survey were instrumental in addressing the following research question:

RQ1: Is the appreciation of humour affected by the use of PHNs?

Specifically, this research question led to the formulation of the following hypothesis:

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Hypothesis 1: The level of appreciation in humour is higher with the use of PHNs than subtitles only.

H1.1: The level of appreciation in humour is higher with the use of PHN1 than subtitles only.

H1.2 The level of appreciation in humour is higher with the use of PHN2 than subtitles only.

H1.3 The level of appreciation in humour is higher with the use of PHN1 than PHN2.

In the post-task questionnaires, a series of statements related to the use of subtitles in various conditions, including SBS only, with PHN1, and with PHN2, were presented to the 34 participants. It is worth noting that, prior to viewing each clip, participants were unaware of the specific subtitling conditions they would encounter. Additionally, after viewing each clip, participants received the following extra explanatory notes before proceeding to Statement No. 6 (S6) in each questionnaire, corresponding to the respective subtitling condition:

For SBS: “Please note: in the following questions, the term ‘subtitles’ refers to the English translation appearing at the bottom of the screen.”

For PHN1/2: “Please note: in the following questions, the term ‘headnotes’ refers to texts appearing at the top of the screen.”

For conditions of PHN1 and PHN2, participants also received an extra information note from S9 to the end asking them for comparison. For example, S9 was presented to them as “Compared to other videos I have seen with standard subtitles only, I think the video with the headnotes is funnier”. The inclusion of the underlined sentence enabled participants to draw a comparison between the video they had just viewed and the subtitled videos they encounter in everyday experiences. This addition was particularly relevant because some participants might have encountered a video with PHNs as the very first video during the experiment before watching the video with SBS.

In the attitude surveys, the statements were organised according to specific categories, and they are presented here in the same order (see Table 7.7). For example, the same statement S6 was presented under three conditions to gather responses for assessing the appreciation of humour (Figure 7.4), while statement S9 was identical under the two PHN conditions and thus they were compared against each other (Figure 7.5).

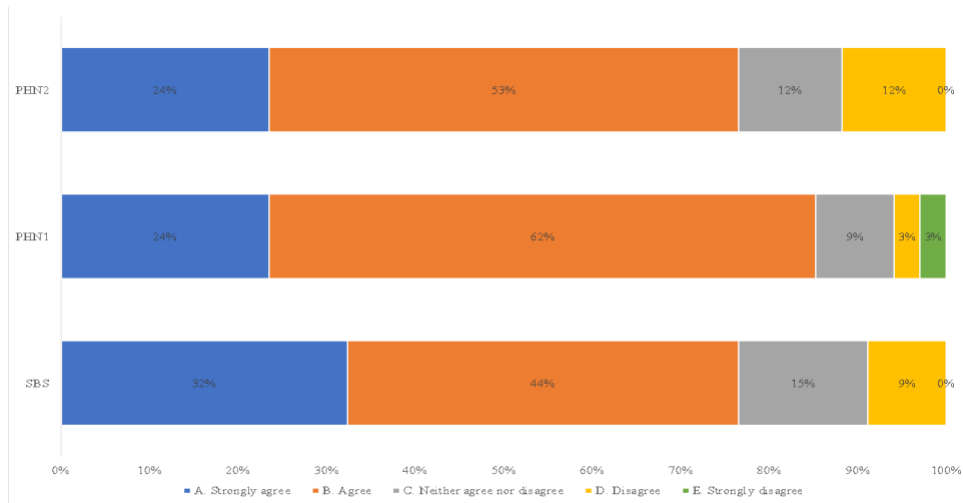
Table 7.7: Summary of categorised statements

Statement category	SBS	PHN1	PHN2
appreciation of humour	S6	S6	S6
	\	S9	S9
reading time	S7	S7	S7
ease of comprehension	S8	S8	S8
comprehension of humour	S9	S10	S10
comprehension of cultural references	S10	S11	S11
comprehension of humour (negative format)	S11	S13	S13
comprehension of cultural references (negative format)	S12	S14	S14
other	\	S12, S15	S12, S15

1) Perceived appreciation of humour

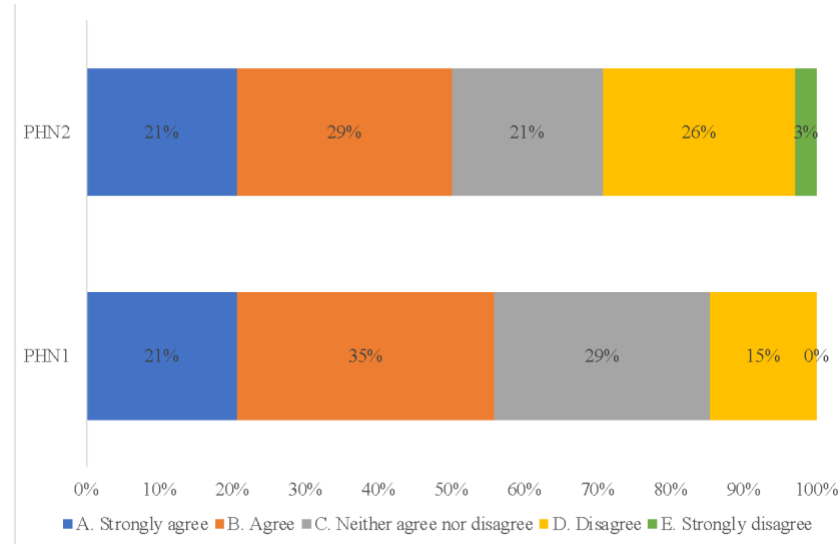
Figure 7.4 demonstrates that a substantial majority of participants, particularly in the PHN1 condition, perceived the video content as humorous, with 86% (24% + 62%) expressing agreement or strong agreement. This proportion was marginally higher than the comparable figures in the other two conditions (76% and 77%). Notably, one participant (P27) in PHN1 distinctly expressed strong disagreement, a response absent in other conditions. Variances in individual perceptions were also evident, with participants P27, P10, and P21 displaying divergent views on the humour across different subtitling conditions. Overall, despite these individual differences, there was a clear trend of positive reception towards the humour in the videos, with agreement exceeding 75% on average, especially pronounced in the PHN1 condition.

Figure 7.4: S6: Level of agreement with “I think this video is funny” (n=34)



In comparison to the conventional subtitled videos that are part of the participants’ everyday media consumption, slightly over half the participants reported an elevated humorous response to videos augmented with PHNs (Figure 7.5). This suggests that, while the inherent content of each video plays a role, the presence of PHNs may positively influence, or at least not impede, the perceived humour appreciation in the videos. Specifically, the variant with PHN1 elicited a stronger humorous response (21% + 35%) compared to PHN2 (21% + 29%), highlighting a slight preference among participants.

Figure 7.5: S9: Level of agreement with “I think the video with the headnotes is funnier” (n=34)



The inclusion of PHNs in videos appears to notably enhance viewers' perception of humour compared to conventional subtitled content, with more than half the participants reporting an elevated humorous response. Specifically, a marginal preference for videos with PHN1 suggests that PHN1 might be more effective or appealing in delivering humour than PHN2. Moreover, the data reveal a predominantly favourable response to the humour across all three conditions, with only a few participants dissenting. In essence, the addition of PHNs tends to positively affect, or at the very least not detract from, the humour perceived in the videos.

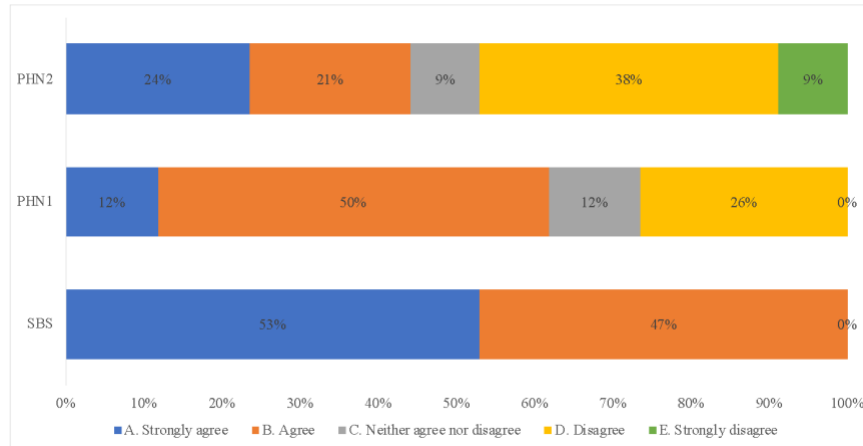
To further investigate the relationship between the three conditions and statement S6, a Spearman's correlation test was conducted, and the results revealed a weak negative relationship ($r_s = -0.06$, $p = 0.56$). This indicates that as the conditions change from SBS to PHN1 to PHN2, the level of agreement with statement S6 tends to decrease, implying that fewer participants would find the provided video with both PHNs funny. However, with p-value exceeding the significance threshold of 0.05, suggesting that the observed correlation could reasonably be attributed to random chance alone and is not statistically significant. In the same manner, the

correlation between statement S9 and the headnote conditions (PHN1 and PHN2) was examined and again, the results indicate a weak negative correlation ($r_s = -0.10$, $p = 0.44$) between participants' responses and conditions. This suggests that there is a tendency for more participants to find the video with PHN1 funnier than with PHN2. However, this relationship is not statistically significant and lacks strong support from the dataset.

2) Perceived reading time

Figure 7.6 reveals that while all participants indicated having sufficient time to read subtitles in the condition of SBS only, there was a notable decrease in the proportion of participants affirming this sentiment with the introduction of PHNs in the other conditions. Specifically, when PHN1 was introduced, only 62% (comprising 12% who “strongly agree” and 50% who “agree”) felt they had enough time for reading. This percentage declined further to 45% (24% + 21%) with the implementation of PHN2. Furthermore, the response to PHN2 was more pronounced, with three participants (P01, P03, P35) explicitly choosing “strongly disagree”, signalling a clear difficulty in simultaneously processing both SBS and PHNs. In a direct comparison between PHN1 and PHN2, an additional seven participants opted for “disagree” or “strongly disagree” in the PHN2 condition, which translates to a combined 47% (38% and 9%) expressing discomfort with the time allocation. This pattern suggests that a large proportion of participants found the dual task of reading SBS and PHN2 more challenging, compared with SBS only and with PHN1.

Figure 7.6: S7: Level of agreement with “I had enough time to read the subtitles” and “I had enough time to read both the subtitles and the headnotes” (n=34)



The correlation analysis examining the link between perceived reading time and different subtitling conditions yielded a significant negative correlation ($r_s = -0.46$, $p < 0.01$). This indicates that as subtitling conditions evolved from SBS only to PHN1 and then to PHN2, participants felt that their reading time decreased. The highly significant p-value reinforces the conclusion that this relationship is statistically meaningful. Notably, under the initial SBS condition, participants reported a perception of more ample reading time than the other conditions. In essence, the analysis suggests that introducing PHN1 and PHN2 progressively diminishes the perceived duration available for their reading of SBS and PHNs, pointing towards a substantial impact of headnotes on viewers' perception of reading time.

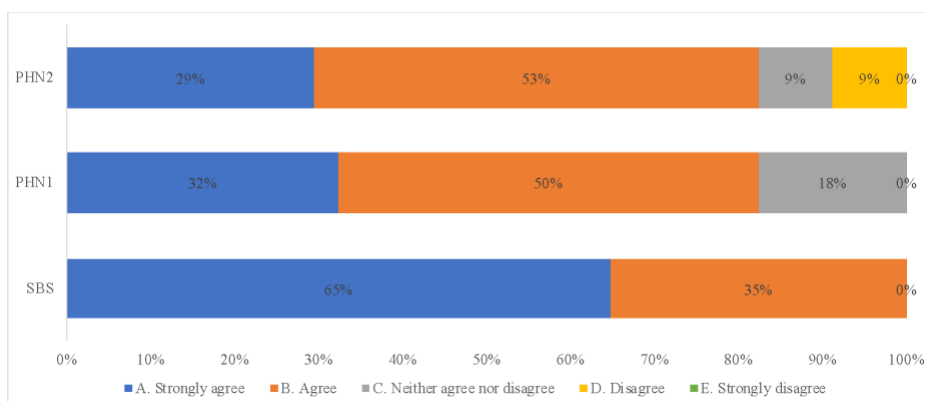
This result is consistent with the analysis of eye-tracking data, which reveals that participants' mean fixation durations were significantly longer on SBS compared to PHNs. Furthermore, when examining fixation durations per character, it was observed that participants engaged with PHN1 longer than with PHN2. These results collectively imply that participants struggled to simultaneously read both SBS and PHNs, particularly PHN2, indicating insufficient time was allotted for completing both on-screen texts effectively during the viewing.

To sum up, based on the questionnaire and eye-tracking data, there are several possible reasons for the perceived insufficient reading time on PHNs. PHN1 texts might have led to longer per-character fixations due to their shorter nature, or because participants had sufficient time to read. Conversely, the longer text length of PHN2 (42.27) compared to PHN1 (25.55) on average might have caused participants to rush, resulting in less time spent per character. This could be due to not having enough time to read or finish PHN2.

3) Perceived ease of comprehension

Responses towards ease of comprehension are presented in Figure 7.7 and it reveals that all participants (65% + 35%) found the provided subtitles easy to understand under the condition of SBS only. However, when it comes to PHN1 and PHN2, 82% of them shared the same opinion that the given headnotes are easy to understand. Interestingly, under PHN2, three participants (P20, P21, P33) chose to disagree with the statement, indicating a divergence in opinion compared to the other conditions. These results suggest that participants perceived the condition of SBS only as the easiest to understand, followed by PHN1, and with PHN2 being the most challenging condition.

Figure 7.7: S8: Level of agreement with “I think the subtitles are easy to understand” and “I think the headnotes are easy to understand” (n=34)



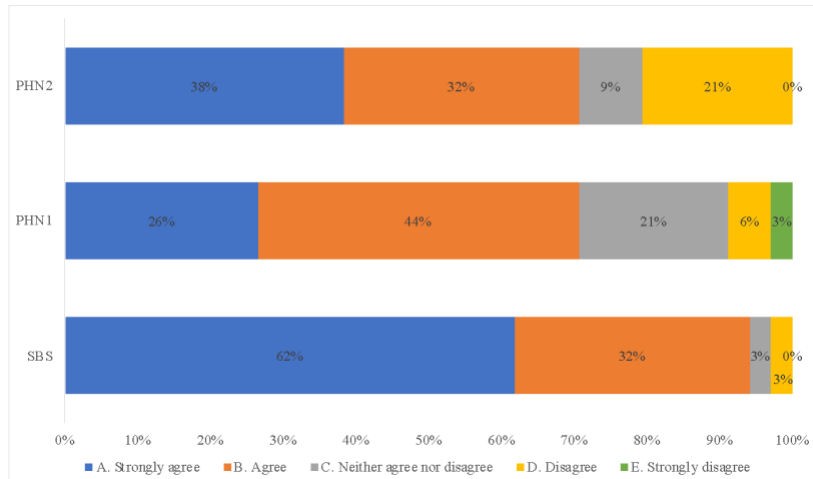
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Spearman's test indicates a weak yet statistically significant negative correlation ($r_s = -0.03$, $p < 0.01$) between the subtitling conditions and participants' perceived ease of comprehension for subtitles, PHN1, or PHN2. Despite the correlation's relative weakness, the highly significant p-value robustly suggests that the relationship is not coincidental. In essence, the analysis points to a meaningful trend where participants generally find standard subtitles the most comprehensible, with perceived comprehension slightly decreasing for PHN1 and further for PHN2.

4) Perceived comprehension of humour

Regarding the comprehension of humour (S9 and S10) (Figure 7.8), nearly all participants in the SBS condition believed that subtitles were helpful by giving a positive answer (94%), with only one participant disagreeing (P09). In the PHN1 and PHN2 conditions, the same percentage (70%) of them chose "agreed" or "strongly agree" with the statement. In particular, one participant (P08) strongly disagreed with the statement, indicating that they found PHN1 unhelpful; whereas P13 and P21 shared a similar opinion by choosing "disagree" and considered subtitles as not helpful. Overall, the number of participants who found subtitles or headnotes unhelpful for the comprehension of humour increased with the addition of PHNs: 3% (SBS), 9% (PHN1), 21% (PHN2).

Figure 7.8: S9: Level of agreement with “I think the subtitles help me in understanding the humour in the video” and S10: “I think the headnotes help me in better understanding the humour in the video” (n=34)



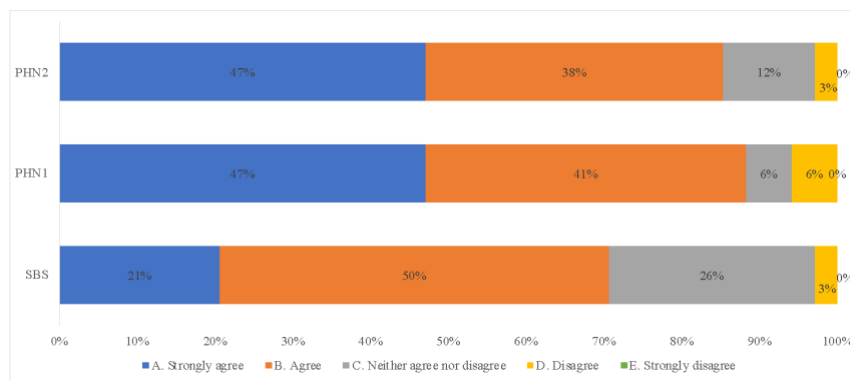
Based on the responses, a weak negative correlation was found between the subtitle condition and participants’ agreement with the subtitles/headnotes helping them in the comprehension of humour, as indicated by the negative correlation coefficient ($r_s = -0.25$, $p = 0.01$). This suggests that as the subtitle conditions vary, there tends to be a shift in participants’ agreement on the utility of subtitles/headnotes for humour comprehension.

5) Perceived comprehension of cultural references

In terms of comprehension of cultural references (Figure 7.9), over 70% of participants believed that subtitles helped them in the SBS condition (21% + 50%), while over 80% of them considered PHN1 (47% + 41%) and PHN2 (47% + 38%) more helpful. Interestingly, an equal number of participants expressed disagreement with the helpfulness of subtitles in the SBS (P12) and PHN2 (P21) conditions, while two participants (P08, P21) expressed the same under PHN1. Overall, the highest number of participants (85%) under the PHN1 condition found the PHNs to be helpful in understanding cultural references, followed by PHN2, with the lowest effectiveness observed in the SBS-only condition. This highlights an intriguing broader perspective: while PHNs improve perceptions of cultural

references, they also tend to slow down the reading process and do not significantly enhance the general comprehension of humour. Thus, PHNs may be beneficial for increasing cultural understanding but not necessarily for other aspects, presenting a trade-off that needs to be considered.

Figure 7.9: S10: Level of agreement with “I think the subtitles help me in better understanding the cultural references in the video” and S11: “I think the headnotes help me in better understanding the cultural references in the video” (n=34)



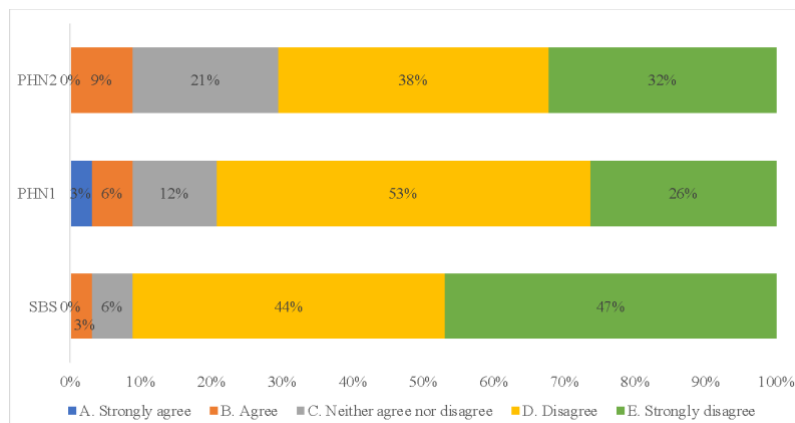
The positive correlation coefficient ($r_s = 0.23$, $p = 0.02$) reveals a modest yet statistically significant positive correlation between the subtitle condition and participants’ perceived helpfulness of subtitles or PHNs in understanding cultural references. This indicates that as the condition changes from SBS to PHN2, it is likely that more participants would consider PHNs as helpful in the comprehension of cultural references in the research videos, although this correlation is not particularly strong. This and the finding on humour comprehension above suggest that these two aspects should be treated separately, raising questions about the role of cultural references in achieving humorous effects.

