More than meets the ear: Investigating the impact of audiovisual speech cues and supportive sentence context during bilingual speech perception in noise in younger and older adults

Alexandre Chauvin

A Thesis

In the Department

of

Psychology

Presented in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy (Psychology) at

Concordia University

Montreal, Quebec, Canada

May 2022

CONCORDIA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared

By: **Alexandre Chauvin**

Entitled: **More than meets the ear: Investigating the impact of audiovisual speech cues and supportive sentence context during bilingual speech perception in noise in younger and older adults**

and submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY (PSYCHOLOGY)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____Chair
Dr. Christine Dewolf

_____External Examiner
Dr. Alexandre Jesse

_____External to Program
Dr. Kim Sawchuk

_____Examiner
Dr. Aaron Johnson

_____Examiner
Dr. Norman Segalowitz

_____Thesis Supervisor
Dr. Natalie Phillips

Approved by _____
Dr. Andreas Arvanitogiannis, Graduate Program Director

March 29, 2022_____
Dr. Pascale Sicotte, Dean
Faculty of Arts and Science

ABSTRACT

More than meets the ear: Investigating the impact of audiovisual speech cues and supportive sentence context during bilingual speech perception in noise in younger and older adults

Alexandre Chauvin, Ph.D.
Concordia University, 2022

This dissertation investigates speech perception in noise in a first (L1) and second (L2) language, in both younger and older adults. The studies presented here used a sentence perception in noise task during which participants were asked to identify sentence terminal words across three different modalities (visual-only, auditory-only, audiovisual) and two levels of context (low context, moderate context). Furthermore, baseline perceptual load (i.e., L1, auditory-only, low context) was equated across participants.

Manuscript 1 investigated speech perception in noise in young adult English-French/French-English bilinguals. The results suggest that: 1) young adult bilinguals benefit from visual speech cues and sentence context in both of their languages, 2) the benefit of visual speech cues is proportionally greater in L2 compared to L1, and 3) there is a complex interplay between L2 experience and L2 performance during speech perception in noise.

Manuscript 2 contrasted bilingual speech perception in noise in younger and older English-French/French-English bilinguals. There were no age differences in performance, except for poorer lip-reading in older adults. Therefore, when baseline perceptual load is equated, younger and older bilinguals benefit from visual speech cues and sentence context to the same extent. Contrary to younger adults, older adults showed similar benefit from visual speech cues in L1 and L2, suggesting that bilinguals' reliance on visual speech cues may decrease as they accumulate experience in L2.

Manuscript 3 examined bilinguals' tendency to look at the speaker's nose/mouth around the onset of sentence terminal words during speech perception in noise. Individuals looked at the speaker's mouth more during audiovisual speech compared to auditory-only speech (i.e., when presented with a still face), but generally no age or language differences were observed.

However, the proportion of time spent looking in L1 and L2 were generally positively correlated, suggesting a role of individual preferences/style rather than language experience during L2 speech perception in noise.

Overall, this dissertation contributes to the literature on the benefits of visual speech cues and supportive sentence context during speech perception in noise. Furthermore, the results constitute an early step in developing more comprehensive models of speech perception in noise which include diverse listeners.

ACKNOWLEDGEMENTS

CONTRIBUTION OF AUTHORS

The three studies included in this dissertation were jointly conceptualized by Alexandre Chauvin and Dr. Natalie Phillips. The majority of the stimuli were developed by Alexandre Chauvin with the help of several research assistants; the process was overseen by Dr. Natalie Phillips. A portion of the English stimuli were drawn from a previous study conducted in the Cognition, Aging, and Psychophysiology laboratory. Alexandre Chauvin oversaw the videorecording of the sentence stimuli and processed the audio and video with the help of research assistants.