6) Perceived comprehension of humour (negative format)

Figure 7.10 indicates that a substantial majority of participants (over 90%, combining 44% and 47%) did not find subtitles to be obstructive to their understanding of humour. Nevertheless, this percentage decreased to

approximately 70% when PHNs were incorporated (79% for PHN1 and 71% for PHN2), suggesting some participants felt that PHNs may interfere with humour comprehension.

Figure 7.10: S11: Level of agreement with “I think the subtitles interfere with my understanding of the humour in the video” and S13: “I think the headnotes interfere with my understanding of the humour in the video” (n=34)



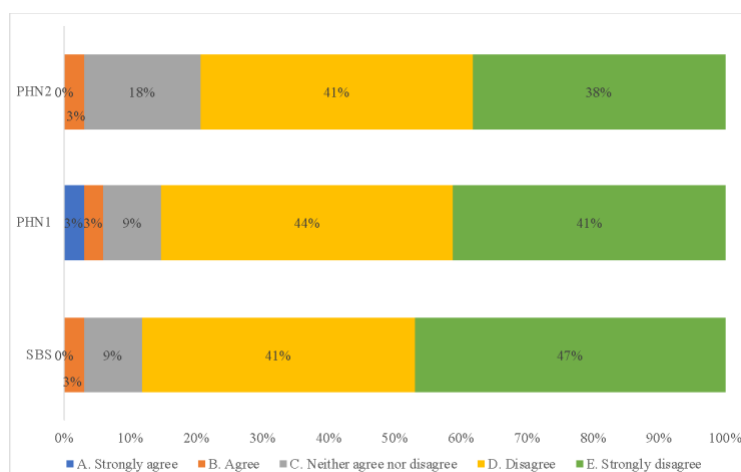
The correlation result reveals a relatively weak negative correlation between the subtitle condition and participants’ agreement concerning the interference of subtitles or PHNs with humour comprehension, as indicated by the negative correlation coefficient ($r_s = -0.19$, $p = 0.06$). However, the p-value suggests that this correlation does not attain statistical significance at the conventional threshold of 0.05. Consequently, the relationship may lack the statistical strength necessary to be deemed significant in the dataset. In summary, although there is a tendency for participants’ opinions about interference with humour comprehension to fluctuate with changes in the subtitle condition, this relationship is notably weak.

7) Perceived comprehension of cultural references (negative format)

Similar to the collected data from the previous statement, the number of disagreement responses (“disagree” to “strongly disagree”) regarding the comprehension of cultural references also decreased from conditions SBS (88%)

to PHN1 (85%) and PHN2 (79%), but the change was relatively minor. It is worth noting that under SBS condition, P06 believed that subtitles were interfering, and P21 chose “strongly agree” to this statement under PHN1. Moreover, in both conditions, P08 expressed that both PHN1 and PHN2 were distracting for the comprehension of cultural references. This observation is consistent with their responses in Figures 7.8 and 7.10, where they also indicated that PHN1 was unhelpful and disruptive to the comprehension of humour.

Figure 7.11: S12: Level of agreement with “I think the subtitles interfere with my understanding of the cultural references in the video” and S14: “I think the headnotes interfere with my understanding of the cultural reference in the video” (n=34)



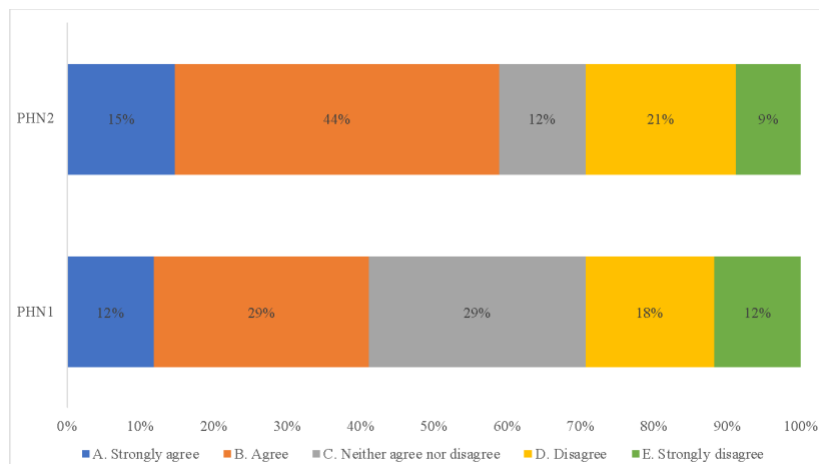
The correlation result ($r_s = -0.09$, $p = 0.35$) indicates a minimal tendency for participants who experienced different subtitle conditions to exhibit slight variations in their agreement regarding the interference of subtitles or PHNs with their comprehension of cultural references. While there is a very weak inclination for participants’ views on interference with cultural reference comprehension to marginally fluctuate with changes in the subtitle condition, the results do not offer statistical evidence to establish the significance of this relationship.

8) Other

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Two additional statements presented only under the conditions of PHN1 and PHN2 are examined in the following. As shown in Figure 7.12, when participants were asked if PHNs were interrupting their reading process, a higher proportion gave a positive answer in PHN2 (59%) compared to PHN1 (41%). Interestingly, the same percentage of participants (30%) gave a negative answer to this statement under both conditions. Notably, one participant (P20) expressed a “strongly agree” response to this statement for both PHN1 and PHN2, indicating a strong aversion to the use of PHNs.

Figure 7.12: S12: Level of agreement with “I think the headnotes interfere with my reading process of subtitles at the bottom during watching the video” (n=34)

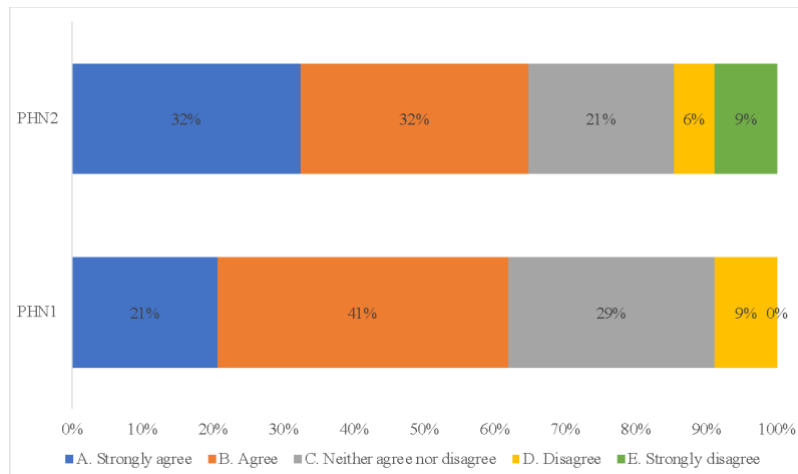


Between conditions of PHN1 and PHN2, a mild negative correlation was suggested ($r_s = -0.11$, $p = 0.36$) between the headnote condition and participants' agreement regarding the interference of PHNs with their reading process of subtitles. However, the p-value also suggests that the relationship between the tested variables may not be statistically meaningful in the dataset.

Lastly, Figure 7.13 demonstrates that participants' preferences were relatively evenly split between PHN1 (21% + 41%) and PHN2 (32% + 32%), suggesting a comparable level of acceptance for both PHNs. Despite this overall parity, three participants (P07, P20, P21) distinctly expressed a strong disinclination toward

comedies featuring PHN2, marking a clear preference against this specific headnote. This highlights the importance of considering individual viewer reception when implementing PHNs in comedic content.

Figure 7.13: S15: Level of agreement with “I would prefer watching Chinese comedies with the headnotes” (n=34)



The Spearman’s correlation test shows that there is a minimal tendency for participants’ preferences for watching Chinese comedies with PHNs to vary slightly with changes in the headnote condition, but this relationship is not statistically significant, as indicated by the high p-value ($r_s = 0.06$, $p = 0.64$).

7.2.4 Summary of results for questionnaire data

The data analysis in this section encompasses insights from post-task questionnaires completed by 34 participants, focusing on RQ1 and RQ2 to assess the effects of PHNs on humour appreciation and comprehension in Chinese comedy viewing. The collective responses indicate a complex relationship between PHN usage and the perceived impact on both humour appreciation and comprehension.

For RQ1, there was a noticeable, albeit not statistically significant, reduction in humour appreciation when PHNs were integrated into the videos (S6 and S9)

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compared to SBS only. This trend suggests a potential influence of PHNs on how humour is received, warranting further exploration. This result can be supported by the collected data on the observed mirth in §6.3.3. Specifically, mirth data showed a marked decline in humour appreciation with the introduction of PHNs: PHN1's inclusion led to reduced mirth displays compared to subtitles alone, with a further decrease noted for PHN2. Combining the results from three types of data, it is found that humour appreciation is highest when only subtitles are present and decreases progressively with the introduction of PHN1 and further with PHN2. This pattern highlights a direct correlation between the inclusion of PHNs and a diminishing enjoyment of humour among viewers, underscoring the impact of additional textual elements on the reception of comedic content.

In addressing RQ2, the data showed that participants' responses indicated a slight decline in humour comprehension with PHNs, though the distribution of data did not conform to normality, and thus statistical significance was not established. This observation, while intriguing, calls for a more comprehensive analysis, incorporating additional methodologies such as interviews to substantiate these initial findings and provide a more holistic understanding of PHN's impact on humour comprehension.

Notably, the analysis revealed certain relationships between three subtitle conditions and participants' levels of agreement with various statements, leading to several trends emerging:

1. Perceived reading time: SBS>PHN1>PHN2

The data on this aspect highlighted a distinct pattern, with participants reporting the most favourable reading time in the SBS condition, followed by PHN1 and PHN2. This suggests that participants felt their reading time was compromised with the inclusion of PHNs, with an increasing number indicating inadequate time as they transitioned from SBS to other conditions of headnotes. The augmentation of textual length from SBS to PHN1 and PHN2 is observed to inversely affect the temporal allocation for participants' reading tasks. This increase in content is

correlated with a corresponding reduction in the time participants perceive they have to assimilate the on-screen text. Specifically, PHN2's longer texts (on average 1.65 times longer than PHN1) may have left participants feeling rushed, resulting in less time spent per character, as evidenced by some participants (e.g., P28, P37) who voiced in the interview that they did not have enough time to read or finish PHN2. This may have led to shorter fixation durations per character in PHN2 compared to PHN1, as shown by eye tracking data in Section 6.3.2.

2. Perceived ease of humour comprehension: SBS>PHN1>PHN2

Echoing the trend observed in reading time, more participants found it easier to comprehend the humour through subtitles alone compared to videos with PHNs. This ease of comprehension diminished progressively with the increasing textual complexity and volume of the PHNs. Particularly, PHN2, with its more extensive and longer text compared to PHN1 and SBS, likely contributed significantly to this perceived increase in complexity.

3. Perceived comprehension of cultural references: PHN2>PHN1>SBS

Interestingly, the incorporation of PHNs, especially PHN2, was perceived by participants to improve their grasp of cultural references, a trend in stark contrast to their perceptions regarding humour comprehension. As illustrated previously in Figure 7.8, participants reported a decline in humour comprehension when PHNs were introduced, compared to the condition with SBS only. This divergence highlights a dynamic where the addition of PHNs seems to facilitate cultural understanding yet potentially complicates the humour comprehension process. Notably, comprehension of cultural references was less effective with only SBS, which may be attributed to the varied focus of the content provided by PHNs. PHN2 provided explanations retaining more of original cultural references, as highlighted in §4.4.4, whereas PHN1 presented a succinct approach with more localised and adapted references in English. Despite participants' self-reported perceptions of improved understanding with the inclusion of PHNs, this did not translate into higher scores in the comprehension test, specifically in questions related to cultural references. This discrepancy suggests that while participants felt

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their understanding was enhanced with PHNs, their actual comprehension scores, as measured by the test, did not consistently reflect this sentiment.

The above contrasting trends underscore a multifaceted interaction between subtitle conditions and participant perceptions. While headnotes (PHN1 and PHN2) appear to complicate the reading process and comprehension of humour, they simultaneously seem to enhance the understanding of cultural references. This dichotomy implies that the design and implementation of PHNs require a careful balance. The goal would be to enrich the viewer's cultural understanding without overburdening their reading processing or detracting from the core viewing experience.

Moreover, the distinct personalisation strategies employed in the study, based on participants' scores on the BFI-S and CQS tests, appeared to exert negligible influence on their humour appreciation or comprehension. Participants were categorised into two persona groups according to their test scores: persona 1, associated with lower scores, indicating lower cultural intelligence and an anticipated preference for PHN1; and persona 2, corresponding to higher cultural intelligence scores and an expected inclination towards PHN2. Despite these categorisations and the tailored approach to personalisation, the data did not demonstrate a significant impact of these strategies on participants' humour appreciation or comprehension, suggesting a more complex interplay of factors than initially presumed. The analysis of questionnaire responses indicates that participants' scores do not significantly influence their perceptions or preferences regarding subtitling conditions. This observation is corroborated by the interview data presented in Section 7.3, further substantiating the notion that individual scores appear to bear minimal relevance to participants' subjective experiences and choices concerning the subtitling variants.

In conclusion, the questionnaire data analysis suggests that incorporating PHNs in Chinese comedy does not markedly affect humour appreciation or comprehension. However, it does impact participants' perceptions regarding various aspects of

subtitling. Notably, the addition of PHNs appears to negatively impact perceptions related to reading time, ease of comprehension, and humour comprehension, while positively enhancing the comprehension of cultural references. The strong opinions expressed by certain participants about PHNs, as captured in the questionnaire responses, merit additional exploration through follow-up interviews to investigate their underlying rationales and perspectives, as presented in the following sections.

7.3 Interview data

As the last step of the experiment, after the viewing sessions, participants were interviewed to gather their opinions regarding subtitles and PHNs. The interview covered topics such as participants' awareness and thoughts regarding the three subtitling conditions. These interviews typically lasted around ten minutes. The specific research purpose was disclosed to participants at the end of the interview, including the purposes of adding PHNs and conducting the experiments. Interview data was collected to elicit answers to RQ3 (Is there a correlation between participants' scores in CQS and BFI-S and their preference for specific PHNs?), and specifically was divided into the following two hypotheses:

Hypothesis 3: Participants with low scores in the CQS and BFI-S scales think the clips with PHN1 strategy are funnier compared to the PHN2 strategy and SBS only.

Hypothesis 4: Participants with low scores in the CQS and BFI-S scales can better understand the cultural references in the clips with PHN1 strategy, compared to the PHN2 strategy and SBS only.

These hypotheses are predicated on the premise that individuals with low scores in cultural intelligence and personality traits, as measured by the CQS and BFI-S, may exhibit specific inclinations or sensitivities towards the intricate presentation of humour and cultural references, potentially finding PHN1 more accessible and engaging.

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The interview questions were designed to further explore the dimensions previously investigated through the questionnaires and to complement the existing data. This section outlines the themes extracted from the qualitative coding using NVivo, aimed at answering RQ3.

Basic quantitative analysis was performed on the closed-ended questions. For the open-ended questions, raw responses were separated and tagged using an open coding protocol. The initial codes were then grouped by affinity to extract high-level themes and sub-themes. This process yielded numerous high-level themes relevant to RQ3 and resulted in the identification of six themes and sixteen sub-themes. These themes include the following, with sub-themes in brackets:

1. Humorous perception (yes VS. no, reasons)
2. Preference for PHNs (PHN1 VS. PHN2 VS. none)
3. Viewing purposes (language learning VS. entertainment)
4. Positive impact of PHNs (comprehension of humour, comprehension of cultural references)
5. Duration of PHNs (should extend VS. it's fine)
6. Other suggestions for PHNs (placement on the screen, format, colour, others)

Several noteworthy findings from the interviews are highlighted in this section below following the orders of identified six themes. Direct quotes ⁸ from participants are used as evidence to support these themes and provide a clearer understanding of the data. This comprehensive approach ensures that the qualitative data effectively complements the quantitative findings, offering a robust analysis of participant preferences and the impact of PHNs on their viewing experience.

⁸ Note: In this section, the quotations enclosed within quotation marks represent verbatim, original statements from the participants, and quotations texts in italics are condensed and paraphrased from their responses by the author. This was decided because TA was used in analysing interview data, as opposed to discourse analysis or conversation analysis, and very detailed transcriptions were not required (Braun and Clarke 2006).

1. Participants generally found all three clips humorous, particularly when the content resonated with their personal experiences or culture, regardless of the presence of PHNs. A significant majority considered the clips funny, but their preferred ones varied, primarily based on how relatable the content was to their own life experiences. One of the strongest themes from the interviews was the relatability of the video humour to themselves.

For example, Clip 3 (Time Flies) depicts an employee trying to complete a report before a deadline but becoming inadvertently engrossed in various social media platforms. This leads to a comedic yet relatable portrayal of distraction and ultimately, failure to accomplish the task. This observation underscores the importance of relatability in shaping humour perception among participants, highlighting the connection to their personal experiences in everyday life and culture.

This finding aligns with relevance theory, particularly the role of existing assumptions in the inferential process. According to relevance theory, cognitive effects—the changes in an individual’s cognitive environment resulting from new information—are maximised when the viewer can relate the content to their own experiences and cultural background. This is because such relatedness allows for the activation of a broader set of assumptions, facilitating the recovery of relevant implicatures, including those that are weakly implied. However, it is important to note that even in the absence of closely related assumptions, viewers are still capable of deriving a range of cognitive effects. Relevance theory posits that the communicative process does not rely solely on the presence of existing assumptions; rather, it hinges on the communicator’s ability to produce stimuli that prompt the audience to infer the intended meaning with minimal cognitive effort. This is where the concept of weak implicature becomes crucial. Weak implicatures are not explicitly stated but can be inferred from the context, allowing viewers to interpret humour even if they do not share specific experiences or cultural knowledge. In this context, the relatability of the video content can

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enhance the audience's engagement by allowing them to draw on their own cognitive environment. When the content resonates with the viewers' personal experiences, it can increase the cognitive effects while reducing the processing effort required to understand the humour. This balance between cognitive effects and processing effort is central to achieving optimal relevance, which is the goal in the translation of humorous content.

Here are some opinions from three participants as an example:

P08: I like it [Time flies] because the use of social media, how the people in their daily life, they don't do the tasks they are meant for, and they're just busy in the social media life – it's our culture now, we've all been there.

P18: They're all funny but I love the first one [Are you asleep]. Maybe because I could relate to it. I know a comedian that does similar videos with different body parts, and I like that one so I could relate.

P20: Because it's an experience I have. I can relate to that experience. The driving one [Dramatic GPS] was funny but not too much because we don't drive on busy roads. But that one [Are you asleep] I've had that experience plenty of times where I'm awake at night and thinking I need to get asleep.

Notably, during the interview, P21 conveyed a unique stance, affirming that only the clip “Are you asleep” with PHN1 was funny for them. This viewpoint aligns consistently with their responses in the questionnaire as they persistently disagreed with the notions that headnotes facilitated an easier understanding or enhanced the comprehension of humour and cultural references in the videos (see Figures 7.8 and 7.9 in Section 7.2.3). This distinct perception could be attributed to the variable accessibility of humour elements inherent in the different clips, potentially influenced by the individual's contextual knowledge or pre-existing cognitive frameworks. From P21's perspective, certain comedic elements were more effectively communicated through the actors' verbal expressions and physical performances, suggesting that the humour resonated more directly and independently of the headnotes' presence.

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P21: The characters were easily explained. There were the funny moments. It was easy to follow their acting and the humour was simpler [in Are you asleep]. The others I didn't find them funny at all... It's because humour is very personal. I look at stuff with my wife, and what I find funny, she doesn't find funny at all. Then she would laugh at something that I would find just so boring. I think there's no universal humour and it's very difficult to set a standard for everyone.

2. When it came to headnotes, the majority of participants (20 out of 34) preferred PHN1 due to its simplicity and readability. Several participants highlighted that PHN1, compared to PHN2, felt more straightforward and direct, making it a more accessible option for them. Additionally, some participants viewed PHN1 as a bridge between Chinese and English cultures, facilitating smoother cultural exchange (see quotes from P17 below).

Interestingly, the same reason led other participants (11 out of 34) to favour PHN2 over PHN1. While they also saw PHN1 as a cultural bridge, they found that it required greater cognitive effort to translate the English phrases provided in PHN1 into more comprehensible explanations. Notably, this preference for PHN2 was not exclusive to participants with high CQS and BFI-S scores; for example, both a low-scoring participant (P04) and a high-scoring participant (P17) preferred PHN2. In essence, participants like P04 and P17 found PHN2 more straightforward and accessible for comprehending humour and cultural references. This divergence in preferences underscores the varied ways individuals process and appreciate subtitled content, influenced by their cognitive and cultural adaptability.

Table 7.8 presents the distribution of participants' preferences for either PHN1 or PHN2, juxtaposed against their categorisation into high- or low-scoring groups based on the pre-task questionnaire results (in §6.2). Among 34 participants, a majority count of 20 showed a preference for PHN1, 11 leaned towards PHN2, and the remaining 3 participants either exclusively favoured subtitles or stated that their preference was contingent on the viewing context (noted as 0). However, it is

important to note that this distribution alone did not show a clear correlation between participants' scoring groups and their preference for PHN1 or PHN2. As further supported by Spearman's correlation results ($r_s = 0.04$, $p = 0.83$), there is no statistically significant connection found between the scoring groups and the stated preferences. In other words, the data does not provide sufficient evidence to suggest that participants from the high-scoring group (of CQS and BFI-S tests) uniformly favour PHN1, or that participants from the low-scoring group consistently prefer PHN2. This result underscores the complexity and diversity in individual preferences concerning subtitle formats. This revelation, to a degree, accentuates the intricate and diverse nature of individual preferences in subtitle format conditions, suggesting that personal preferences in subtitles and headnotes extend beyond categorisations based on cultural intelligence or personality traits. The lack of a uniform pattern suggests that while personalisation is desirable, its implementation may benefit from more sophisticated approaches. The application of machine learning techniques, for instance, could potentially enhance the effectiveness of personalisation by analysing and adapting to individual viewer patterns and preferences, offering a more tailored and dynamic subtitling experience.

Table 7.8: Participants' scoring groups and preferences for PHN1 or PHN2

Participant	Group	Prefer	Participant	Group	Prefer
P01	High	PHN1	P05	High	PHN2
P08	High	PHN1	P13	High	PHN2
P18	High	PHN1	P17	High	PHN2
P22	High	PHN1	P33	High	PHN2
P25	High	PHN1	P39	High	PHN2
P30	High	PHN1	P04	Low	PHN2
P32	High	PHN1	P14	Low	PHN2
P40	High	PHN1	P20	Low	PHN2
P03	Low	PHN1	P26	Low	PHN2
P06	Low	PHN1	P27	Low	PHN2
P09	Low	PHN1	P35	Low	PHN2
P10	Low	PHN1	P38	Low	PHN2
P12	Low	PHN1	P31	High	0
P15	Low	PHN1	P07	Low	0
P16	Low	PHN1	P36	Low	0
P21	Low	PHN1			
P23	Low	PHN1			
P28	Low	PHN1			
P37	Low	PHN1			

Taking these results into account, along with the findings from the first observation, it becomes clear that there is no compelling evidence to support research hypothesis 3. Specifically, participants with low scores on the CQS and BFI-S scales do not necessarily find clips with the PHN1 funnier compared to other subtitle conditions. Instead, the key factor of humour perception for these participants appears to be the relatability of the content to their personal experiences or culture, irrespective of the presence of PHNs. The introduction of PHNs might have made the translated humour more accessible and comprehensible for viewers from two groups.

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With a majority of participants preferring PHN1, it highlights the strengths of PHN1 in providing immediate and simplified explanations, while some of them acknowledge that PHN2 using a text-heavy approach can be valuable for conveying complex or cultural concepts. These participants also think that PHN1 was easier and quicker to read as it presents less text in general on the screen. PHN1 was considered to place less burden on their reading process compared to PHN2, suggesting that the brevity and simplicity of PHN1 are advantageous in terms of reading efficiency and comprehension. For instance, P08 pointed out that they chose PHN1 “because it’s easier to read and easier to understand”; P32 also thinks PHN1 was simpler as it “tells it in a straightforward way, it doesn’t go into great detail, just like a simpler explanation to me”. Some participants also expressed that the choice between the two versions may depend on the viewer’s specific viewing goals, whether for quick comprehension or deeper exploration of the clips:

P03: In my perspective, I prefer PHN1 because it doesn’t require much explanation. However, for certain terms like “guanyin” some additional text is necessary, or else I wouldn’t understand the reference. On the other hand, some cultural references can be quite self-explanatory. They mention platforms like WeChat, and while I may not know exactly what WeChat is, I can grasp the concept based on the context. So, in this case, I don’t need the extra background information or explanation as much as in PHN2. That’s why I lean towards version one[PHN1], it feels closer to my culture.

P18: I prefer PHN1 because it provides immediate understanding. Having a brief explanation helps me grasp the content quickly. If I’m interested in a topic, I can research it further after watching the video. In contrast, PHN2 is information-heavy, and there may not be enough time to read it all during the video. However, PHN2 could be useful for viewers who want to delve deeper during a second viewing.

P28: I find PHN1, with simpler comparisons like common things, very helpful, especially when cultural meanings vary. However, PHN2 is more text-heavy but necessary for explaining complex concepts. Both versions have their value; one is great for direct analogies, while the other excels in explaining intricate cultural concepts with no direct equivalents.

Conversely, participants expressing a preference for PHN2 collectively highlighted its directness and lower level of confusion, particularly when encountering culturally specific references or expressions. Although these participants recognised PHN1 for its readability, they also found it more confusing, especially for those unfamiliar with English cultural references or equivalents in the Western culture. For instance, P33 chose PHN2 because it was “more detailed in providing information and straightforward for explanation”, while others preferred it because PHN1 was confusing to them. P39 favoured PHN2 due to uncertainty about the meanings of certain idioms in PHN1, and P38 believed that PHN2 has broader applicability, making its information and explanations universally understandable. P38 noted, “For example, the term ‘confirmation money’ in PHN1 might not make sense to someone not from Ireland, and it could lead to confusion”. P26 also felt that PHN1 was confusing and open to interpretation, but acknowledged that PHN2 was faster to understand, especially when reading quickly. Additionally, P17 found PHN1 to be more mentally taxing, whereas PHN2 was more direct in explaining.

It should be noted that participants showed different understanding of the term “directness”. To them, in this context, it refers to how easily and clearly the information in PHNs is presented and understood. PHN2’s directness is associated with its detailed and informational explanations from the source culture, which makes it easier for participants to grasp the intended meaning without additional cognitive effort. In contrast, PHN1’s directness is seen in its easier readability and adaptability into a familiar culture, but can be confusing due to its use of culturally specific phrases and references that require background knowledge to understand fully. Therefore, participants’ preference for directness varies depending on their familiarity with the cultural references and their need for details from explanations.

P17: Version one of the headnotes [PHN1] feels more like a Western equivalent to me. However, it requires an additional mental step. It connects me to Gabriel, which is great, but then I have to recall what Gabriel means to me personally. It’s like a two-step process. The other one,

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[also PHN1] with the “81 traffic lights” is similar to our phrase “jumping through hoops” but again, I have to mentally backtrack and remember what “jumping through hoops” means. Version one’s headnotes serve as a cultural bridge for me, but they also require some extra mental effort, which made me feel slower in comprehending the content. In contrast, version two’s direct explanations made it easier and quicker for me to understand.

Additional rationales for their preferences include the belief that PHN2 provides more comprehensive contextual and background information within the detailed explanations from the course culture, a feature that aligns more favourably with their preferences (P04, P35), or is more interesting for them to learn (P27, P36).

P04: Version one [PHN1] is easy to read. I guess I’m just used to it and that’s it. But version two [PHN2] explains more for me, culture and jokes. I understand it more and it kinda clicks better with my brain.

P27: I find it more interesting to learn about different religions, so the fact that it’s focused on Buddhism is more interesting to me. I also appreciate getting a description that doesn’t rely on my understanding of something else. It’s straightforward, and I can grasp it easily. I don’t think it would work if they tried to relate it to something in Christianity because there are likely subtle differences I wouldn’t fully understand. It’s better to have a unique description that fits the unique concept.

P35: I believe that PHN2 provides more context, especially in a general sense, and it offers a lot more detail. For example, the explanations about pocket money and red envelopes are very specific. I prefer having longer sentence because it allows me to process the information more thoroughly. I can visualise the concept, understand what the audience is likely visualising, and find more humour in it. It helps me feel closer to the intended audience’s perspective.

P36: For quick viewing and just grasping the basic idea, I’d opt for version one [PHN1]. However, for a more in-depth and lasting understanding, I prefer the other [PHN2]. The additional information in PHN2, like the

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significance of '81' as a sacred number, enhances my learning and memory. In contrast, I'm less likely to remember details from the first option. I'll be able to remember these [PHN2] more.

However, interview data also show that three participants (P07, P20, P31) prefer the viewing condition of subtitles only, neither PHN1 nor PHN2. All of them mentioned that they considered themselves slow readers and did not have enough time to read both of PHNs and SBS at the same time. In particular, P20 was not accustomed to watching videos with subtitles and found the videos with two versions of headnotes “very challenging”. This could elucidate their firm stance against the utilisation of both PHNs, as evidenced by their “strongly agree” response to the questionnaire statement regarding the interference of PHNs with the reading process (see Figure 7.12). Also, P20 expressed a strong dislike for PHN1 due to the belief that humour in Chinese culture lacks direct equivalents in Irish culture, making it untranslatable. P20 underscored the uniqueness of Chinese culture and believes that it would be “more beneficial to learn about China directly rather than attempting to translate it into an Irish context, as the two cultures are distinct”.

It is interesting that other participants, namely P07 and P31, expressed a preference for watching videos with subtitles only. Their preference was driven by their desire for an immersive viewing experience. They felt that the presence of PHNs on the screen disrupted their viewing process, detracting from their immersion in the scenes:

P07: I think headnotes did help me better understand the humour, but it came at the expense of immersion in the content. I acknowledge that headnotes provide clarity, but personally, I prefer immersion, even if it means accepting some ambiguity. I also realised that I believed I understood some cultural references but later discovered I did not. Like not knowing what I did not know, but I think it doesn't bother me that much.

P31: I believe that when you're engrossed in watching something, it's easy to immerse yourself in the narrative. However, when headnotes providing

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cultural context appear, it can disrupt this immersion by reminding you that you're watching a video. For instance, if you're watching a thriller, you can become fully engrossed in it, but headnotes just remind you it's not real.

3. As with P07 and P31 on their desire for an immersive viewing experience, the majority of participants agree that the use of PHNs should align with their viewing purposes (e.g., P36), entertainment or education. Most participants agree that PHNs enhance their understanding of humour and cultural references within the clips, although some suggest that the degree of assistance provided by PHNs might depend on their specific viewing intentions. Participants tend to prefer PHN1 when watching videos for entertainment or to quickly grasp the content. However, if their goal is to learn Chinese language, for example, or to gain more knowledge, PHN2 is considered more suitable. This aligns with Martin's (2007) and Gavanski's (1986) (as discussed in Section 4.3) perspectives on the multifaceted nature of humour, which encompasses both emotional and cognitive components. For instance, participants like P07 and P31 expressed a preference for PHN1 when watching videos for entertainment or quick content understanding. This preference highlights the role of humour appreciation, where immediate and accessible humour is prioritised:

P07: When I'm in the mood for pure entertainment, I'd definitely go for something like PHN1. It's straightforward and just adds to the fun. But when I'm looking to learn and dig deeper into a topic, that's when I'd prefer something like PHN2. It provides more context and information from Chinese culture, which is great for gaining knowledge. So it really depends on my goal – entertainment or learning.

Conversely, participants who aimed to gain more knowledge or learn Chinese language preferred PHN2 for its detailed explanations, reflecting a focus on humour comprehension:

P28: This [PHN1] is meant to help you understand the joke and will aid understanding faster. Whereas if I wanted to show a video for a class of

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students attempting to understand Chinese culture or something like that, I think I would go with these ones [PHN2] more because that's more information about Chinese culture as opposed to helping me understand what's immediately going on in the scene. I think both would help you understand, but I think that would be more information-rich. So when I just want to enjoy, I would prefer PHN1; when I want to learn about China or the Chinese language, I prefer PHN2.

This dichotomy between PHN1 and PHN2 underscores the need to balance cultural context and humour comprehension, a key theme identified in Zabalbeascoa's (1997) work on translating humour (see Section 3.2). The detailed insights provided by participants, such as P36's reflection on the lasting impact of PHN2's explanations, further illustrate this balance:

P36: If I'm in a hurry and just want to get a quick idea of what's going on, PHN1 works well for that purpose. But when I'm thinking long-term and want to actually learn something, I lean towards PHN2. It's the kind of content that sticks with you. For example, I had no idea about the significance of the number '81' before, but now it's something I'll remember. PHN2 offers that depth of knowledge from Chinese language and culture that's more likely to stay with me, whereas the other one, not so much.

Notably, some participants (e.g., P20) perceive the elements of humour appreciation, cultural reference comprehension, and overall video understanding within the clips as distinct and separable components. In other words, as highlighted by P20 below, these participants contend that one can derive entertainment value from a video without fully grasping all the cultural references or humour within it. Consequently, they do not feel the need to completely understand the cultural references or humour in order to find a video funny. This perspective aligns cohesively with the findings from the questionnaire (Section 7.2.4), where PHNs are observed to introduce complexity into the reading process and potentially impede humour comprehension, yet concurrently, they seem to

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facilitate a deeper understanding of cultural references. This suggests that the addition of PHNs presents a double-edged sword, enhancing cultural insights while possibly complicating the humour comprehension process. This multifaceted interaction highlights the delicate balance between providing cultural context and maintaining an unobstructed, enjoyable viewing experience:

P20: Understanding every cultural reference isn't crucial for appreciating humour. Take, for instance, the Irish show Father Ted, which British viewers find funny despite not grasping over 50% of the Irish cultural references. They still find it hilarious. While cultural references can offer insights into Chinese life, they aren't essential for humour to shine through. It depends on the comedy genre. In the case of Father Ted, comprehending all the references isn't necessary, but for shows like Derry Girls, which delve deep into culture and politics, it might be crucial. The clips I just watched didn't feature much physical humour; it was mostly verbal with a touch of slapstick. I found the slapstick in the middle clip [Are you asleep], with people moving and running, easier to find funny.

These participants' feedback highlights the importance of aligning PHNs with viewers' purposes and needs, whether for entertainment or educational goals. This feedback, combined with insights from humour reception literature, underscores the intricate relationship between humour appreciation, cultural reference comprehension, and the overall viewing experience. The data indicates that while PHNs enhance cultural understanding, they can simultaneously complicate humour comprehension, necessitating a careful balance in their application.

4. Over half of the participants expressed a consensus that the presence of PHNs enhances the comprehension of humour and cultural references within video content compared to subtitles alone. They acknowledge that the absence of headnotes would likely lead to confusion during the viewing experience, particularly in understanding the reasons behind laughter in the scenes or the intended meaning of certain elements, while some consider PHN2 more helpful in explaining cultural references in particular. For instance, P05 noted a preference

for watching clips with PHNs, as they found themselves unable to grasp some aspects of the content when PHNs were absent, leading them to recognise the positive impact of them. Participant P16 similarly observed that in the absence of PHNs, they encountered difficulty comprehending specific jokes, resulting in a sense of confusion. In alignment with this perspective, P06 considered PHN2 as footnotes in reading articles “because it makes more sense as to why they were laughing and so on. It’s like when you are reading an article, you would need footnotes sometimes”. This opinion was shared by P12 who admitted that the presence of PHNs contributes to a more enjoyable viewing experience as understanding the content thoroughly enhances the enjoyment of the programme.

Specifically, several participants believe that PHNs serve as a valuable source of supplementary context and information, facilitating their comprehension of the characters and references embedded within the clips. This additional background knowledge enhances their ability to apprehend the humour and cultural references behind the scenes. Without proper comprehension, potentially humorous segments might not resonate as intended, rendering the humour elusive. This perspective underscores the role of PHNs in bridging the gap between the viewer’s cultural framework and the inherent cultural elements in the videos, thereby enriching the overall viewing experience. For example, some of their opinions are listed below:

P17: I find headnotes to be really helpful because they provide context for the characters and references that I might not understand otherwise. Sometimes, when I watch Spanish shows or listen to Spanish podcasts, they make references to things in Spanish culture that I’m not familiar with, it can be confusing. Without explanations, it can take me a whole episode to figure out what’s going on, or I have to pause and Google the references. This is especially important in comedy shows because comedy often relies on situations that everyone can relate to, and if there are cultural references, they need to be explained, especially for a foreign audience like me, since we don’t share the same cultural background or daily experiences.

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P26: I think I found the first one [Time flies] funnier just because of relating to it. But I felt like I understood more about the humour and the jokes they were making on the second [Are you asleep] because it had the headnotes. That's the bit of the information that I feel like I'm missing. I get the jokes about social media, but more specific ones on the cultural references, I don't understand, unless it explains to me in the headnotes.

P35: I personally have a strong preference for headnote 2 [PHN2] as they provide valuable context that I consider essential. Without headnotes, I can still watch the video and join in the laughter, but I often find myself lacking a clear understanding of why it's amusing. Headnotes fill this gap by offering additional context, such as explaining the meaning behind certain terms or references. In my experience, having headnotes significantly enhances my comprehension. For example, in Dramatic GPS, it took me a long time to understand a character named Ziwei. This was in contrast to another skit involving Tofu and brain [Are you asleep], where I could grasp the concept and underlying message relatively easily with headnotes. I believe that headnotes would have greatly aided my understanding in the former case, helping me identify and understand the character Ziwei more quickly.

However, seven participants expressed opposite opinions asserting that PHNs primarily served as effective tools for explaining cultural references while falling short in explaining humour. For instance, P04 contended that PHNs are not effective regarding humour but in providing clarity for cultural references. P10 believed that PHNs are more adept at conveying linguistic content than capturing humour, particularly when humour relies on the delivery and acting aspects. Furthermore, P23 underscored that while PHNs provide extra information, they are more useful for understanding cultural references, as the humorous content remains enjoyable even without headnotes. Echoing their perspective, P39 affirmed that humour remains in the clips without PHNs, but they indeed enhance understanding, particularly in cases involving wordplay and cultural references. Overall, these participants acknowledge the value of PHNs in explaining cultural aspects but hold negative views on their efficacy for humour comprehension.

Three participants expressed the challenge of assessing the effectiveness of PHNs in aiding their comprehension of humour and cultural references. They indicated that the level of assistance provided by PHNs is contingent upon various factors, including the content of the videos and the reading speed of individual viewers. For instance, P15 conveyed a relatively indifferent stance toward PHNs and suggested a preference for their inclusion primarily when specific words or information necessitate explanations when watching shows in a foreign language. P18 stressed that the effectiveness of PHNs is contingent on the type of humour being presented to them, implying that headnotes may not uniformly enhance the understanding of all comedic elements. On the other hand, P37 underscored the multifaceted nature of this issue, asserting that the impact of PHNs depends not only on the video content but also on viewers' reading speed. They pointed out that while important information might warrant headnote explanations, the challenges stemming from the text-heavy nature of these explanations could impede viewers' ability to read them quickly. This, in turn, may lead to a compromised viewing experience and the potential for adverse effects on comprehension and enjoyment.

P18: I find that headnotes do a good job explaining cultural aspects, but I understand they can't cover everything like a Wikipedia page. Maybe they should focus more on essential information that aids understanding. Regarding humour, it's a bit complex. Translating jokes from one language to another can lose some nuances, but you can still get it. However, not having the full context of cultural references and societal features can make it more challenging. Some jokes are funny even if you don't know the whole backstory. It really depends on the specific joke and the level of cultural background needed.

P37: In my view, videos with fewer on-screen texts are easier to watch, but there are times when cultural references need explanation. The video about social media, I understood it without needing many explanations. But it all depends on how important those references are. Some things definitely require explanation, and that's where headnotes come in handy. That said, fewer on-screen texts make for a smoother viewing experience. However, it's hard to read all of them when they're a bit rushed, too fast. So, it

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depends on your reading speed. If you're a fast reader, it doesn't affect your experience as much, but if you read slower, it can be overwhelming.