For all three manuscripts, Alexandre Chauvin managed the study, and recruited and tested participants with the help of Anna-Francesca Boatswain Jacques, Sophie Pellerin, and Jean-Louis René. Alexandre Chauvin analysed the data presented in the manuscripts, and the results were interpreted collaboratively with Dr. Natalie Phillips. The first drafts of the manuscripts were written by Alexandre Chauvin and subsequently revised by Dr. Natalie Phillips; the second manuscript was also revised by Anna-Francesca Boatswain Jacques, Sophie Pellerin, and Jean-Louis René.

TABLE OF CONTENTS

List of Figures

List of Figures

List of Tables

Chapter 1: General Introduction and Organization of the Dissertation

Speech perception is a fundamental aspect of the human experience. As such, it is often taken for granted, seeming almost automatic. Perhaps because of this, it is immediately apparent when speech perception is hindered, such as in the presence of background noise. Unfortunately, background noise is a frequent occurrence, one which most of us must frequently contend with. Additionally, some groups of listeners are particularly vulnerable to the impact of background noise. For example, older adults may have more difficulty engaging in speech perception in noise due to age-related changes in sensory acuity (e.g., Schneider & Pichora-Fuller, 2000). Non-native listeners (e.g., bilinguals listening to speech in their second language) may also find speech perception in noise particularly challenging, due in part to differences in the processing of non-native speech sounds (e.g., Bosch et al., 2000; Navarra et al., 2007) and less developed linguistic knowledge in the non-native language (Garcia Lecumberri et al., 2010).

This dissertation investigates the challenges posed by speech perception in noise in a native and non-native language, and the ways in which it can be facilitated. In particular, I focus on two factors which have both separately been the object of considerable scientific inquiry: audiovisual speech and supportive sentence context. To do so, I will first briefly discuss models of auditory word perception (Chapter 2). Then, I will review relevant work on the challenges inherent to speech perception in noise (Chapter 3). Third, I will discuss how audiovisual speech and supportive sentence context can facilitate speech perception in noise (Chapter 4). For Chapters 3 and 4, I will first examine general principles, before highlighting information pertaining specifically to older listeners and non-native listeners; this culminates in a description of the work presented here. Chapters 5, 6, and 7 contain the three studies which constitute the core of this dissertation. Finally, Chapter 8 provides a discussion of the results, and outlines limitations and avenues for future research.

Speech perception in noise has a rich history of scientific inquiry and has been studied at several levels over the years, including phonemes (e.g., Burfin et al., 2014), isolated words (e.g., Ross et al., 2007), sentences (e.g., Sommers et al., 2005). While each level of inquiry has its strengths and weaknesses, the literature review presented in the following sections focuses on sentence-level data. This decision was motivated by the fact that sentence stimuli offer a good balance between allowing effects of semantic context and being relatively short and self-

contained. Unless otherwise indicated, the reader should assume that any studies reviewed in the following sections use sentence stimuli.

Chapter 2: Models of Auditory Speech Perception

Prior to discussing speech perception in noise, it is useful to briefly review speech perception at the sentence level. As aptly discussed by Samuel (2011), models of speech perception at the sentence level are typically divided between those that posit a purely bottom-up account, and those that stipulate that speech perception involves some degree of interactivity between different levels of processing (e.g., phonemic, lexical). Importantly, both bottom-up and interactive models were heavily influenced by a common precursor: the Cohort model (Marlsen-Wilson & Welsch, 1978).

2.1. The Cohort Model

The ideas behind the Cohort model of spoken word recognition arose from early work by Marslen-Wilson (1975), who used a shadowing task during which listeners were asked to repeat back speech as close in time as possible. The stimuli consisted of pairs of sentences, with the second sentence containing a trisyllabic target word. Crucially, the sentences were divided into three different categories: sentences with semantic disruptions, sentences with syntactic disruptions, and sentences without disruptions (i.e., normal sentences). In the sentences with semantic disruptions, the target words were replaced with semantically anomalous words (e.g., "The new peace terms have been announced. They call for the unconditional *universe* of all the enemy forces."; Marslen-Wilson, 1975). Syntactic disruptions were created by replacing target words with words that were both semantically and syntactically anomalous (e.g., "He thinks she won't get the letter. He's afraid he forgot to put a stamp on the *already* before he went to post it."; Marslen-Wilson, 1975). In normal sentences, the target word was semantically and syntactically congruent.