Based on the interview findings and the results of finding 3 from the questionnaire, it is evident that research hypothesis 4 is not supported. This hypothesis posited that participants with low scores on the CQS and BFI-S scales could better understand the cultural references in the clips with the PHN1 strategy compared to the PHN2 strategy and subtitles only. However, the data suggests that participants' understanding of cultural references increased with the presence of PHN2, irrespective of their scores on these scales. A higher proportion of participants preferred PHN2 for explaining culturally specific elements, and questionnaire data reveals that their comprehension of cultural references improved when PHNs were included, particularly with PHN2. Conversely, when only subtitles were provided in the video, the level of comprehension of cultural references was lower. This suggests that PHN2 plays a more crucial role than PHN1 or SBS only condition in enhancing viewers' understanding of cultural references within the video content.

5. In line with P37's observations concerning reading speed, the majority of participants agree that the duration of PHNs, particularly in the case of PHN2 with longer text, should be extended to facilitate comprehension. Participants expressed that this was due to their lack of familiarity with videos featuring headnotes. This unfamiliarity, combined with the abrupt appearance of PHNs on the screen, posed a degree of distraction. As exemplified by participants such as P09, P12, and P20, the general sentiment was that while PHNs were regarded as overall beneficial, their rapid display proved to be challenging, especially PHN2. This issue manifested in the form of participants struggling to balance watching the scenes, reading PHNs, and keeping up with SBS, resulting in occasional missed subtitles, as described by P12 and P28:

P12: I think headnotes were very useful, but they were very quick. I had to watch the scenes, then I missed the subtitles because I was reading the headnote and then I didn't have time to read the subtitles for that part.

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P28: I personally found the headnotes somewhat challenging to deal with. It would have been beneficial if they remained on screen a bit longer, especially during pauses, as they were valuable for grasping the cultural aspects. Trying to read them often meant missing out on the ongoing action or words in the scenes.

6. Furthermore, while a majority of participants expressed a preference for the presented headnote format in this study, some suggested an alternative placement at the bottom of the screen, with larger fonts or a distinct colour compared to subtitles. Most participants found the existing format, which underlines keywords in subtitles and provides explanations in headnotes, to be “clear” and “easy to follow” (e.g., P03, P05). However, some participants admitted to never encountering something similar to PHNs before and needed an adjustment period. Specific comments highlighted the benefits of keyword underlining in subtitles, with participants noting that it helped them identify relevant content in the video (P38). For them, underlining served as a visual cue, prompting them to refer to the PHNs when they observed an underlined word (P35). Participants also responded positively to the use of brackets in PHNs to indicate descriptions (P37). All of these features were consistently applied across all PHNs, enabling viewers to readily understand its function and aiding comprehension. Certain participants expressed disagreement with the present format and advocated for placing PHNs at the bottom of the screen. Their rationale was that such a placement would minimise the necessity for upward eye movement, consequently improving the overall viewing experience, particularly during comedic videos (P20, P21, P23, P25, P31, P32, P33, P36). Participants who also advocated for distinct colour argued that it would improve the visibility of PHNs compared to having both SBS and PHNs in all black (e.g., P20, P36).

P20: Personally, I believe it would have been more convenient if the headnotes were placed next to the subtitles at the bottom. To give you an idea, I remember VH1 used to have this feature where they showed music videos, and information like where the song was recorded or who wrote it would appear in bubbles on different parts of the screen for about 10 seconds. For example, if it was an REM song, these details would pop up

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at different times. I think that format would work better for me than a headnote. They were positioned in the middle or at the side of the screen and stayed on for about 15 seconds. Although this isn't the same as subtitles, I believe having the information on screen for a longer duration would be easier to read and more helpful.

P36: Placing headnotes at the bottom possibly would be more helpful, or even just above the subtitles. Maybe it would also help if the colours were different. Now they both have a black background with white text. If the background for one of them were white with black text to create a contrast and show that it's different, that might work.

However, this format suggestion also elicited opposite opinions from several participants. They believed that placing headnotes at the bottom of the screen alongside subtitles could lead to confusion between the headnotes and the ongoing dialogue presented in the subtitles:

P40: I personally believe that placing the headnotes alongside the subtitles at the bottom could be confusing. It [being on top] doesn't necessarily bother me, but it would demand more focused attention. It becomes a continuous process of reading, and if the headnotes were positioned at the bottom, I might start associating them directly with what the characters are saying. For instance, when headnotes mentioned what "moments" means, I'd likely interpret it as some character talking in the video because it's in the subtitles.

Some participants proposed potential solutions to address the issues related to PHNs. Several of them attributed the need to shift their gaze upward to read PHNs to the screen's proximity, suggesting that moving further away from the screen would provide a more comprehensive view of all on-screen elements so they would "have a better view of everything" (P21, P33). Additionally, some participants expressed the desire for an option that would "automatically pause on the video" when PHNs appear, facilitating their reading without disrupting the viewing

experience (P20, P21). These suggestions may enhance the usability and functionality of PHNs in future implementations.

P33: I think having the headnotes next to the subtitles in one place would allow me to absorb both at once without constantly shifting my focus up and down. Since I sit quite close to the screen, unlike my usual distance, having everything on the screen would be more convenient. When I had to look up for the headnote, I couldn't see the subtitles properly. But sitting back further would be better.

P20: Even as I was watching it, I was thinking that these [headnotes] would totally disrupt the flow of the comedy. If there was a pause automatically on the video, and that [headnotes] flashed up, and then the video played again, that would be easier for me.

7.4 Findings from questionnaire and interview data

In conclusion, based on the data analysis above, the interview data corroborated the trends identified in the questionnaire responses, offering a consistent narrative. Moreover, the interviews contributed a more detailed perspective, enriching the understanding of participants' views and providing deeper insights into their individual experiences and perceptions.

Regarding the examination of RQ1, the analysis reveals that the incorporation of PHNs with subtitles led to a perceived slight reduction in humour appreciation among participants. Although this trend did not manifest as statistically strong, it suggests that PHNs may have a subtle negative impact on humour appreciation.

Addressing RQ2, participant responses from questionnaires suggest that the introduction of PHNs might slightly impede humour comprehension, favouring standard subtitles for a clearer understanding. From the interview results, it appears that while PHNs did not notably enhance participants' understanding of humour, their presence did not show an extensive negative impact either. This reflects the questionnaire findings, where PHNs were observed to complicate the

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reading process and humour comprehension, particularly PHN2, which contains longer texts in general.

Regarding RQ3, an interesting pattern emerged. Participants from the high-scoring group on the CQS and BFI-S tended to favour PHN1, contrary to the hypothesis that the low-scoring group would favour PHN1. However, this preference did not translate into a statistically significant correlation, suggesting that BFI-S and CQS may not be directly linked to preferences for PHNs. This indicates that factors other than personality traits and cultural intelligence might influence headnote preferences. The preference for PHN1 predominantly stems from its perceived more accessibility for its localised references. Conversely, a subset of participants exhibited a preference for PHN2, endorsing it for its perceived efficacy in facilitating the comprehension of cultural references similar to the original. This is consistent with the questionnaire data, which did not show a clear link between individual scores and preferences for PHNs.

In terms of viewing intentions in the future, PHN1 emerged as the favoured option among participants inclined towards entertainment or quick comprehension of content. On the other hand, PHN2 was regarded as more advantageous for individuals aspiring to deepen their proficiency in the Chinese language or cultural context. This highlights the dual role of PHNs in catering to different viewer needs, as reflected in the questionnaire data where PHN2 was perceived to enhance cultural reference comprehension. In the following concluding chapter, a comprehensive exploration of both the practical and theoretical implications derived from these findings was undertaken, thereby presenting the broader impact of the study.

One of the important findings is a majority of participants agreed that PHNs enhance their understanding of cultural references when watching videos in another language. However, this heightened comprehension is associated with a trade-off, specifically in terms of reading time and ease of comprehension. Most participants reported that, under the condition of subtitles only, it was easier for

them to read and understand the subtitles than the conditions with PHNs. This was attributed to the longer and more extensive texts presented in PHNs, resulting in a greater reading burden.

From the perspective of relevance theory (discussed in Chapter 3), these results can be interpreted in terms of intended import and the encoded concepts. Intended import refers to the message that the content creator wants to convey, while encoded concepts are the specific ideas, words, phrases, and visual elements used to express that message (Sperber and Wilson, 2015). In this study, SBS and PHNs serve as encoded concepts designed to help deliver the intended meaning of humour and cultural references. The use of PHNs aims to achieve optimal relevance for viewers, balancing their comprehension of humour, cultural references, and the processing of on-screen text. The interaction between source verbal messages and visual information influences subtitle translation, and the interplay between visual information and on-screen subtitles directly contributes to cognitive effects.

The application of relevance theory in this study highlights that PHNs are intended to ensure the successful delivery of humour by allowing viewers to extract key meanings from visual information while minimising processing effort. In other words, PHNs provide culturally adapted or authentic explanations that facilitate comprehension without overwhelming the viewing experience. By tailoring PHNs to different levels of cultural adaptability, the study aims to bridge the gap between the audience and the source culture, making humour and cultural references more accessible and enjoyable.

However, not all encoded concepts—those ideas and meanings intended by the speakers or the videos—may be successfully decoded by viewers, who interpret and understand the information based on their own knowledge and context (Sperber and Wilson, 2015). This potential gap in decoding can affect the overall interpretation and enjoyment of the humour. According to relevance theory, every instance of communication inherently carries an expectation of optimal relevance.

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Comprehension is guided by a relevance-oriented heuristic, where individuals prioritise communicative inputs based on their immediate relevance. This dynamic can be observed from eye-tracking data, as participants' fixation durations primarily focused on the SBS area rather than PHNs, indicating they perceive SBS as more relevant. Viewers of subtitled products tend to engage in a pragmatic interpretation process, where they focus on understanding the video content through the most accessible and relevant inputs, such as subtitles and visual images. Once viewers feel that their comprehension is satisfactory, they are likely to cease further processing efforts, potentially overlooking supplementary explanations provided by PHNs.

This focus on the relevance-oriented heuristic of comprehension underscores that while PHNs are designed to enhance understanding by providing additional context, viewers may selectively engage with these elements based on their perceived relevance, which is shaped by their prior knowledge and the immediate context provided by the video and subtitles. Moreover, as Gutt (2000) explains, the effectiveness of translation hinges on careful consideration of the nature and degree of interpretative resemblance, which is necessary for achieving optimal relevance. This means that translators must ensure that TT closely aligns with the audience's expectations and interpretative abilities, facilitating a more seamless and accurate understanding of the content.

In this context, achieving optimal relevance in delivering humour relies on the viewers' relevant knowledge and beliefs about the intended humour. These existing assumptions are integral to the interpretation process and contribute to the overall processing effort. This impacts how viewers interpret the humour, and it is the translator's job to assess what assumptions the viewers might have access to. Furthermore, in contrast to watching videos with dubbing, viewing subtitled videos can present greater processing effort due to the need to simultaneously read text and process visual and auditory information (Koolstra, Peeters and Spinhof, 2002). Subtitles require viewers to divide their attention between reading and watching, which can increase mental effort but also enhance comprehension and language

learning. Subtitling maintains the original audio, preserving the authenticity and emotional expression of the performance, which can be crucial for the effective delivery of humour. Therefore, while subtitling may demand more cognitive resources, it also offers unique benefits such as improved language acquisition and a more authentic viewing experience, which can ultimately contribute to achieving optimal relevance for the audience. By balancing the processing effort required with the cognitive effects achieved, subtitles and PHNs together can help viewers navigate cultural references and humour more effectively.

The data collected from the study indicates that although the inclusion of visual messages within subtitles and headnotes, especially in the case of PHN2, intends to reduce viewers' cognitive effort and enhance cognitive effects, it turns out, unsurprisingly, to pose more challenges for participants in terms of reading and comprehension of both subtitles and headnotes at the same time.

The results of participants' responses suggest that, despite the consistency of the video content across the three conditions, the increased processing effort required for reading additional information (i.e., PHNs) has disrupted the balance of humour delivery. However, this observation should not be misconstrued as an inability of participants to recover the intended meaning. This is substantiated by their comprehension scores and the affirmative narratives emerging from the interviews. Instead, it implies that participants are capable of understanding the intended meaning through the integration of verbal and visual cues, potentially relying solely on the subtitles, without necessitating supplementary aid from PHNs.

This understanding of viewers' processing of PHNs highlights a critical aspect of cognitive processing in multimedia contexts: the interplay between visual and verbal information. Participants demonstrated that they could derive meaning and appreciate humour effectively by focusing on the primary subtitles, which suggests that the cognitive load imposed by additional PHNs might not always enhance the viewing experience. This finding aligns with relevance theory, which posits that communication aims to achieve a balance between processing effort and cognitive

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effects. Further research is needed to develop methods that minimise the need to switch between subtitles and visual imagery. This would involve creating a more seamless integration of cultural references within the primary subtitles, thereby reducing cognitive load and enhancing the overall viewing experience. By refining these methods, researchers can better support viewers' comprehension and enjoyment of foreign-language content, ensuring that the added elements such as PHNs do not detract from the primary narrative and thematic engagement.

Similar patterns emerged from the interview data, where participants expressed a preference for relying on PHNs to understand cultural references in the videos but also highlighted the need for an extended duration for reading them on the screen. Additionally, in terms of their enjoyment of the viewing experience, participants commonly found all three video clips humorous, and their enjoyment was often linked to how relatable the content was to their personal experiences. This indicates that the impact of the relatability of contents on participants' perception of humour, more so than their understanding of humour or cultural references through PHNs. This finding aligns with relevance theory, which emphasises that individuals recover the intended meaning based on their own existing assumptions and experiences. It also supports the perspective of Zabalbeascoa (2020, p. 674), who posits that “[h]umour may have different levels of priority in different texts”, as discussed in Chapter 5. The significance of humour varies depending on the context and content of the material. Furthermore, Zabalbeascoa (*ibid.*) argues that humour is not solely a matter of individual appreciation determined by personal preferences, characteristics, or experiences. Instead, it is also influenced by cultural, social, historical, political, and linguistic factors. For instance, participant Po8 found Clip 1 (Are you asleep) particularly funny because it not only reflects their personal experiences but also resonates with the current culture of digital information. This example underscores how humour can be contextually dependent, shaped by broader societal and cultural influences beyond individual traits.

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For participants who did not find all the clips funny (e.g., P21), their perspective was rooted in the belief that humour is highly “personal”. Their view supports the notion that humour is a subjective and personalised experience, lacking a universal standard or consensus, as discussed by Chiaro (2010) and previously mentioned in Section 3.2. Chiaro emphasises the unique and personal nature of humour reception and interpretation among different individuals, viewing humour as a paradox that acknowledges its inherently subjective nature and the potential for significant variation in interpretation among different individuals. In essence, humour remains a complex phenomenon, capable of both broad appreciation and diverse individual interpretations. Due to its complexity, humour is assessed from two perspectives in this study: humour appreciation and humour comprehension, as suggested by Gavanski (1986) who discovered that the enjoyment of humour is more connected to the emotional level, whereas funniness ratings are more connected to the cognitive level. As highlighted by P20, who believed that humour appreciation and comprehension can be dependent, viewers may not necessarily need to fully understand a scene to find it funny, or conversely, they may not find a scene funny even if they understand it. This aligns with the discussion on humour in Section 3.2, where it was stressed that humour comprehension and appreciation can indeed be separated, contingent on the audience’s standpoint.

Thus, as noted by Martin (2007) and Zabalbeascoa (2020), humour should be examined through the lens of the recipients, taking into account the breadth of their responses. This study’s approach of measuring humour from both appreciation and comprehension perspectives allows for a more comprehensive understanding of how humour operates across different contexts and audiences. Moreover, the variance in humour perception may not necessarily be connected to viewers’ personality traits or cultural intelligence, as studied in this research. Instead, it might more closely associate with their prior experiences, existing knowledge, and specific viewing objectives, whether they are geared towards entertainment or educational purposes. When it comes to headnotes, PHN1 is preferred by participants seeking entertainment or rapid content comprehension, while PHN2 is considered more appropriate for individuals aiming to enhance their proficiency in the Chinese language or broaden their knowledge in Chinese

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culture. However, regarding participants' favoured subtitle formats, a greater number of participants tend to lean towards PHN1 because of its simplicity and ease of reading. Conversely, some participants exhibit a preference for PHN2, perceiving it as a more accessible option for comprehension of source cultural references. This divergence in preferences underscores the multifaceted nature of participant choices regarding subtitle formats, which can also be attributed to their varied viewing purposes.

Chapter 8

Contributions and Discussions

8.1 Introduction

This research investigates the effects of PHNs on English-speaking audiences' reception of humour in watching Chinese comedies along with SBS. By dissecting humour reception into two fundamental categories—appreciation and comprehension—the research meticulously investigates the potential impact of PHNs.

Recall that in Section 4.4.4, two versions of headnotes were created based on participants assumed scores on the CQS and BFI-S scales. PHN1, designed for low-scoring individuals, was created using a domestication strategy, while PHN2, aimed at high-scoring individuals with higher cultural adaptability, was created using a foreignisation strategy.

The participant base consisted of 40 English-speaking individuals, selected through a pre-task questionnaire (CQS and BFI-S) to ensure a range of cultural adaptability scores, resulting in 34 valid data points for analysis. The methodology was carefully crafted to ensure a comprehensive understanding of participant engagement and reaction to subtitled content under different conditions: SBS only, SBS + PHN1, SBS + PHN2. The Tobii T60XL eye tracker was used to ensure viewer engagement with subtitles and headnotes. This quantitative data was complemented by qualitative insights drawn from post-task questionnaires and interviews, providing a rich tapestry of data on participant perceptions and experiences.

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The research first raises critical questions about how PHNs influence viewers' humour appreciation during their viewing experience (RQ1), and second, examines the extent to which humour comprehension is impacted by PHN integration (RQ2). Moreover, the research extends its analysis to evaluate the interplay between viewers' scores on CQS and BFI-S, as gauged by pre-task questionnaires, and their preferences for PHNs (RQ3). This holistic approach aims to uncover the intricate relationships between individual differences and the effectiveness of PHNs in augmenting the comedic experience.

Using relevance theory (Sperber & Wilson, 1986/1995), this study examines how subtitles and PHNs serve as ostensive stimuli that guide viewers toward deriving cognitive effects with minimal processing effort. By carefully balancing these elements, the research explores how different subtitle strategies can maximise relevance, enhancing both humour appreciation and cultural comprehension among diverse audiences.

Gutt's (2000) theoretical framework on relevance in translation further informs this study, highlighting the importance of achieving interpretive resemblance between ST and TT. This research extends Gutt's ideas by applying them to AVT, where the interplay between visual stimuli and textual information is crucial for achieving optimal relevance and effective communication.

By integrating PHNs with SBS, the research aims to provide insights into how modifications in subtitle presentation can influence the reception of cultural references and linguistic difficulties in foreign language comedies, potentially offering a richer, more inclusive viewing experience. This approach acknowledges the complexity of humour translation and the role of cultural references in humour appreciation, aiming to bridge gaps in understanding and enjoyment among audiences with varying levels of cultural adaptability. By dissecting the intricacies of humour perception and comprehension in the face of cultural diversity, this study endeavours to provide fresh insights and empirical evidence from the

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perspective of subtitle translation, thereby enriching the understanding of how individuals engage with humour in multimedia content from another language and culture. Ultimately, this study aims to contribute to the ongoing dialogue regarding the use of subtitles and their role in facilitating cross-cultural entertainment exchange, underlining the significance of subtitle application in enhancing the global consumption and appreciation of diverse media content.

This study, guided by relevance theory and Gutt's framework, seeks to understand the delicate balance between cognitive effects and processing effort in subtitle translation. By doing so, it provides a detailed view of how subtitling can be optimised to achieve interpretive resemblance and ensure that humour and cultural references are effectively communicated across linguistic and cultural boundaries.

This chapter begins with a summary of the findings derived from the collected data, addressing the three research questions proposed in the study (section 8.2). Following this summary, section 8.3 highlights some contributions of the research, including to the field of AVT and media design. It concludes in section 8.4 by identifying some limitations of the study, such as sample size and scope, and offers perspectives for future research in AVT, suggesting areas for further exploration and methodological improvements.

8.2 Summary of findings

This mixed-method research first used an eye-tracking device to confirm that participants engaged actively with subtitles and to collect initial data for part of the answers to RQ1 (*Is the appreciation of humour affected by the use of PHNs?*). Analysis revealed different levels of engagement with the content, where subtitles received more attention than both types of PHNs on the screen. The results indicate a clear preference for subtitles over PHNs among viewers, as reflected by the less mirthful responses observed in the PHN conditions and reinforced by participants' feedback during interviews. This finding is supported by the data

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from the post-task questionnaire and interview, which showed a reduction in humour appreciation when PHNs were integrated into the videos, compared to the condition of SBS only. The interview results also indicate that participants perceived all three clips as humorous, particularly when the content echoed their personal experiences, irrespective of whether PHNs were present or not.