For each of the categories of sentences presented above, a second level of disruption was introduced. This was done by changing one of the syllables of the trisyllabic target words in order to create a nonsense word. For example, the normal sentences were ultimately divided into sentences for which the target word was left untouched (i.e., $Normal_0$), and sentences for which the first, second, or third syllable was replaced (i.e., $Normal_1$, $Normal_2$, and $Normal_3$, respectively). This procedure yielded a total of twelve different combinations, ranging from sentences with no contextual or lexical disruptions (i.e., $Normal_0$) to sentences for which the target word was semantically and syntactically anomalous, and the third syllable of said target word was replaced (e.g., $Syntactic_3$).

The overall goal of this manipulation was to investigate the effects of context on word restorations (i.e., the restoration of disrupted words to their original form; e.g., "tomorrane" to "tomorrow"). Marslen-Wilson (1975) speculated that if the interaction between levels of speech processing (e.g., lexical and semantic) occurs serially, word restoration should be equivalent across conditions, regardless of semantic and syntactic disruptions. Conversely, if levels of speech processing are interactive, then semantic and syntactic context may bias word restoration towards a small set of plausible word forms.

Using this elegant design, Marlsen-Wilson (1975) noted a few important results. First, he found that some participants could shadow incoming speech very rapidly, in the order of a few hundred milliseconds. This was taken as evidence for rapid recognition of speech signals.

Second, by analysing the restoration errors made by participants, Marlsen-Wilson (1975) found two broad types of errors: word restoration errors and context restoration errors. The former consisted of responses during which the original (i.e., undisrupted) lexical form was restored (e.g., repeating "tomorrow" in response to "tomorrane"; Marlsen-Wilson, 1975). These were by far the most common type of restoration error and occurred most often when the target word was semantically and syntactically congruous given the preceding context, and the initial syllable was left undisrupted (i.e., $Normal_2$ and $Normal_3$). On the other hand, context restoration errors consisted of reinstatements of the original target word despite disruptions. These errors were significantly less common and occurred only for semantically and syntactically disrupted sentences.

Third, the mean shadowing latency was shorter for context restoration errors than for word restoration errors. Furthermore, the mean shadowing latency was shorter for word restoration errors that are most dependent on prior context (i.e., $Normal_2$ and $Normal_3$) compared to those that do not reflect the context. These results are not in line with a serial model of spoken word recognition, which would stipulate that word-level information should be processed before contextual constraints.

Based on these results, the basis of the Cohort model was formed (Marslen-Wilson & Welsch, 1978). More specifically, the Cohort model stipulates that the human speech processing system continuously computes the most plausible interpretation of the speech signal given the available information (e.g., syntax, sentence context). As such, the Cohort model posits a dynamic system, which constantly updates the representation of the incoming speech signal. In

practice, the Cohort model suggests that the bottom-up analysis of the speech signal activates a set of plausible lexical representations (i.e., the cohort) based on the initial overlap in phonemic information. In turn, this cohort is trimmed based on incoming acoustic information (i.e., dropping cohort items inconsistent with new phonetic information) or contextual information.

Over the years, the Cohort model was further refined (e.g., Marslen-Wilson, 1987) to break down spoken word recognition into three basic functions: access, selection, and integration. The access function consists of the mapping of the sensory input onto lexical representations, typically assumed to occur through an acoustic-phonetic analysis of the speech signal. The selection function involves the selection of the most plausible word form based on the available input. Finally, the integration function consists of the integration of plausible word forms into the higher-level semantic and syntactic context. Importantly, these functions are thought to be interactive rather than serial (e.g., Marslen-Wilson, 1987; Zwitserlood, 1989).