This hierarchy of engagement underscores the central role subtitles play in conveying essential dialogue and narrative details that viewers typically prioritise. However, it might also stem from viewers' familiarity with subtitles compared to headnotes, which are less commonly encountered in video content. Alternatively, viewers may have focused more of their attention on the image area rather than the textual area. As previously demonstrated in numerous studies utilising eye tracking, viewers tend to devote a larger share of their attention to the visual elements of audiovisual content when it is accompanied by integrated subtitles, as opposed to when standard subtitles are used (Fox, 2018; Kruger *et al.*, 2018). As mentioned in Section 2.3.3, empirical investigations into the deployment of integrated (sub)titles have examined the impact of subtitle positioning—whether adjacent to the on-screen speakers or conventionally at the bottom—on audience reception. These findings suggest that while integrated subtitles aim to align with the viewers' natural gaze patterns and potentially enhance engagement with the audiovisual content, their positional variance relative to the standard bottom-screen placement does not markedly affect the fundamental aspects of viewers' processing in terms of scene recognition and content comprehension (Black, 2022).

In terms of eye-tracking analysis, the data showed that viewers engaged similarly with both types of PHNs, as evidenced by their similar average fixation durations. However, when adjusted for the number of characters, a notable distinction emerged: PHN1 commanded more attention per character than PHN2, suggesting a more detailed level of engagement with PHN1's content. This may arise from PHN1's inclusion of culturally specific references adapted to the viewers' cultural context, which might have prompted deeper processing to align with familiar

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concepts. In contrast, PHN2, which contained longer text overall, likely required a quicker reading pace due to time constraints during viewing.

Additionally, the research found a generally lower frequency of mirthful responses across all three subtitling conditions, with significant differences observed in humour appreciation under the headnote conditions. This suggests that PHNs may negatively impact the enjoyment of humour. Despite PHN2's additional length, which might suggest a need for longer reading time, viewers' attention predominantly remained on the subtitles area, possibly diluting the full appreciation of humour. This might imply that the extensive nature of PHN2 divided viewers' focus, affecting their engagement with humour. It appears that the balance of attention between subtitles and headnotes influences viewers' humour response, suggesting that while headnotes aim to enhance humour reception, the primary engagement with subtitles and visual elements still hugely shapes it.

These findings align with relevance theory, particularly concerning the balance between cognitive effects and processing effort. The results suggest that while PHNs can enrich the cognitive environment by providing additional context, they can also increase processing effort, which can detract from the overall enjoyment of humour. This underscores the importance of achieving optimal relevance, where the cognitive benefits of PHNs justify the additional effort required to process them.

The eye-tracking results represent a particularly challenging facet within the realm of screen translation: the attention distribution from the audience on the image area and the textual area. It is difficult to assess the overall reception of subtitle translations in this medium. Some argue that the successful transmission of humour, particularly when it involves complex cultural wordplay, to the intended audience represents a significant milestone in translation quality. In his PhD dissertation, Alharthi (2016) compared different translation strategies in subtitling humour and stated that if the audience shows amusement (referred to as mirth in this study) or positive engagement (observed through fixation durations) with the translated humour, such outcomes can be directly linked to the translator's

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effective strategies and skilful execution. This view highlights the translator's pivotal role in not just translating subtitles but in adeptly navigating cultural and linguistic references to elicit the desired humorous effect among the audience. For example, Schauffler (2012) also compared two subtitling approaches from English to German and discovered that the audience elicited more enjoyment when subtitles were translated using idioms or cultural items similar to their background. His finding proved contrary to the findings in this research; specifically, it was noted that the inclusion of PHNs featuring idioms or cultural references resulted in a diminished enjoyment level among viewers, as evidenced by a decrease in instances of mirth.

There is no doubt that the translation of subtitles is key in delivering humour. However, the question arises: what if humour is not delivered successfully to the audience from the screen? The complexity of humour translation is further compounded by the presence of multiple stimuli on the screen, including on-screen images and text elements, which together create an even more challenging setting for effective translation and viewer engagement. This multifaceted environment creates an intricate setting for viewers, where the successful transmission of humour relies not only on the translator's capabilities but also on the interaction between the translation of subtitles and the various visual and textual components displayed. It may not be solely the responsibility of the subtitles as the positive reception of translated humour also depends on several factors including the recipient's personality, current mood, and cultural background (Rossato and Chiaro, 2010). Moreover, according to Deckert and Bogucki (2022, p. 67), several factors influence how individuals perceive and experience AVT, including the viewer's reading speed, individual differences (e.g., personality), knowledge (e.g., cultural assumptions), as well as expectations and viewing motivation.

Given these factors, it becomes evident that a one-size-fits-all approach to subtitling and headnotes is insufficient for translation of humour. For instance, viewers with different reading speeds may benefit from customisable subtitle speeds and durations to ensure they can follow along comfortably without feeling

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rushed or overwhelmed. However, contrary to Deckert and Bogucki's (2022) statement, personality traits did not significantly affect how viewers engage with and interpret audiovisual content, as shown in this research.

It turns out that viewers' existing knowledge and cultural assumptions play a significant role in their comprehension and appreciation of humour and cultural references. Viewers who are well-versed in the cultural context might prefer minimal interruptions from PHN1 focusing more on the visual and auditory elements of the content. Conversely, PHN2 may provide the necessary context for those unfamiliar with certain cultural references, thereby enhancing their understanding and enjoyment of the content.

Expectations and viewing motivations also vary widely among audiences. Some viewers might be looking for a purely entertaining experience and prefer succinct, less intrusive PHN1, while others might seek a more educational experience, appreciating detailed explanations and cultural insights provided by comprehensive PHN2. Allowing audiences to tailor their subtitling and headnote settings based on their specific needs and preferences ensures a more satisfying and engaging viewing experience. This content- and purpose-based personalisation could be advantageous as it enables the translator or content creator to carefully consider cultural and humorous elements in advance, ensuring that the content is accessible and resonates with diverse audience segments.

Thus, the ability to customise PHNs and subtitles is helpful in meeting the diverse needs of the audience, enhancing their overall viewing experience by aligning with their reading speed, individual differences, knowledge, expectations, and viewing motivations without disrupting their viewing engagement. This balanced level of personalisation not only makes the content more accessible and enjoyable but also supports a more customised approach to AVT. These insights align with Gutt's (2000) emphasis on interpretive resemblance and relevance in translation. By offering personalised subtitle and headnote options, translators attempt to ensure

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that the translated content resonates with the target audience's cognitive environment, achieving the intended humorous and cultural effects.

These findings align with relevance theory, particularly concerning how individuals leverage their cognitive environment—which comprises their existing assumptions—to make inferences that achieve optimal relevance. This suggests that viewers interpret the video content by integrating it with their current knowledge and beliefs, facilitating a balance between cognitive effects and processing effort. By doing so, they reach a level of understanding and appreciation of the translated videos that aligns with the optimal relevance sought in effective communication. In essence, the delivery of humour from video to the target audience is guided by the pursuit of relevance. Viewers bring their existing notions, knowledge, or beliefs to a viewing, whether subconsciously or not. These existing assumptions form the context in which new information from the video content is interpreted. The more relevant existing assumptions viewers have about a particular topic, humour, or cultural reference, the better their comprehension and appreciation of the new information can be.

PHNs play a crucial role in this process by providing additional contextual information regarding humour and cultural references that helps bridge the gap between the encoded concepts in the video and the viewers' existing knowledge. By offering additional explanations or background information, PHNs aim to enhance the viewers' understanding of cultural references and humour that might otherwise be missed. This additional information is expected to reduce the cognitive effort required to process the subtitles and the visual content, thus facilitating a smoother and more meaningful viewing experience. For instance, when viewers do not hold enough existing assumptions or knowledge during the viewing, PHNs help them go beyond the explicit content of what is said to derive additional meaning based on the context. PHNs can clarify cultural references, historical references, or idiomatic expressions that are crucial for fully receiving the humour in the video. By doing so, the use of PHNs works to achieve optimal relevance by ensuring that viewers can make the necessary inferences with minimal unjustified effort, thereby

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enhancing their overall enjoyment and comprehension. Further, PHNs contribute to the viewers' cognitive environment by enriching their understanding of the content, making it easier for them to integrate new information with their existing knowledge, leading to a more effective and enjoyable viewing experience.

These factors—viewers' existing assumptions, which encompass their knowledge, beliefs, and the contextual interpretation guided by relevance—underscore the subjective nature of humour reception and highlight the challenge of translating humour. Such complexity leads to the next research question (RQ2): *Is the comprehension of humour affected by the use of PHNs?*

The questionnaire results highlighted the impact of PHNs on the comprehension of humour and cultural references within subtitled content. Specifically, the introduction of PHNs was associated with a marginal reduction in humour comprehension among participants, in contrast to conditions where only SBS were employed. Conversely, both PHNs were similarly recognised for their efficacy in enhancing the understanding of cultural references, equating their value to that of SBS in this regard. While some participants noted that the incorporation of PHNs slowed their reading pace, they concurrently recognised the value of PHNs in enriching their comprehension of cultural references, albeit not in enhancing their comprehension of humour. Consequently, PHNs may serve well in augmenting cultural insight but may not similarly benefit other facets, such as the reading process or the comprehension and appreciation of humour. This emphasises the necessity of weighing potential trade-offs when considering the application of PHNs in subtitling humour.

These findings underscore the role of PHNs involved in humour and cultural reference comprehension. According to Díaz Cintas and Remael (2007/2014), the conveyance of cultural elements poses inherent challenges due to potential disparities in cultural equivalence, necessitating creative translational strategies to bridge such gaps effectively and maintain the intended humour. The application of PHNs in this study is an attempt to provide such cultural equivalence to the

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subtitled content to deliver an enhanced understanding of humour and cultural references. However, as Zabalbeascoa (1997, p. 332) suggested, translating humour requires an intricate balance, emphasising the necessity of prioritisation and creative flexibility to preserve narrative cohesion and the intended comedic effect within the constraints of subtitling.

The different effects of PHNs on humour versus cultural reference comprehension elucidate the complex interplay between translation techniques and viewer reception for maintaining the coherence and humour intrinsic to the original audiovisual content. These findings offer an intriguing insight into viewer behaviour and perception, and several factors might justify them:

1. **Attention allocation:** incorporating PHNs into video content may potentially increase the effort required for viewers to shift their attention on the screen, particularly when they are navigating through the storyline, decoding humour, and integrating cultural references all at once. The simultaneous presentation of subtitles and PHNs may fragment viewers' focus, which could detrimentally affect their overall understanding. This effect is pronounced in the context of humour comprehension, which typically demands rapid processing to catch the humour, or cultural references embedded in the videos. With the introduction of PHNs, viewers must divide their attention between the image area, the subtitles, and PHNs. This could explain the observed increase in reading time for subtitles when PHNs are not present, and the corresponding decrease when PHNs are introduced. The additional effort required to shift focus between these elements may hinder viewers' ability to quickly process and appreciate humour, thereby impacting their overall engagement with the content.

2. **Familiarity and reading habits:** viewers are generally more accustomed to processing standard subtitles, which directly relate to the dialogue or narrative in the video content. PHNs, which provide additional context or cultural references, introduce a new element that may disrupt typical reading habits. This unfamiliarity could explain why comprehension decreases with the addition of PHNs, as viewers

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may not be as adept at integrating these elements into their viewing experience. Interview results additionally revealed that some participants identified as “slow readers” or expressed unfamiliarity with reading headnotes, which might account for their diminished ability to process on-screen events, especially when comparing conditions with headnotes to subtitles only. This suggests that individual viewing habits such as reading speed and experience with headnotes can impact viewers’ capability to simultaneously comprehend textual information and follow the visual narrative.

3. Viewer expectations and preferences: The reception of PHNs is greatly influenced by individual viewer preferences and expectations. Some viewers may lean towards a simpler, more seamless viewing experience that relies solely on subtitles, prioritising straightforward recreational viewing over a deeper exploration of cultural contexts. Conversely, some viewers value the enriched understanding that PHNs can offer, particularly in terms of cultural references, even if it means spending more effort in shifting attention or reading. The more positive reception of PHN2 for cultural reference understanding suggests the potential of these headnotes to bridge cultural gaps, making specific references or jokes more accessible to audiences from another language background. This indicates that while PHNs may complicate the immediate comprehension of humour due to the increased attention shifting, they serve a valuable role in enriching the viewer’s understanding of the cultural context, thus potentially enhancing the overall viewing experience over time. Several participants acknowledged that despite time constraints in reading PHNs, they considered the inclusion crucial for enriching their comprehension of diverse cultural contexts. This diversity in viewer preferences highlights the importance of personalisation in the viewing experience. It suggests an ideal scenario where viewers could tailor their subtitle settings according to their personal needs, the specific context, and content requirements. This level of personalisation would accommodate varying preferences, whether for SBS only or an enhanced experience with PHN1 or PHN2, reflecting the diverse ways in which different individuals engage with and interpret subtitled content. This can be noted from the interview results where participants indicated that the application of headnotes should be consistent with their viewing

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objectives: for purposes of entertainment or rapid comprehension of the video content, participants expressed a preference for PHN1. However, when their intention shifted towards learning the Chinese language or cultural knowledge, PHN2 was deemed more appropriate. This distinction highlights the considerations viewers make in selecting subtitle settings based on their immediate goals, suggesting a demand for personalised subtitling options that cater to the varied educational and recreational needs of the audience.

In terms of view preferences, the role of personalisation emerged as an important factor in the reception of subtitled content, particularly when incorporating PHNs. This aligns with broader principles of personalisation discussed in Section 2.2, which emphasise adapting content to better suit users' needs, preferences, and characteristics. The concept of personalisation as applied in AVT mirrors approaches in other fields, such as language learning, where tailored content facilitates a deeper understanding and enhances engagement. In this study, the use of PHNs is an attempt to personalise the audiovisual content to accommodate diverse viewer profiles with varying levels of cultural familiarity. For instance, PHN1, which provided more localised and familiar cultural explanations, catered to viewers with lower cultural adaptability, whereas PHN2 retained more original cultural elements, appealing to those with higher levels of cultural intelligence. This differentiation echoes the practice of customising educational content to match students' backgrounds and learning needs, as discussed in Section 2.2.1.

The data from eye-tracking, questionnaires, and interviews consistently showed that PHNs that aligned more closely with viewers' cultural backgrounds and expectations helped bridge the gap between the source culture and the target audience. As with personalised learning, adapting subtitling approaches in AVT not only improves comprehension but also enhances the overall enjoyment of the content. This reflects the broader trend towards personalisation in education, media, and digital content delivery, where user-centred design principles are increasingly applied to enhance accessibility and satisfaction.

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Regarding the personalisation of PHNs, a great portion of participants agreed that PHN₂, which often contains longer text on average, should be extended to display longer on the screen to aid comprehension. Although such demand for increased display times for PHNs to better accommodate viewer processing was shared among most of the participants, the feasibility of such adjustment is challenged by the inherent pace and rhythm of video content. Extending the duration of headnotes on screen might lead to a mismatch, as a headnote from the previous scene could remain visible while the scene has already progressed, potentially muddling the dialogue flow and coherence due to the mismatched pacing between textual and visual content.

Some participants also voiced concerns with the current layout, suggesting that PHNs be positioned at the bottom of the screen near the subtitle area to reduce the need for viewers to shift their eye movement upwards, aiming to streamline the viewing process. However, this proposal introduces complications regarding screen display, particularly since subtitles traditionally occupy the lower segment of the screen. Placing headnotes in the same area could overcrowd the space, hindering the visibility of both text and visual elements. This recommendation aligns with the earlier exploration of integrated subtitles' positioning as discussed in Section 2.3.2, warranting thorough further investigation to ascertain its efficacy. According to the “modular guidelines” established by Fox (2018) and the suggestions proposed by McClarty (2013), numerous factors must be taken into account when determining the placement of integrated subtitles. These include the distribution and identification of focal points, the dynamics of movement and action within the scene, camera movements, and the dimensions of the subtitles themselves, etc. (Black, 2022, p. 9). Therefore, the precise positioning of headnotes necessitates thorough investigation for a more refined and systematic outcome.

Moreover, several participants suggested employing PHNs with unique font or background colours to improve their differentiation from subtitles, as used in some fansubbing communities. While this suggestion aims to improve headnote visibility, it overlooks potential accessibility issues, such as colour blindness, which

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could affect some viewers' differentiation between the two types of text. This might inadvertently increase the reading burden for viewers with visual impairments, highlighting the need for inclusive design considerations in the implementation of personalised subtitle and headnote features. According to Romero-Fresco and Chaume (2022), creativity in media accessibility involves not only providing access to media but also making an artistic contribution that enhances the viewer's experience. However, creative approaches must balance innovation with inclusivity to ensure that all viewers, regardless of their abilities, can engage with the content. These considerations are essential for developing effective subtitling practices that cater to a diverse audience, ensuring that enhancements in visibility do not compromise accessibility. By taking into account potential accessibility issues and integrating best practices from AVT research, the implementation of PHNs can be refined to provide an optimal viewing experience for all.

The last research question (RQ3) in this study relates to the correlation between viewers' pre-task scores and their PHN preferences. The participants' responses on the pre-task tests, which assessed their cultural intelligence (via CQS) and personality traits (BFI-S), were used to categorise them into high-scoring and low-scoring groups. This categorisation aimed to explore potential correlations between these psychological measures and their preferences for specific PHNs. However, this comparative analysis showed that participants' personality traits and cultural intelligence levels - as measured via these particular instruments - may not influence their headnote preferences. These findings directly address RQ3, suggesting that there is no discernible correlation between participants' scores in CQS and BFI-S and their preferences for specific PHNs.

This result supports some previous research in the realm of humour studies. For instance, a study conducted by Viegas (2000) (cited from Gulas and Weinberger, 2010) focusing on twins, underscored that differences in the perception of humour are predominantly shaped by environmental influences, rather than being rooted in their genetic factors. The research (*ibid.*) points to the understanding of humour appreciation as a distinctive trait, which stands apart from many other personality

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traits that are often significantly shaped by genetic underpinnings. The notion that the appreciation for humour is more a product of personal experiences and surroundings rather than DNA is further reinforced by the research findings presented by Muir (2000). These insights collectively suggest that humour, unlike many aspects of personality and behaviour that are closely linked to genetic makeup, is largely developed through and influenced by our interactions with the world around us, highlighting its unique place within the spectrum of human characteristics.

Moreover, in her exploration of the concept of humour within the Chinese context, particularly its association with modernity and the individual, and its inception into Chinese discourse as a loanword from English, Davis (2013) illuminates the profound historical significance of humour in Chinese heritage. She articulates that humour is intricately intertwined with personal, cultural, and historical dimensions, serving as an essential and continually evolving form of human expression and interaction. In another study, Yue *et al.* (2016) undertook a comparative analysis of humour perception among Chinese and Canadian participants. Their findings confirmed the profound cultural underpinnings of humour perception, underscoring the imperative for a detailed comprehension of humour's role within diverse societal contexts. This research enriches the discourse on the multifaceted nature of humour, positing that it is significantly influenced by both individual experiences and cultural backgrounds. Such insights suggest that humour appreciation and perception are deeply rooted in specific cultural and experiential frameworks. These studies echo the finding that for translated humour to effectively reach its intended audience, it must align with their existing knowledge and perceptions concerning the culture or humour depicted in the video. Such alignment is crucial for achieving optimal relevance, a core principle of relevance theory as discussed in Chapter 3, which has guided the methodology of this research. By carefully considering the target audience's perceptions, this research aims to ensure that the humour translates not only linguistically but also culturally, facilitating a deeper connection and understanding between the content and its viewers.

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Personalisation of subtitles and headnotes is necessary for humour to effectively reach the target audience and deliver the intended comedic effect. Translators face the complex challenge of adapting humour from SL to TL within audiovisual content, ensuring that the linguistic and cultural specifics of the original humour are preserved or suitably modified. This task entails a careful balance of cultural elements, where translators play a key role in cross-cultural communication. Viewers, in turn, enrich the translation process by bringing their existing cultural knowledge and insights, thereby enhancing their understanding and appreciation of the translated humour. Interview data suggests that some participants who consider themselves slow readers, did not have enough time to read headnotes and subtitles simultaneously. Therefore, it would be ideal for viewers to select their own level of subtitle description based on the context, content, and their abilities and preferences.