The Cohort model has been the object of extensive scientific inquiry over the years. For example, work by Zwitserlood (1989) investigated semantic priming effects during auditory sentence perception. During the task, participants were asked to make a lexical decision in response to printed probe words. Crucially, a probe word could appear at various points of the unfolding speech signal, before or concurrently with target spoken words. Using this paradigm, Zwitserlood (1989) found evidence for semantic priming of probes; importantly, this was true for probe words related to the spoken word, but also for probes related to what the listener had heard up until the point the probe appeared. Samuel (2011) provided a clear example: in response to the probe word "gun", a listener's response may be facilitated (i.e., primed) by hearing the word "bulletin", provided that the probe appears early enough that "bullet" is still part of the lexical cohort. This was taken as supportive evidence for the notion that multiple lexical representations are activated by bottom-up acoustic information, and that contextual effects take place on the basis of available bottom-up information.

2.2. Beyond the Cohort Model

As was previously discussed, the Cohort model proved to be extremely influential in the realm of spoken word recognition. Furthermore, the model has been revised after its inception. For example, Gaskell and Marslen-Wilson (1997) proposed a reformulation of the Cohort model (dubbed the Distributed Cohort Model), which stipulates that different forms of lexical knowledge (e.g., phonology, semantic knowledge) are represented in parallel rather than serially.

Over the years, several other models emerged. Amongst these models, some follow in Cohort's footsteps to suggest a certain degree of interactivity between different levels of processing (e.g., phonemic, lexical). Other models instead posit purely bottom-up processing during speech perception.

Interactive models (e.g., TRACE model; McClelland & Elman, 1986) typically posit a speech processing architecture in which a unit at any given level can increase the activation of units at other levels, provided that those units are consistent with each other. For example, semantic information during sentence processing may interact with processing at the lexical level, influencing which words become activated. Another example was presented in Samuel (2011): in interactive models, partial information (e.g., "exting") may activate a lexical representation such as "extinguish" which, in turn, increases the activation of the sublexical representation "sh". In other words, lexical and sublexical processes interact with each other to increase the overall activation of the lexical item "extinguish".

On the other hand, in strictly bottom-up accounts (e.g., Shortlist A; Norris, 1994), processing of the incoming speech signal is fairly straightforward: acoustic features give rise to phonemes which, in turn, form words. Proponents of purely bottom-up accounts typically argue that top-down processes cannot facilitate perception, and that any "top-down influences" on speech perception actually come from postperceptual decision processes (e.g., Norris et al., 2000).

Whether interactive or strictly bottom-up, several of the models that followed Cohort were based on the concept of "activation". More specifically, there is a near-ubiquitous acceptance that perceptual input (i.e., the incoming speech information) activates lexical representations, which then compete with each other to properly segment the input into and map it onto words (Norris & McQueen, 2008). This is true for both the TRACE model and Shortlist A. However, as Norris and McQueen (2008) stated, the concept of activation has limited explanatory value beyond the idea that "more activation is better". A revised version of the Shortlist A model (Shortlist B; Norris & McQueen, 2008) adopted a Bayesian perspective and discarded the idea of activation in favour of concepts such as likelihood and probability. The concept of probability is especially amenable to the study of speech recognition, particularly because it allows for an impact of *priors* (e.g., contextual information, word frequency effects). In accordance with Bayesian principles, Shortlist B also uses accumulating evidence to revise

prior beliefs, allowing for a dynamic account of continuous speech recognition (Norris & McQueen, 2008). As such, while priors (e.g., high word frequency) impact the probability associated with a given lexical candidate, this probability can be lowered by contradicting evidence (e.g., phonemic mismatch, incongruent context).

In the original account of the Shortlist B model, Norris and McQueen (2008) present numerous simulation studies which successfully replicate various behavioural findings. For example, Shortlist B provides a good simulation of human data coming from Luce and Pisoni (1998). In the original paper, participants were presented with consonant-vowel-consonant words or nonwords during a lexical decision task. Crucially, the word frequency, neighbourhood density (i.e., the number of words that are phonologically similar to the targets), and neighbourhood frequency (i.e., the word frequency of neighbours) of the targets was manipulated. Luce and Pisoni (1998) found that reaction time during the lexical decision task (i.e., determining whether an auditory stimulus is a word or a nonword) was faster for high-frequency words compared to low-frequency words, for words in low-frequency neighbourhoods compared to words in high-frequency neighbourhoods, and for words in low-density neighbourhoods compared to words in high-density neighbourhoods. Using Dutch equivalents to Luce and Pisoni's English stimuli, Norris and McQueen (2008) showed that the results of at Shortlist B simulation are comparable to the human data obtained described above. Indeed, the probabilities computed by Shortlist B were higher for low-frequency words compared to high-frequency words. There were also effects of neighbourhood frequency and neighbourhood density in the same direction as those outlined by Luce and Pisoni (1998). Another simulation study presented by Norris and McQueen (2008) suggest that the impact of word frequency on word recognition diminishes as the clarity of the perceptual input increases.

Since the inception of Shortlist B, additional studies have provided support for the idea that spoken word recognition may be probability-based/Bayesian in nature. For example, McQueen and Huettig (2012) designed an eye-tracking experiment during which participants were presented with sentences containing critical words. Additionally, the participants saw a four-picture display on any given trial. The name of one of one of these four pictures had either: 1) the same onset phonemes as the critical word (i.e., onset-overlapped), or 2) a different initial phoneme but rhymed with the critical word (i.e., rhyme overlapped). Sentences were presented either in quiet, or with noise similar to the static heard on a poorly tuned radio. Crucially, the

critical word of a given sentence was never distorted. Overall, participants tended to fixate onset-overlapped pictures more often compared to rhyme-overlapped pictures in quiet conditions. However, in noisy conditions, participants looked less at the onset-overlapped pictures and more at the rhyme-overlapped pictures. The authors interpreted this as evidence that noise decreased the reliability of the evidence about critical words, even though the noise never overlapped with the critical words. This is in line with Shortlist B's idea that evidence affects priors. Additionally, the authors ran a Shortlist B simulation, which yielded comparable results.

In another experiment, Bushong and Jaeger (2019) also showed that incoming evidence affects one's reliance on contextual cues. They presented participants with sentences containing an ambiguous target word for which the voice onset time (VOT) was manipulated. For example, the VOT of the first sound of the word *tent* was manipulated to yield a continuum ranging from a /d/-like sound to a /t/-like sound. Additionally, the target words were presented with sentence context biasing towards either a /t/ sound (e.g., "When the ?ent in the *forest* was well camouflaged, we began our hike"; tent-biasing) or a /d/ sound (e.g., When the ?ent in the *fender* was well camouflaged, we sold the car; dent-biasing). Participants were told to listen to each sentence and report the target word that they heard. Crucially, participants were divided into two groups: a low conflict group and a high conflict group. In the low conflict group, VOT and context varied naturally (i.e., a shorter VOT was more often associated with a dent-biasing context and a longer VOT was more often associated with a tent-biasing context). On the other hand, VOT and context were uncorrelated in the high conflict group. Bushong and Jaeger (2019) found that decorrelating VOT and context changed the effect of VOT. Participants in the high conflict group had steeper categorization curves compared to participants in the low conflict group. In other words, participants in the low conflict group relied heavily on context to guide their responses, while participants in the high conflict group showed a higher weighting of VOT cues. Given that context is unrelated to VOT in the high conflict condition, this suggests a dynamic adjustment of cue-weighting based on accumulating evidence during speech perception.

More broadly, however, Shortlist B allows for an elegant description of various types of listeners. For example, speech perception in noise is typically more challenging than speech perception in quiet (Mattys et al., 2012). In terms of Shortlist B, this effect may be due to a decrease in the reliability of the speech signal which, in turn, affects the probabilities of lexical candidates. Additionally, non-native speech perception in noise is typically more challenging

than native speech perception in noise (Garcia Lecumberri et al., 2010). In Shortlist B terms, this may be because non-native listeners have less developed priors (i.e., linguistic knowledge), effectively diminishing the often-beneficial biasing effect of linguistic knowledge (although the formulation of the Shortlist B model presented by Norris and McQueen does not directly address second language processing).