Audiences should have the option of different PHNs tailored to their viewing purposes, whether for entertainment or learning language and culture. This customisation is useful, as different audiences prefer different types of inputs, highlighting the need for personalised and adaptable subtitling options. The personalisation of headnotes emphasises the interactive nature of humour reception in translated media, where the effectiveness of humour can be influenced by the viewers' willingness and ability to engage with the content. This interaction is guided by relevance theory, which suggests that effective communication depends on the audience's ability to derive meaning with justifiable effort. Therefore, by offering tailored PHNs, translators can help ensure that humour retains its cultural depth while remaining accessible across different linguistic and cultural contexts. This approach not only preserves the richness of humour but also enhances its reception, making it more meaningful and accessible to audiences with varying levels of cultural adaptability, as supported by evidence from eye-tracking data, questionnaires, and interviews. Eye-tracking showed that while subtitles received more attention, PHN1, which included culturally adapted references, engaged viewers more per character than PHN2, indicating a deeper processing of familiar cultural content. Questionnaire results supported this, revealing that although PHNs did not significantly boost humour comprehension

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compared to subtitles alone, they were effective in enhancing the understanding of cultural references, bridging cultural gaps that could hinder appreciation. Interviews further confirmed the value of PHNs, with participants noting that while PHNs sometimes slowed reading, they enriched cultural insights. Those focused on educational viewing preferred detailed PHN2 for cultural learning, while others favoured the concise PHN1 for entertainment, suggesting a need for personalized subtitling.

These findings align with relevance theory, as PHNs enriched the cognitive environment despite the added processing effort, enhancing cultural understanding. Collectively, the evidence demonstrates that PHNs support cultural comprehension and, to a lesser extent, humour reception, making the content more accessible to diverse viewers.

The decision to apply techniques like PHNs depends on the function of the AVT process and the types of target audiences. For entertainment-focused content, where pacing and viewer engagement are paramount, the use of PHN1 should be prioritised. The primary goal is to maintain the flow and enjoyment of the content without overburdening the viewer with excessive information. A tailored PHN1 that provides brief, adapted but relevant context can enhance understanding without disrupting the viewing experience. Conversely, for educational content aimed at language learning, PHNs, particularly PHN2, can provide essential cultural context and explanations similar to the original culture. These headnotes enhance the learning experience by offering deeper insights into the source language and culture, making them invaluable for achieving educational objectives.

Considering the benefits of relevance and personalisation in audiovisual products, it is essential for producers to provide clear guidance on subtitling options to help target audiences make informed decisions. This aligns with Nida's (1964) concept of dynamic equivalence (see Section 2.2.2.1), which involves using various adaptive strategies to produce the same experience for readers (Suojanen, Koskinen, and Tuominen, 2014). By offering explanations and recommendations on subtitling

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formats—whether to watch with subtitles only or to opt for an integrated experience that includes headnotes—producers can cater to the diverse needs of their audience. This approach ensures that viewers, who are now seen not just as passive recipients but as interactive users with a stronger role in content production (ibid., p. 33). Personalised guidance empowers viewers to select the subtitling format that best suits their specific goals, whether those be entertainment, education, or cultural exploration. This tailored approach enhances overall viewing satisfaction and comprehension, ensuring that the translation strategies employed are in line with the audience’s expectations. In the context of audiovisual products, integrating PHNs and providing clear subtitling guidance allows producers to create an experience for the target audience that closely mirrors that of the original audience. This method not only improves comprehension but also aligns with the broader objectives of functionalist translation theory, which prioritises the recipient’s ease of understanding and engagement.

In sum, based on the above findings, the research explicitly addressed the following RQs and hypotheses related to the use of PHNs in AVT:

RQ1: Is the appreciation of humour affected by the use of PHNs?

Hypothesis 1: The level of appreciation in humour is higher with the use of PHNs than subtitles only.

Findings: The results showed that while PHNs improved cultural comprehension, they did not significantly enhance humour appreciation. In fact, the presence of PHNs sometimes reduced humour enjoyment compared to SBS only. Therefore, Hypothesis 1 was not supported.

RQ2: Is the comprehension of humour affected by the use of PHNs?

Hypothesis 2: The level of comprehension in humour is higher with PHNs than with subtitles only.

Findings: The research indicated that while PHNs helped bridge cultural gaps and improved comprehension of cultural references, they did not consistently enhance humour comprehension. Participants experienced a marginal reduction in humour comprehension under PHN conditions. Thus, Hypothesis 2 was partially

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supported, as PHNs enhanced cultural comprehension but did not significantly improve humour comprehension.

RQ3: Is there a correlation between participants' scores in CQS and BFI-S and their preference for specific PHNs?

Hypothesis 3: Participants with low scores in the CQS and BFI-S scales find PHN1 strategy funnier compared to PHN2 strategy and SBS only.

Findings: The results indicated no significant correlation between participants' CQS and BFI-S scores and their preferences for PHN strategies. Hence, Hypothesis 3 was not supported.

Hypothesis 4: Participants with low CQS and BFI-S scores can better understand the cultural references in clips with PHN1 strategy, compared to PHN2 strategy and SBS only.

Findings: Although some participants indicated that PHN1 made the content more relatable, the data did not show a strong, consistent correlation with the participants' CQS and BFI-S scores. Thus, Hypothesis 4 was not supported.

8.3 Contributions of this research

As discussed earlier in §3.5, reception studies focusing on the translation of subtitles and humour remain limited. Given the expansion of the international audiovisual industry, it is imperative to explore the mechanisms through which translated humour can effectively resonate with audiences who speak different languages. In the 1950s, United States-based television enterprises emulated the cinema industry's global outreach, extending their broadcasts to households worldwide. The international dissemination of visual media has necessitated the development of screen translation practices, especially in non-English speaking regions, to facilitate the comprehension and enjoyment of films (Chiaro, 2009). This development underscored the significance of translation services in ensuring accessibility and appreciation of foreign films across linguistic barriers.

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Similarly, the increasing prominence of Chinese film and TV products within English-speaking markets exemplifies the reciprocal need for screen translation, highlighting its critical role in the cross-cultural exchange and reception of international filmography. As video content becomes increasingly global, understanding how textual information influences viewer reception is essential for content creators and researchers, offering pathways to more engaging and enjoyable multimedia experiences.

The study on PHNs sheds light on the intricate dynamics of the reception of translated humour in subtitled content. By methodically investigating the impact of PHNs on the appreciation and comprehension of humour, this research challenges existing paradigms about viewer interaction with on-screen texts. The findings reveal the potential of tailored or personalised subtitling and headnotes to enrich the viewing experience. These insights are particularly relevant as they provide empirical evidence and novel strategies that can be applied to enhance viewer engagement and comprehension in a globalised media landscape.

By integrating relevance theory and Gutt's theoretical framework, this research contributes to the field of AVT by offering new perspectives on how subtitling can be optimised to achieve interpretive resemblance and cognitive relevance. This approach not only enhances the effectiveness of translated humour but also improves the overall accessibility and enjoyment of subtitled content.

8.3.1 Contributions to AVT research

This research contributes to AVT by methodically examining the impact of PHNs on the reception of humour, focusing on appreciation and comprehension aspects. Through a mixed-method approach that includes eye-tracking data and quantitative and qualitative feedback, this study offers novel insights and adds to existing knowledge on the construction and effectiveness of PHNs.

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First, the research provides empirical evidence demonstrating that PHNs, while not the primary focus compared to standard subtitles, positively affect viewers' comprehension of cultural references within video content. This contribution deepens the understanding of how PHNs can bridge cultural gaps in AVT.

The study also highlights the indispensable role of subtitles in content comprehension, with eye-tracking data showing preferential engagement with subtitles over PHNs. However, the varied engagement with PHN1 and PHN2 suggests that tailored design strategies in subtitling can enhance the viewer experience, particularly for humour. This insight informs more effective subtitling practices that consider the cognitive and cultural needs of the audience.

In this research, it is demonstrated that the practical application of relevance theory in subtitling, showing how the balance between cognitive effects and processing effort can be managed to achieve optimal relevance. By aligning subtitles and PHNs with the viewer's cognitive environment, translators can enhance the reception of humour and cultural references, ensuring that the translated content resonates effectively with the audience.

Additionally, the research underscores the importance of personalisation in subtitling, demonstrating that integrating PHNs enhances the overall viewing experience by providing cultural and contextual information not conveyed through subtitles alone. These findings support the need for tailored subtitling and headnote strategies that accommodate viewers' cognitive focus and individual experiences.

Regarding Gutt's concept of interpretive resemblance, the research suggests that subtitles and headnotes can help achieve a degree of resemblance to the original content. However, this depends on ensuring that the cognitive benefits of the translation justify the processing effort required, as excessive effort may diminish the accuracy and effectiveness of the translation.

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By combining eye-tracking data with quantitative and qualitative feedback, the study showcases a comprehensive methodological approach to studying AVT, highlighting the value of mixed-method research in understanding the dynamics of eye engagement and viewer interaction with subtitling and headnotes.

8.3.2 Implications for media design

This research suggests important implications for media design in AVT, emphasising the critical role of subtitles and the potential benefits of PHNs for enhancing media accessibility.

First, the study reaffirms the established importance of subtitles for viewer comprehension (e.g., Díaz Cintas and Remael, 2007/2014; Karamitroglou, 1998), underscoring the need for clarity and readability in their design to ensure effective communication. The findings suggest that enhanced engagement with subtitles is crucial in scenarios where conveying critical information is paramount. Moreover, the mixed reception of PHNs highlights the need for personalisation in subtitle design. This aligns with previous studies, such as Filizzola (2017), who found that humour reception is influenced by factors like personality, history, and cultural background. These findings reinforce the importance of offering customised subtitling options that cater to different audience needs and preferences.

The research also observed that excessive use of headnotes can detract from humour appreciation, indicating that headnotes should be carefully moderated in length and quantity to maintain the humorous essence of the material. Such a balance would ensure that headnotes enhance understanding without overwhelming the viewer. However, practical challenges arise when considering the duration of PHNs on the screen. As participants suggested, PHNs with longer text, such as PHN2, may require extended display times to facilitate comprehension. Nevertheless, this must be balanced against the pacing of the content, as leaving a headnote on the screen for too long could disrupt the flow and coherence of the viewing experience.

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Moreover, this research advocates for a creative approach to subtitling that accommodates diverse audience preferences, particularly in understanding cultural references. Drawing from the broader context of user-centred approaches in translation and localisation, as discussed in Section 2.2.2.2, it becomes evident that personalisation and adaptation are crucial in enhancing the usability and effectiveness of subtitled content. Subtitles and PHNs should be designed to complement each other, providing adequate context without overloading viewers, thereby ensuring that the cultural references and humour embedded in foreign-language media are effectively communicated.

The integration of personalisation strategies, such as those highlighted in the field of HCI, underscores the importance of tailoring subtitling features to the specific needs and preferences of individual viewers. This approach is particularly relevant in AVT, where the interplay between visual and textual elements requires careful consideration to achieve a seamless and engaging viewing experience. By leveraging the concept of personalisation, as discussed in Section 2.2.3, translators can better anticipate and address the diverse needs of their audience, creating subtitles that are not only functional but also culturally resonant. Moreover, the findings from Manchón and Orero (2018), which explored the impact of customisable subtitles on different age groups, reinforce the necessity of incorporating personalisation into subtitling practices. Their study (*ibid.*) demonstrated that while customisation primarily enhances user comfort and satisfaction, it does not significantly affect content comprehension. This insight is crucial for developing subtitling strategies that prioritise accessibility and user satisfaction without compromising the integrity of the content.

While this study did not specifically examine language learning, the potential of PHNs to offer cultural context suggests that they could be useful in educational settings. The integration of personalised subtitling features could facilitate language learning by providing additional contextual information that aids in the understanding of cultural references and linguistic difficulties. This idea aligns

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with previous findings (e.g., Manchón and Orero, 2018) that personalisation enhances user comfort and experience, indicating that such features could play a significant role in educational tools aimed at language acquisition.

The personalisation of subtitling features is not only useful for improving accessibility and user satisfaction but also holds the potential to enrich the overall viewing experience. By addressing the specific needs and preferences of individual viewers, subtitling practices can be optimised to deliver content that is both engaging and culturally informative. Future research should continue to explore the intersection of personalisation, cultural adaptation, and language learning in subtitling, with the aim of developing more inclusive and user-centred AVT practices that cater to the diverse and evolving needs of global audiences.

Given these insights, and in addition to existing guidelines (e.g., BBC and Netflix) that advocate for concise, easy to read, and synchronised subtitles, the following additional guidelines are proposed for effective subtitling practice:

1. **Customisable Display:** Implement options for viewers to adjust subtitle duration according to their reading speed. This is particularly important for accommodating individual differences in processing time, enhancing accessibility across diverse audiences.
2. **Accessibility:** Prioritise high-contrast colours and legible fonts in subtitle design to ensure readability for all viewers, including those with visual impairments. This aligns with the need to minimise cognitive effort while maximising clarity.
3. **Complementary PHNs:** PHNs should be carefully designed to provide essential cultural and contextual information without overwhelming the screen or detracting from the primary visual and auditory elements. They should work in harmony with subtitles, ensuring that viewers can access additional context with minimal extra cognitive effort.
4. **Varied PHN Versions:** Offer multiple PHN versions tailored to different audience needs, such as a domesticated version for viewers seeking entertainment and a foreignised version for those interested in language learning and cultural immersion. This approach acknowledges the varied preferences and cognitive

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environments of different viewers, aligning with relevance theory's emphasis on achieving optimal relevance for diverse audiences.

5. PHN Formatting: The study found that the use of underlining and line breaks in subtitles and PHNs was well-received by participants. Incorporating these formatting techniques can help distinguish PHNs from standard subtitles, ensuring that the additional contextual information is clearly presented without causing visual clutter.

However, the implementation of personalised subtitling strategies may face challenges such as time and cost constraints. The research emphasises iterative testing and audience feedback to refine subtitling practices. Investing in adaptive technologies that tailor subtitles and headnotes to viewer preferences can mitigate these challenges and enhance the viewing experience. It is essential to consider the different speeds at which individuals read and process information, as evidenced by participants who identified as slow readers and preferred subtitles without headnotes. This further underscores the necessity for a customisable approach where viewers can select their preferred level of subtitle description based on the context, content, and their personal abilities.

These implications align with relevance theory, highlighting the need for subtitles and headnotes to achieve optimal relevance by balancing cognitive effects with processing effort. By considering these factors in media design, content creators can enhance the accessibility, engagement, and enjoyment of subtitled content.

In summary, this research contributes to the field of AVT by offering insights into the reception of translated humour and the dynamics of viewer engagement with textual elements. While primarily focused on media design and accessibility, the findings also suggest potential implications for language education, which could be explored in future studies. By examining the effects of PHNs on the appreciation and comprehension of humour and cultural references, the study challenges existing paradigms in subtitle translation and highlights the potential for more personalised and inclusive multimedia experiences. Moreover, the study suggests

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that PHNs might have potential educational benefits in facilitating language learning. By providing additional cultural context, PHNs may help learners understand language and cultural references more deeply. This points to a possible direction for future research in educational technology development, where integrating PHNs could support language learning.

The study's focus on personalisation and the careful balance of textual elements informs effective subtitling practices, ensuring that subtitles and headnotes complement each other without overwhelming the viewer. The positive reception of PHNs by viewers, whether for educational or entertainment purposes, underscores their value in enriching the viewing experience across languages.

By advocating for further research and addressing potential challenges, this study contributes to the development of more engaging, accessible, and enjoyable media content. Overall, the research suggests potential for innovative approaches in AVT that could enhance viewer engagement and cultural comprehension.

8.4 Limitations and suggestions for future work

While the study offers some valuable insights and contributions in AVT, several methodological constraints and avenues for future investigation need to be addressed. Firstly, the relatively modest sample size of 34 valid datasets limits the generalisability of the findings in this research. The criteria for eye-tracking data validity (70% threshold) led to the exclusion of some data, resulting in only 11 or 12 participants for each condition viewing, which underscores the need for future research to employ larger, more diverse samples and datasets to strengthen the validity and applicability of the results.

Additionally, the study's focus on a specific genre (comedy) and language direction (Chinese into English) may limit the broader applicability of the findings. Different genres might engage viewers differently, and other language pairs could present unique challenges and opportunities in translation and reception. Future research

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should explore a wider range of genres and language pairs to determine if the observed effects of PHNs on humour appreciation and cultural comprehension hold across different contexts. This broader approach would help to establish more robust and comprehensive guidelines for the integration of PHNs in AVT.

Furthermore, the absence of a significant correlation between pre-task tests (CQS and BFI-S) and preferences for PHNs suggests a complex interplay between individual audience backgrounds and perceptions that was not fully captured in this research. This aligns with the notion that humour reception is influenced by personal experiences and cultural background, as suggested by Filizzola (2017). To address this gap, future studies should conduct a detailed examination of participants' demographic information, including personal experiences and cultural backgrounds, to understand their influence on subtitle and headnote preferences. Expanding the AVT research to encompass various cultural contexts and viewer demographics would provide a more comprehensive understanding of how PHNs can be tailored to diverse audience needs. These investigations should also consider the impact of different types of humour and cultural references, as well as the role of PHNs in non-humorous genres, to create a holistic view of their effectiveness and potential applications.

The research design employed in this study used a within-participants approach, where the same participants were exposed to three different subtitling conditions. This design contrasts with between-participants studies, where different participants are allocated to the same conditions, or longitudinal studies, which track the same participants' responses over an extended period. The within-participants design in this context allowed for a direct comparison of the effects of varying subtitling conditions on the same individuals, minimising inter-individual variability and providing a clearer view of how different subtitling styles impact viewing experience. However, while this design offers significant insights into immediate responses to subtitling variations, it may not fully capture the evolution of viewer preferences and engagement that could emerge from prolonged or repeated exposure to these conditions. As shared by several participants during the

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interview, the disruption of their reading process on screen due to the unexpected appearance of headnotes underscores a critical area for further inquiry. These participants perceived that their ability to navigate and process these textual elements might improve over time as they become more accustomed to their presence. This points to the potential for adaptation and suggests that viewer engagement with on-screen text could evolve with continued exposure. Between-subjects studies and longitudinal research designs could offer valuable perspectives in this regard. Between-subjects research would facilitate the exploration of diverse viewer responses to subtitling conditions without the potential confounding effects of exposure to multiple treatments. On the other hand, longitudinal studies would allow researchers to track changes in viewer behaviour, perceptions and preferences, offering a comprehensive understanding of the learning curve associated with adapting to on-screen textual information while providing a dynamic view of viewers' adaptation to subtitling practices. Such research could provide valuable insights into the cognitive processes involved in reading and processing on-screen text in multimedia contexts. It could also explore whether and how viewers develop strategies for integrating these elements into their viewing experience without disrupting their engagement with the content.

Due to constraints in scope and time, this study did not explore the cognitive load and effort involved in processing subtitles and headnotes, factors that might contribute to the observed reduction in the process of reading with the addition of PHNs, as well as the diminished appreciation and understanding of humour during the viewing. Future research could delve into these cognitive dimensions to clarify their influence on how viewers perceive humour in subtitled content. This would enable a more comprehensive assessment of whether PHNs serve as a cognitive aid or barrier for viewers. Additionally, an analysis comparing the fixation durations on specific image areas versus the subtitle and headnote areas could offer valuable insights into how viewers allocate their attention across different elements of the screen, further exploring the cognitive processing involved in the reception of multimodal information. Investigating these differences could uncover the specific impacts headnotes and subtitles exert on viewers' engagement with the screen, as well as their understanding of both the video content and the textual information.

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This would be valuable in informing the development of more effective design and placement strategies for these textual elements (subtitles and headnotes) within audiovisual content. By comprehensively understanding how they influence viewer experience and information processing, translators and researchers can optimise the integration of subtitles and headnotes, which could enhance the educational and recreational value of media, making it more accessible and enriching for audiences with varying levels of cultural adaptability.

Reflecting on Gutt's (2000) theoretical framework, future research should consider how different cognitive environments among diverse audiences affect their processing of PHNs and subtitles. This approach would help in tailoring AVT practices to better align with the target audience's cognitive abilities, ensuring that translations achieve optimal relevance and resonate effectively with viewers.

Romero-Fresco (2015) underscores the imperative for continued investigation into the distribution of eye-gaze patterns among viewers of subtitled media. These research endeavours are pivotal for a deeper understanding of how diverse audiences process and derive enjoyment from both textual and visual elements concurrently presented in audiovisual content. Expanding upon this premise, it is essential that future research continues to explore the details of eye-gaze behaviour to clarify the intricate dynamics between subtitle engagement and content reception. This approach can not only enhance our comprehension of the cognitive and affective responses elicited by subtitled media but also hold the potential to inform evidence-based guidelines for optimising subtitle positioning. Systematically examining these aspects can contribute to the development of best practices that elevate the viewing experience, ensuring that subtitles effectively complement the visual narrative without detracting from the overall enjoyment of the media.

Overall, addressing these limitations and exploring the suggested areas could significantly enhance our understanding of how viewer characteristics, attention distribution, and the reception of multimodal content interact. Specifically, by

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investigating the role of PHNs in audiovisual AVT, future research can provide deeper insights into how PHNs can be effectively tailored to diverse audiences. This comprehensive approach will pave the way for advancements in creating more inclusive and engaging media experiences across different cultural and linguistic contexts.

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Appendices

Appendix A: Pre-task questionnaire

1. By ticking this box, I confirm that I have read and understood the information

above and I consent to take part in this research project. Yes

2. I confirm that I do NOT wear bifocal/varifocal glasses, or bifocal/varifocal contact lenses. Yes

3. I confirm that I have little to zero proficiency in the Chinese language. Yes

4. I see myself as someone who is original, comes up with new ideas.
(Completely disagree) 1 2 3 4 5 (Completely agree)

5. I see myself as someone who does a thorough job.
(Completely disagree) 1 2 3 4 5 (Completely agree)

6. I see myself as someone who is communicative, talkative.
(Completely disagree) 1 2 3 4 5 (Completely agree)

7. I see myself as someone who is considerate and kind to others.
(Completely disagree) 1 2 3 4 5 (Completely agree)

8. I see myself as someone who worries a lot.
(Completely disagree) 1 2 3 4 5 (Completely agree)

9. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

10. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

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11. I am conscious of the cultural knowledge I apply to cross-cultural interactions.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

12. I check the accuracy of my cultural knowledge as I interact with people from different cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

13. I know the legal and economic systems of other cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

14. I know the rules (e.g., vocabulary, grammar) of other languages.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

15. I know the cultural values and religious beliefs of other cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

16. I know the marriage systems of other cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

17. I know the arts and crafts of other cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

18. I know the rules for expressing non-verbal behaviours in other cultures.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

19. I enjoy interacting with people from different cultures.

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(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

20. I am confident that I can socialize with locals in a culture that is unfamiliar to me.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

21. I am sure I can deal with the stresses of adjusting to a culture that is new to me.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

22. I enjoy living in cultures that are unfamiliar to me.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

23. I am confident that I can get accustomed to the shopping conditions in a different culture.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

24. I change my verbal behaviour (e.g., accent, tone) when a cross-cultural interaction requires it.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

25. I use pause and silence differently to suit different cross-cultural situations.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

26. I vary the rate of my speaking when a cross-cultural situation requires it.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

27. I change my non-verbal behaviour when a cross-cultural interaction requires it.

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(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

28. I alter my facial expressions when a cross-cultural interaction requires it.

(Strongly disagree) 1 2 3 4 5 6 7 (Strongly agree)

29. Would you like to be invited to the main experiment in DCU? Yes No

30. Please provide your phone number or email address to be contacted.

31. What time and day of the week would be convenient for you to come to the DCU Glasnevin campus? e.g., 3-4pm on Saturdays

Appendix B1: Post-task questionnaire - Clip 1

Clip 1: Are you asleep

Condition 1: SBS only

Note for participants: in this questionnaire, the term subtitles refers to English translation appearing at the bottom of the screen.

Post-task questionnaire: Part 1 (comprehension test)

- 1 Are you familiar with the cultural references/humour in this clip?
 - A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember
- 2 What is Chinese Xiangsheng?
 - A. Talk show B. Night comedy C. Comedic dialogue D. Soap show E. I cannot remember
- 3 Why did he need to borrow some money?
 - A. Because his girlfriend asks him to
 - B. Because he wants to buy a gift for his girlfriend
 - C. Because he needs to pay his credit card bill
 - D. Because he's going on a trip
 - E. I cannot remember
- 4 As a tradition in China, who would receive Hongbao for Spring festival?
 - A. Seniors B. Friends C. Children D. Wives E. I cannot remember
- 5 Why didn't he sleep after all?
 - A. Because his hormones are in disorder

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B. Because he wants some time to himself

C. Because he plans to rob a bank

D. Because the room is too cold

E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

I think this video is funny.

- 6 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I had enough time to read the subtitles.

- 7 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I think the subtitles are easy to understand.

- 8 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I think the subtitles helped me in understanding the humour in the video.

- 9 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I think the subtitles are useful for me to learn about Chinese culture.

- 10 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I think the subtitles interfere with my understanding of the humour in the video.

- 11 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

I think the subtitles interfere with my understanding of the cultural references in the video.

- 12 A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Conditions 2+3: SBS+PHN1, SBS+PHN2

Appendices

Please note: in the following questions, the term headnotes refers to texts appearing at the top of the screen.

Post-task questionnaire: Part 1 (comprehension test)

- 1 Are you familiar with the cultural references/humour in this clip?
 - A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember

- 2 What was Ears' request?
 - A. Yinyue B. Zhibo C. Dianying D. Xiangsheng E. I cannot remember

- 3 Why did he need to borrow some money?
 - A. Because his girlfriend asks him to
 - B. Because he wants to buy a gift for his girlfriend
 - C. Because he needs to pay his credit card bill
 - D. Because he's going on a trip
 - E. I cannot remember

- 4 As a tradition in China, who would receive Hongbao for Spring festival?
 - A. Seniors B. Friends C. Children D. Wives E. I cannot remember

- 5 Why didn't he sleep after all?
 - A. Because his hormones are in disorder
 - B. Because he wants some time to himself
 - C. Because he plans to rob a bank
 - D. Because the room is too cold
 - E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

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6 I think this video is funny.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

7 I had enough time to read both the subtitles and the headnotes.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

8 I think the headnotes are easy to understand.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Compared to standard videos with subtitles only,

9 I think the video with the headnotes is funnier.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

10 I think the headnotes help me in better understanding the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

11 I think the headnotes help me in better understanding the cultural references in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

12 I think the headnotes interfere with my reading process of subtitles at the bottom during watching the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

13 I think the headnotes interfere with my understanding of the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

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14 I think the headnotes interfere with my understanding of the cultural reference in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

15 I would prefer watching Chinese comedies with the headnotes.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Appendix B2: Post-task questionnaire - Clip 2

Clip 2: Dramatic GPS

Condition 1: SBS only

Note for participants: in this questionnaire, the term subtitles refers to English translation appearing at the bottom of the screen.

Post-task questionnaire: Part 1 (comprehension test)

- 1 Are you familiar with the cultural references/humour in this clip?
 - A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember
- 2 Why did the driver turn off the landlady voice pack?
 - A. She gave wrong directions
 - B. She's too bossy and keeps yelling at him
 - C. He couldn't understand her instructions
 - D. Her voice impression was not good
 - E. I cannot remember
- 3 Please identify the name of the Chinese Buddha.
 - A. 观音(Guanyin) B. 太极(Taiji) C. 武功(Wugong) D. 大神(Dashen) E. I cannot remember
- 4 What did Buddhas ask him to do after getting on the elevated highway?
 - A. Stop beeping
 - B. Get off the elevated highway
 - C. Check the engine

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D. Turn left

E. I cannot remember

5 What did 81 traffic lights refer to?

A. Driver's life

B. All kinds of difficulties

C. The environment

D. Driving routes

E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

6 I think this video is funny.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

7 I had enough time to read the subtitles.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

8 I think the subtitles are easy to understand.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

9 I think the subtitles helped me in understanding the humour in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

10 I think the subtitles are useful for me to learn about Chinese culture.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

11 I think the subtitles interfere with my understanding of the humour in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

12 I think the subtitles interfere with my understanding of the cultural references in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Conditions 2+3: SBS+PHN1, SBS+PHN2

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Note for participants: in the following questionnaire, the term headnotes refers to texts appearing at the top of the screen.

Post-task questionnaire: Part 1 (comprehension test)

- 1 Are you familiar with the cultural references/humour in this clip?
 - A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember
- 2 Why did the driver turn off the landlady voice pack?
 - A. She gave wrong directions
 - B. She's too bossy and keeps yelling at him
 - C. He couldn't understand her instructions
 - D. Her voice impression was not good
 - E. I cannot remember
- 3 Please identify the name of the Chinese Buddha.
 - A. 观音(Guanyin) B. 太极(Taiji) C. 武功(Wugong) D. 大神(Dashen) E. I cannot remember
- 4 What did Buddhas ask him to do after getting on the elevated highway?
 - A. Stop beeping
 - B. Get off the elevated highway
 - C. Check the engine
 - D. Turn left
 - E. I cannot remember
- 5 What did 81 traffic lights refer to?

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- A. Driver's life
- B. All kinds of difficulties
- C. The environment
- D. Driving routes
- E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

6 I think this video is funny.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

7 I had enough time to read both the subtitles and the headnotes.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

8 I think the headnotes are easy to understand.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Compared to standard videos with the subtitles only,

9 I think the video with the headnotes is funnier.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

10 I think the headnotes help me in better understanding the humour in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

11 I think the headnotes help me in better understanding the cultural references in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

12 I think the headnotes interfere with my reading process of subtitles at the bottom during watching the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

13 I think the headnotes interfere with my understanding of the humour in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

14 I think the headnotes interfere with my understanding of the cultural reference in the video.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

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- 15 I would prefer watching Chinese comedies with the headnotes.
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Appendix B3: Post-task questionnaire - Clip 3

Clip 3 Time flies

Condition 1 SBS only

Please note: in the following questions, the term subtitles refers to English translation appearing at the bottom of the screen.

Post-task questionnaire: Part 1 (comprehension test)

- 1 Are you familiar with the cultural references/humour in this clip?
 - A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember

- 2 How long did he spend on WeChat?
 - A. 5mins B. 50mins C. 30mins D. 1 hour E. I cannot remember

- 3 Where do they post and share on WeChat?
 - A. Moments B. Reels C. Boost post D. Shares E. I cannot remember

- 4 What is the icon for like on WeChat?
 - A. Thumbs up
 - B. Heart
 - C. Flame
 - D. Flower
 - E. I cannot remember

- 5 What fruit was used to symbolise gossip in Chinese?
 - A. Watermelon B. Strawberry C. Kiwi D. Apple E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

- 6 I think this video is funny.

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A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

7 I had enough time to read the subtitles.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

8 I think the subtitles are easy to understand.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

9 I think the subtitles helped me in understanding the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

10 I think the subtitles are useful for me to learn about Chinese culture.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

11 I think the subtitles interfere with my understanding of the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

12 I think the subtitles interfere with my understanding of the cultural references in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Conditions 2+3: SBS+PHN1, SBS+PHN2

Please note: in the following questions, the term headnotes refers to texts appearing at the top of the screen.

Post-task questionnaire: Part 1 (comprehension test)

1 Are you familiar with the cultural references/humour in this clip?

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- A. Yes, most of it
 - B. Yes, just a little
 - C. Not that I know of
 - D. Never
 - E. I cannot remember
- 2 How long did he spend on WeChat?
- A. 5mins B. 50mins C. 30mins D. 1 hour E. I cannot remember
- 3 Where do they post and share on WeChat?
- A. Moments B. Reels C. Boost post D. Shares E. I cannot remember
- 4 What is the icon for like on WeChat?
- A. Thumbs up
 - B. Heart
 - C. Flame
 - D. Flower
 - E. I cannot remember
- 5 What fruit was used to symbolise gossip in Chinese?
- A. Watermelon B. Strawberry C. Kiwi D. Apple E. I cannot remember

Post-task questionnaire: Part 2 (attitude test)

- 6 I think this video is funny.
- A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree
- 7 I had enough time to read both the subtitles and the headnotes.
- A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree
- 8 I think the headnotes are easy to understand.
- A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Appendices

Compared to standard videos with subtitles only,

9 I think the video with the headnotes is funnier.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

10 I think the headnotes help me in better understanding the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

11 I think the headnotes help me in better understanding the cultural references in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

12 I think the headnotes interfere with my reading process of subtitles at the bottom during watching the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

13 I think the headnotes interfere with my understanding of the humour in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

14 I think the headnotes interfere with my understanding of the cultural reference in the video.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

15 I would prefer watching Chinese comedies with the headnotes.

A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly disagree

Appendix C: Semi-structured interview questions

- 1 Do you think the videos were funny?
- 2 Why or why not?
- 3 Which video(s) did you enjoy most? Why?
- 4 Do you often watch videos with subtitles?
- 5 Did you notice there were some texts at the top and at the bottom of the screen in the videos?
- 6 Did you have enough time to read the subtitles at the bottom of the screen in the video?
- 7 Did you have enough time to read the headnotes in the other 2 videos?
- 8 What do you think of the subtitles at the bottom of the screen?
- 9 What about the headnotes?
- 10 Do you think the headnotes explained the humour well?
- 11 Did headnotes help you understand the humour better, compared to the video without them?
- 12 Did headnotes help you understand the Chinese culture better, compared to the video without them?
- 13 Why?
- 14 Is there any humour that you did not understand in the videos?
- 15 How do you compare the different headnotes? (show them screenshots)
- 16 Do you think it would be helpful to have such headnotes tailored to the individuals watching the content?
- 17 Would you like to see more headnotes in general in translated audiovisual content?
- 18 Why/why not?
- 19 Which one do you prefer?
- 20 Do you have any other comments?

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Appendix D: PHNs across three clips

Are you asleep (Clip 1)	Number	1
	Source Text	豆腐脑
	SBS	Tofu brain.
	PHN1	[a jelly-like dish]
	PHN2	[tender tofu served with gravy or sugar]
	Number	2
	Source Text	听一段相声
	SBS	We listen to Xiangsheng now.
	PHN1	[similar to two-person stand-up comedy]
	PHN2	[Chinese comedic dialogue with one leader and one supporter]
	Number	3
	Source Text	给孩子们的红包准备好了吗
	SBS	Have you prepared Hongbao for children?
	PHN2	[pocket money in red envelopes for children in Spring Festival]
Dramatic GPS (Clip 2)	Number	4
	Source Text	观音菩萨
	SBS	Guanyin Buddha?
	PHN1	[similar to archangel Gabriel]
	PHN2	[a kind-hearted and forgiving female Chinese buddha]
	Number	5
	Source Text	本座已为你凑齐九九八十一盏红绿灯
	SBS	Your majesty has selected this path with 81 traffic lights for you.
	PHN1	[meaning 'jump through hoops']
	PHN2	[meaning 'significant difficulties' as 81 is a sacred number in Buddhism]
	Number	6
	Source Text	你不上高架 谁上高架
	SBS	If you don't do it, who will?
	PHN1	[meaning 'the needs of the many outweigh the needs of the few']
	PHN2	[meaning 'sacrifice for others', a key Buddhist principle]
	Number	7
Source Text	紫薇啊	
SBS	You are the melodramatic Ziwei now?	
PHN1	[similar to drama queen]	
PHN2	[an attention-seeking character with a dramatic voice]	
Time flies (Clip 3)	Number	8
	Source Text	交不上我是狗
	SBS	Otherwise I'm a dog.
	PHN1	[meaning idler, good-for-nothing]
	PHN2	[meaning 'bad and lousy' in Chinese culture]
	Number	9
	Source Text	帮我在朋友圈喊一嗓子
	SBS	Post this on my Moments:
	PHN1	[similar to WhatsApp status]
	PHN2	[a Chinese social media feed]
	Number	10
	Source Text	上吴京
	SBS	Use that Wujing meme,
	PHN1	[similar to Bruce Lee]
	PHN2	[a famous Chinese Kungfu star]
	Number	11
Source Text	光棍节了快点击下方小程序	
SBS	It's Singles' day sales, click on the app below	
PHN1	[similar to Black Friday sales]	
PHN2	[an annual big sales day on 11 Nov, as 1 looks like a single person]	

Appendix E: Informed Consent Form

Research title: Investigating personalised headnotes for English-speaking audiences in Chinese comedies

Institution & Funder: School of Applied Language and Intercultural Studies, Dublin City University

Principal investigators: Jing Wang, Sharon O'Brien, Ryoko Sasamoto

Email: jing.wang29@mail.dcu.ie

Purpose of the research: To investigate the impact of personalised headnotes translated for English-speaking audiences when viewing Chinese comedies

- I have read the Plain Language Statement and I have understood the information provided in it.
- I have been given the opportunity to ask questions to the researchers by email, and my questions and concerns have been answered by the researchers.
- I confirm that I am an adult with my age equal to or over 18.
- I confirm that I am an English native speaker and have normal to corrected vision.
- I am aware that I will be asked to watch three video clips while my eye movements and facial expressions being recorded by an eye-tracking device during the research.
- I am aware that I will be asked to complete questionnaires and participate in an interview during the research.
- I am aware that the total experiment may take maximum one hour.
- I confirm that my involvement in the study is voluntary, and I am aware that I may withdraw from this study at any point without repercussion.
- I am aware that my data will only be used by the researcher and will not be disclosed to any third party for commercialisation or profit.
- I am aware that my answers are confidential, and I understand that confidentiality of the information provided is subject to legal limitations.

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- I accept that as after the completion of the experiment, I will receive a financial compensation of a €20 one-for-all voucher.
- I understand that I will be made pseudonymous in the research and my personal information will be strictly restricted only by the researcher.
- I understand all the collected data will be confidentially stored in the researcher's personal account on Google Forms and backed up on DCU's Google Drive server. Before the data are destroyed, access to them is restricted only by the named three investigators.

By ticking this box, I confirm that I have read and understood the information in this form, and I consent to take part in this research project.

Appendix F: Plain Language Statement

This PhD research project is entitled “Investigating personalised headnotes for English-speaking audiences of Chinese comedies”. This study is funded by School of Applied Language and Intercultural Studies at Dublin City University and is being carried out at Dublin City University by Jing Wang (jing.wang29@mail.dcu.ie) under the supervision of Sharon O’Brien and Ryoko Sasamoto.

As an eligible participant in this research experiment, your first language must be English, you must be aged 18 or over, and you must have normal or corrected vision. In the experiment, you will first be asked to fill in two questionnaires that assess cultural awareness. If you take part in the experiment, you will then be asked to watch three short video clips with Chinese audio and English subtitles. After each video viewing, you will answer a brief questionnaire. All the viewings will be monitored by a non-intrusive eye-tracking device to record your eye movements and facial expressions. This means that your face will be recorded, and this data will be used during the analysis. However, no screenshots showing your face will be disclosed in any public reports that come out of the research. The final step includes a brief interview conducted by the researcher. The total duration is around one hour maximum. After the completion of all the steps in the research, you will receive a 20 euro one-for-all voucher for your full participation.

As required by DCU’s Research Ethics Committee, we provide you with the following additional information concerning your participation in the study:

We anticipate no potential risks to you from involvement in this research study and we will make all the necessary arrangements to protect the confidentiality of the data. Each participant will be assigned a number before we start to process the data, so that your name or face will never be visible during the analysis and dissemination of results. As we are not assessing your abilities or competencies, but rather your use and reception of the provided subtitles, we anticipate that the collected data cannot be damaging to you in any way. Nonetheless, you are advised

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that the confidentiality of the information provided cannot always be guaranteed by researchers and can only be protected within the limitations of the law, i.e., it is possible for some data to be subject to subpoena, freedom of information claim or mandated reporting by some professions.

We anticipate that you might benefit indirectly from this study as our aim is to research the reception of translated humour. If you have a habit of watching subtitled videos, you may be able to benefit from the research or become interested in the Chinese culture.

During this study, the data will be handled exclusively by the three researchers named in this invitation to participate. The study is scheduled to be completed by April 2023, followed by data analysis and dissertation writing, and you will be informed of its outcome by means of a research project report by the completion of the PhD dissertation. You will also have the option to have a more detailed, plain language report on direct request to the researchers. Afterwards, the data will be disposed in a way that protects the security and confidentiality of the data.

Your involvement in this research study is voluntary and you may withdraw from the study at any point without repercussion. If you have further questions, please do not hesitate to contact the researcher by sending an email to the address provided above. If you have any concerns about this study and wish to contact an independent person, please contact:

The Secretary, Dublin City University Research Ethics Committee, c/o
Research and Innovation Support, Dublin City University, Dublin 9,
+35317007011, fiona.brennan@dcu.ie

Thank you in advance,

Jing Wang

Sharon O'Brien

Ryoko Sasamoto

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Appendix G: Normalised mean fixation durations per character

Clip	Condition	Participant	AOI tags	PHN on screen	Number of characters	Average_duration_of_fixations	Average_fixation_per_character	Condition	Participant	AOI tags	PHN on screen	Number of characters	Average_duration_of_fixations	Average_fixation_per_character
Are you asleep	PHN1	P15	HONGBAO	similar to confirmation money	26	142	5.46	PHN2	P03	HONGBAO	pocket money in red envelopes for children in Spring Festival	52	144	2.77
		P18				161	6.19		P05				144	2.77
		P27				100	3.85		P10				128	2.46
		P04				0	0.00		P13				0	0.00
		P09				150	5.77		P16				151	2.90
		P07				242	9.31		P17				153	2.94
		P23				0	0.00		P25				159	3.06
		P30				117	4.50		P26				134	2.58
		P38				261	10.04		P28				159	3.06
		P32				188	7.23		P35				126	2.42
		P36				212	8.15		P37				119	2.29
		P21				125	4.81		P03				142	4.44
		P15				200	13.33		P05				146	4.56
		P18				195	13.00		P10				192	6.00
		P27	133	8.87	P13	233	7.28							
		P04	311	20.73	P16	164	5.13							
		P09	117	7.80	P17	140	4.38							
		P07	0	0.00	P25	152	4.75							
		P23	190	12.67	P26	166	5.19							
		P30	133	8.87	P28	125	3.91							
		P38	208	13.87	P35	131	4.09							
		P32	140	9.33	P37	157	4.91							
		P36	186	12.40	P03	123	2.46							
		P21	0	0.00	P05	121	2.42							
		P15	147	4.59	P10	213	4.26							
		P18	130	4.06	P13	233	4.66							
		P27	112	3.50	P16	191	3.82							
		P04	137	4.28	P17	174	3.48							
		P09	141	4.41	P25	203	4.06							
		P07	0	0.00	P26	138	2.76							
		P23	172	5.38	P28	174	3.48							
		P30	106	3.31	P35	137	2.74							
		P38	194	6.06	P37	158	3.16							
		P32	94	2.94										
		P36	139	4.34										
		P21	229	7.16										

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Time flies	PHN1	P06	GOU	meaning idler, good-for-nothing	28	203	7.25	PHN2	P01	GOU	meaning 'bad and lousy' in Chinese culture	39	193	4.95
		P08				140	5.00		P04				175	4.49
		P10				173	6.18		P09				146	3.74
		P12				142	5.07		P15				117	3.00
		P14				117	4.18		P20				96	2.46
		P16				187	6.68		P21				130	3.33
		P22				192	6.86		P23				167	4.28
		P25				216	7.71		P31				163	4.18
		P28				184	6.57		P33				97	2.49
		P35				100	3.57		P38				202	5.18
		P40	98	3.50	P39	125	3.21							
		P06	GUANGGU NJIE	similar to Black Friday sales	26	145	5.58		P01	GUANGGU NJIE	an annual big sales day on 11 Nov, as 1 looks like a single person	47	142	3.02
		P08				111	4.27		P04				149	3.17
		P10				158	6.08		P09				122	2.60
		P12				175	6.73		P15				157	3.34
		P14				183	7.04		P20				171	3.64
		P16				184	7.08		P21				114	2.43
		P22				157	6.04		P23				127	2.70
		P25				94	3.62		P31				137	2.91
		P28				159	6.12		P33				104	2.21
		P35				129	4.96		P38				177	3.77
		P40	105	4.04	P39	168	3.57							
		P06	PENGYOUQ UAN	similar to WhatsApp status	21	173	8.24		P01	PENGYOU QUAN	a Chinese social media feed	25	150	6.00
		P08				0	0.00		P04				283	11.32
		P10				121	5.76		P09				133	5.32
		P12				173	8.24		P15				0	0.00
		P14				0	0.00		P20				113	4.52
		P16				163	7.76		P21				141	5.64
		P22				67	3.19		P23				133	5.32
		P25				157	7.48		P31				167	6.68
		P28				201	9.57		P33				99	3.96
		P35				125	5.95		P38				300	12.00
		P40	0	0.00	P39	164	6.56							
		P06	WUJING	similar to Bruce Lee	18	100	5.56		P01	WUJING	a famous Chinese kungfu star	27	140	5.19
		P08				0	0.00		P04				131	4.85
		P10				142	7.89		P09				117	4.33
		P12				172	9.56		P15				0	0.00
		P14				117	6.50		P20				137	5.07
		P16				150	8.33		P21				105	3.89
		P22				0	0.00		P23				129	4.78
P25	0	0.00				P31	156	5.78						
P28	108	6.00				P33	64	2.37						
P35	105	5.83				P38	189	7.00						
P40	0	0.00	P39	87	3.22									

**Appendix H1: Participants' attention distribution in
SBS only condition**

Participant	Image (ms)	SBS (ms)	Total (ms)	Image %	SBS %
1	224091	199503	423594	52.90	47.10
3	171816	40040	211856	81.10	18.90
4	194737	56684	251421	77.45	22.55
5	393003	212006	605009	64.96	35.04
6	235657	240163	475820	49.53	50.47
7	376717	270377	647094	58.22	41.78
8	172440	119270	291710	59.11	40.89
9	124074	107840	231914	53.50	46.50
10	167280	110874	278154	60.14	39.86
12	287894	199472	487366	59.07	40.93
13	478291	170200	648491	73.75	26.25
14	200531	244204	444735	45.09	54.91
15	117307	137370	254677	46.06	53.94
16	100061	176139	276200	36.23	63.77
17	467666	187956	655622	71.33	28.67
18	369783	252500	622283	59.42	40.58
20	184811	277591	462402	39.97	60.03
21	87030	50299	137329	63.37	36.63
22	166855	253824	420679	39.66	60.34
23	151088	43069	194157	77.82	22.18
25	147677	57727	205404	71.90	28.10
26	451708	224302	676010	66.82	33.18
27	346465	101964	448429	77.26	22.74
28	149019	98882	247901	60.11	39.89
30	492345	91658	584003	84.31	15.69
31	226645	161101	387746	58.45	41.55
32	274563	135455	410018	66.96	33.04
33	222307	126594	348901	63.72	36.28
35	116843	109825	226668	51.55	48.45
36	387080	276829	663909	58.30	41.70
37	395724	158989	554713	71.34	28.66
38	192752	81398	274150	70.31	29.69
39	197982	33381	231363	85.57	14.43
40	121649	83483	205132	59.30	40.70
Average	246,879.15	149,734.38	396,613.53	62.19	37.81

Appendix H2: Participants' attention distribution in SBS+PHN1 condition

Participant	Image (ms)	SBS (ms)	PHN1 (ms)	Total (ms)	Image %	SBS %	PHN1 %
1	122137	102395	4039	228571	53.44	44.80	1.77
3	141125	130830	2722	274677	51.38	47.63	0.99
4	330515	116092	1617	448224	73.74	25.90	0.36
5	137925	89736	3060	230721	59.78	38.89	1.33
6	393476	254264	3197	650937	60.45	39.06	0.49
7	208755	236385	483	445623	46.85	53.05	0.11
8	319201	182169	1316	502686	63.50	36.24	0.26
9	189819	197228	2402	389449	48.74	50.64	0.62
10	403418	267916	3065	674399	59.82	39.73	0.45
12	431805	213229	1845	646879	66.75	32.96	0.29
13	174868	77734	2436	255038	68.57	30.48	0.96
14	374353	227491	2298	604142	61.96	37.66	0.38
15	202773	239915	2149	444837	45.58	53.93	0.48
16	336322	345064	3292	684678	49.12	50.40	0.48
17	182578	89371	4750	276699	65.98	32.30	1.72
18	237871	211870	1719	451460	52.69	46.93	0.38
20	133873	139196	4733	277802	48.19	50.11	1.70
21	185079	108741	1166	294986	62.74	36.86	0.40
22	338063	279497	1394	618954	54.62	45.16	0.23
23	255577	129989	1807	387373	65.98	33.56	0.47
25	425762	154114	1282	581158	73.26	26.52	0.22
26	156944	119172	4596	280712	55.91	42.45	1.64
27	262871	109924	1900	374695	70.16	29.34	0.51
28	386507	186870	2874	576251	67.07	32.43	0.50
30	369311	93503	1348	464162	79.57	20.14	0.29
31	121000	98675	2847	222522	54.38	44.34	1.28
32	211335	236959	2386	450680	46.89	52.58	0.53
33	131574	73379	2786	207739	63.34	35.32	1.34
35	358484	247895	1682	608061	58.96	40.77	0.28
36	211568	249591	2799	463958	45.60	53.80	0.60
37	149838	84580	2981	237399	63.12	35.63	1.26
38	334122	151070	2393	487585	68.53	30.98	0.49
39	91229	13791	1582	106602	85.58	12.94	1.48
40	243228	135794	1100	380122	63.99	35.72	0.29
Average	251567.82	164542.03	2413.12	418522.97	60.48	38.80	0.72

Appendices

Appendix H3: Participants' attention distribution in SBS+PHN2 condition

Participant	Image (ms)	SBS (ms)	PHN2 (ms)	Total (ms)	Image %	SBS %	PHN2 %
1	316746	198849	4257	519852	60.93	38.25	0.82
3	637781	515631	2615	1156027	55.17	44.60	0.23
4	474176	137177	5367	616720	76.89	22.24	0.87
5	259121	202058	3619	464798	55.75	43.47	0.78
6	174872	93087	4625	272584	64.15	34.15	1.70
7	142116	118184	4518	264818	53.67	44.63	1.71
8	90888	65087	3141	159116	57.12	40.91	1.97
9	358734	189715	3015	551464	65.05	34.40	0.55
10	281587	189284	3447	474318	59.37	39.91	0.73
12	171258	104233	7129	282620	60.60	36.88	2.52
13	292110	151675	466	444251	65.75	34.14	0.10
14	126285	127381	5083	258749	48.81	49.23	1.96
15	377166	249693	1449	628308	60.03	39.74	0.23
16	191685	288183	3727	483595	39.64	59.59	0.77
17	323357	143519	3032	469908	68.81	30.54	0.65
18	134248	120141	6996	261385	51.36	45.96	2.68
20	385320	265478	3442	654240	58.90	40.58	0.53
21	259947	128860	2306	391113	66.46	32.95	0.59
22	121306	129564	1083	251953	48.15	51.42	0.43
23	348846	90154	3100	442100	78.91	20.39	0.70
25	254978	136091	4220	395289	64.50	34.43	1.07
26	244731	222219	4054	471004	51.96	47.18	0.86
27	128787	53896	1921	184604	69.76	29.20	1.04
28	205352	188569	3235	397156	51.71	47.48	0.81
30	199070	40143	4248	243461	81.77	16.49	1.74
31	292322	183804	3732	479858	60.92	38.30	0.78
32	98005	89471	2249	189725	51.66	47.16	1.19
33	341270	128791	3069	473130	72.13	27.22	0.65
35	216143	213021	2891	432055	50.03	49.30	0.67
36	156016	102463	5771	264250	59.04	38.78	2.18
37	213532	135280	3506	352318	60.61	38.40	1.00
38	510780	176015	5354	692149	73.80	25.43	0.77
39	268333	36696	3051	308080	87.10	11.91	0.99
40	123230	83175	1181	207586	59.36	40.07	0.57
Average	256473.47	155811.38	3555.85	415840.71	61.47	37.51	1.02

Appendices

Appendix I: Observed mirth from participants on 11 AOIs

Observed mirth on AOIs											
Clip	Are you asleep			Dramatic GPS				Time flies			
AOI	TOFU	XIANGSHENG	HONGBAO	GUANYIN	81	GAOJIA	ZIWEI	GOU	PENGYO UQUAN	WUJING	GUANGCUNJIE
Timestamp	01:24:99 - 01:27:15	02:44:73 - 02:48:40	05:09:57 - 05:12:88	01:37:59 - 01:41:77	01:53:05 - 01:59:89	02:27:93 - 02:31:12	02:56:11 - 02:58:88	00:09:32 - 00:11:56	00:46:40 - 00:48:48	01:51:80 - 01:53:40	04:59:28 - 05:04:08
P01	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y
P03	Y	N	Y	N	Y	Y	N	Y	N	N	Y
P04	N	N	N	N	N	N	N	Y	N	N	Y
P05	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y
P06	N	N	N	Y	Y	N	Y	N	N	Y	Y
P07	N	N	Y	Y	N	N	Y	Y	N	Y	N
P08	N	N	Y	Y	N	Y	Y	N	Y	N	Y
P09	N	N	N	Y	N	N	Y	N	N	Y	Y
P10	N	N	N	N	Y	N	Y	N	N	N	N
P12	N	N	N	N	N	N	N	N	N	N	N
P13	N	N	N	Y	Y	Y	N	N	N	N	Y
P14	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y
P15	Y	N	N	Y	Y	N	Y	N	N	Y	Y
P16	N	N	N	N	Y	N	Y	N	N	Y	N
P17	N	N	N	Y	N	N	Y	N	N	N	Y
P18	Y	N	Y	N	Y	N	Y	Y	N	Y	Y
P20	N	N	N	N	N	N	N	N	N	N	Y
P21	N	N	N	N	N	N	N	N	N	N	N
P22	N	N	N	N	N	N	N	N	N	N	Y
P23	N	Y	Y	Y	N	Y	Y	N	N	Y	Y
P25	N	N	N	N	N	N	N	N	N	N	N
P26	N	N	N	N	Y	Y	Y	Y	N	N	Y
P27	N	N	N	N	Y	N	Y	N	N	N	N
P28	N	N	N	N	Y	N	N	N	N	N	N
P30	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N
P31	N	Y	N	N	N	Y	N	N	N	N	Y
P32	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y
P33	Y	Y	N	Y	Y	N	Y	Y	N	N	N
P35	N	Y	N	Y	Y	N	Y	N	N	Y	Y
P36	N	N	N	N	N	N	Y	N	N	N	Y
P37	N	N	N	N	Y	N	N	N	N	N	Y
P38	N	N	N	N	N	N	N	N	N	N	Y
P39	N	N	N	N	Y	Y	N	N	N	N	Y
P40	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y

Appendices

Appendix J: Comprehension scores from three conditions (n=34)

Participant	Clip	Condition	Q2	Q3	Q4	Q5	Total	Participant	Clip	Condition	Q2	Q3	Q4	Q5	Total	Participant	Clip	Condition	Q2	Q3	Q4	Q5	Total
P01	1	1	1	1	1	1	4	P04	1	2	1	1	0	0.5	2.5	P03	1	3	1	1	1	0.5	3.5
P06	1	1	0	1	1	1	3	P07	1	2	1	1	0	0.5	2.5	P05	1	3	1	1	1	0.5	3.5
P08	1	1	0	0.5	0	1	1.5	P09	1	2	1	1	1	0.5	3.5	P10	1	3	0	1	1	1	3
P12	1	1	0	1	0.5	1	2.5	P15	1	2	0.5	1	0.5	0.5	2.5	P13	1	3	0	1	0.5	1	2.5
P14	1	1	1	1	0	1	3	P18	1	2	1	1	1	0.5	3.5	P16	1	3	0	1	0.5	0.5	2
P20	1	1	1	1	1	1	4	P21	1	2	0	1	0	0.5	1.5	P17	1	3	1	1	1	0.5	3.5
P22	1	1	1	1	1	1	4	P23	1	2	1	1	1	0.5	3.5	P25	1	3	1	1	1	0.5	3.5
P31	1	1	1	1	1	1	4	P27	1	2	1	1	1	0.5	3.5	P26	1	3	1	1	1	0.5	3.5
P33	1	1	1	1	1	0.5	3.5	P30	1	2	1	1	1	1	4	P28	1	3	1	1	1	0.5	3.5
P39	1	1	1	1	1	1	4	P32	1	2	1	1	1	0.5	3.5	P35	1	3	1	0	1	0.5	2.5
P40	1	1	1	1	1	0.5	3.5	P36	1	2	1	1	1	1	4	P37	1	3	1	0	1	0.5	2.5
P04	2	1	1	1	1	1	4	P38	1	2	1	1	1	0.5	3.5	P06	2	3	1	1	1	1	4
P09	2	1	1	1	1	0	3	P01	2	2	1	1	1	1	4	P07	2	3	1	1	0	0.5	2.5
P10	2	1	1	0	1	1	3	P03	2	2	1	1	1	1	4	P08	2	3	1	0.5	1	1	3.5
P15	2	1	1	1	1	0.5	3.5	P05	2	2	0.5	1	1	0.5	3	P12	2	3	1	1	1	1	4
P16	2	1	0.5	1	0.5	0.5	2.5	P13	2	2	1	0	1	1	3	P14	2	3	1	0.5	0	0.5	2
P21	2	1	1	1	1	1	4	P17	2	2	1	0	1	1	3	P18	2	3	1	1	1	1	4
P23	2	1	1	1	1	1	4	P20	2	2	1	0.5	1	1	3.5	P22	2	3	1	0	1	1	3
P25	2	1	1	1	1	1	4	P26	2	2	1	0	1	1	3	P27	2	3	1	1	1	1	4
P28	2	1	1	1	1	1	4	P31	2	2	1	1	1	1	4	P30	2	3	1	1	1	1	4
P35	2	1	1	1	1	0.5	3.5	P33	2	2	1	1	1	1	4	P32	2	3	1	0	1	0	2
P38	2	1	1	1	1	0	3	P37	2	2	1	1	1	1	4	P36	2	3	1	0	1	0	2
P03	3	1	1	0	1	1	3	P39	2	2	1	0	1	1	3	P40	2	3	1	0.5	1	1	3.5
P05	3	1	1	1	1	1	4	P06	3	2	1	1	1	1	4	P01	3	3	1	1	1	1	4
P07	3	1	0	1	1	1	3	P08	3	2	1	1	0.5	1	3.5	P04	3	3	1	1	0.5	1	3.5
P13	3	1	1	1	1	1	4	P10	3	2	0.5	1	1	1	3.5	P09	3	3	1	1	0	1	3
P17	3	1	1	1	1	1	4	P12	3	2	1	1	1	1	4	P15	3	3	1	1	1	1	4
P18	3	1	1	1	1	1	4	P14	3	2	0.5	0.5	1	1	3	P20	3	3	1	1	0.5	1	3.5
P26	3	1	1	1	1	1	4	P16	3	2	1	1	1	1	4	P21	3	3	0.5	0	1	1	2.5
P27	3	1	1	1	1	1	4	P22	3	2	1	1	0	1	3	P23	3	3	1	1	1	1	4
P30	3	1	1	1	1	1	4	P25	3	2	1	1	1	1	4	P31	3	3	1	1	1	1	4
P32	3	1	1	0	1	1	3	P28	3	2	1	1	1	1	4	P33	3	3	1	1	1	1	4
P36	3	1	1	1	0	1	3	P35	3	2	1	1	1	1	4	P38	3	3	1	1	1	1	4
P37	3	1	1	1	1	1	4	P40	3	2	1	1	0	1	3	P39	3	3	1	1	1	1	4

Appendix K: Ethical approval letter from Faculty Research Ethics Committee



Faculty of Humanities & Social Sciences
DUBLIN CITY UNIVERSITY
02 March 2023

CONFIRMATION OF RESEARCH ETHICS APPROVAL FOR A PROJECT

Application Reference: **DCU-FHSS-2023-021**

Project Title: **Investigating personalised headnotes and their impact on humour comprehension and reception**

Project contact(s): **jing.wang29@mail.dcu.ie**

Let this letter certify that the proposed project identified above has been reviewed by the *Humanities & Social Sciences Faculty Research Ethics Committee (F-REC)* and has been approved as a low-risk project. The application was found to comply with university requirements and best practices for research ethics, and with GDPR guidelines and requirements where personal data is processed in the project.

A copy of the application, including appended documents related to participant consent, is archived under the reference above. Queries about this project's approval may be directed to the F-REC Chair.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dónal Mulligan', is written over a horizontal line.

Dr Dónal Mulligan
donal.mulligan@dcu.ie

Chair, Faculty Research Ethics Committee
Faculty of Humanities & Social Sciences
Dublin City University

Dámh na nDaonnachtaí agus na nEolaíochtaí Sóisialta
Ollscoil Chathair Bhaile Átha Cliath