In conclusion, auditory word recognition is an exciting, constantly evolving field. While a complete review is out of the scope of this dissertation, one thing is clear: speech perception is likely more than a simple mapping of phonemes to word forms.

Chapter 3: Speech Perception in Noise

Even under pristine listening conditions, speech perception is a complex, multifaceted process. However, speech perception often takes place under suboptimal listening conditions. Among those, background noise is perhaps the most common, and gives rise to numerous challenges for the listener. In the following sections, I briefly review the challenges associated with speech perception in noise in general, as well as those challenges that particularly affect older adults and non-native listeners. Prior to this, however, I will give an overview of the ways in which the speech signal can be degraded.

3.1 Degradation of the Speech Signal

Even when a speaker delivers their intended message flawlessly, the contents of said message may be degraded. This degradation can be due to environmental factors (e.g., noisy surrounding) or the transmission process itself (e.g., videoconferencing using an unreliable internet connection). In either case, however, degradation of the auditory speech signal can be divided into two broad categories: without energetic masking and with energetic masking (Mattys et al., 2012).

3.1.1. Degradation without energetic masking

While degradation of the speech signal without energetic masking is not the focus of this dissertation, it is nevertheless useful to discuss it briefly in contrast to energetic masking. Put simply, degradation without energetic masking occurs without the presence of a competing signal (Mattys et al., 2012). For example, telephones often filter out some of the sound frequencies which carry speech information (Mattys et al., 2012). Similarly, most individuals can recall at least one telephone call where the audio was intermittent due to a bad connection. In both of those cases, no extraneous signal is interfering with the target speech signal. Instead, the signal itself is degraded, making it more difficult to extract relevant information.

3.1.2. Degradation with energetic masking

More central to this dissertation is the concept of energetic masking, which refers to the reduction in intelligibility of a target speech signal due to physical overlap (i.e., overlap in the auditory signals) with a distractor (e.g., Brungart, 2001; Mattys et al., 2012). For example, two individuals conversing at a busy reception may find it quite difficult to hear their interlocutor.

Not all energetic maskers are created equally, however. When the masking signal fluctuates (e.g., another speaker), there may be occasional quiet periods, allowing for brief dips

or glimpses into the target speech signal (e.g., Cooke, 2006, Peters et al., 1998). These relatively quieter periods are characterized by a temporarily more favourable signal-to-noise ratio (SNR; i.e., the difference between the signal and the noise, typically in decibels), hereby giving rise to what Bernstein and Grant (2009) dubbed a *fluctuating masker benefit*. This benefit is often conceptualized as a momentary release of energetic masking, which leads to a temporary increase in speech intelligibility (e.g., Cooke, 2006; although see Stone & Moore, 2014 for a slightly different account).

When the masking signal is energetically constant (e.g., steady-state noise), glimpses into the target speech signal are rarer (Mattys et al., 2012). Whether the masking signal is constant or fluctuating, however, the intelligibility of the target speech signal depends on two things: the degree of spectral overlap between speech and noise (e.g., Brungart et al., 2006), and the presence and duration of dips/glimpses into the speech signal (e.g., Cooke, 2006). For this reason, energetic masking is typically considered to occur primarily at the level of peripheral hearing (Durlach et al., 2003; Durlach, 2006).

In some cases, maskers may contain meaningful, intelligible speech (e.g., competing talker). Under such circumstances, the information contained in the competing speech signal may further interfere with the target speech signal, a phenomenon known as *informational masking* (Brungart et al., 2001; Mattys et al., 2012). Perhaps the listener can overhear surrounding conversations, which then interferes with their ability to successfully understand what their interlocutor is saying. Because the impact of the masker is thought to come primarily from the *processing of its contents* rather than its overlap with the target speech signal, informational masking is often considered to operate at the level of the central hearing system (Durlach, 2006). Interestingly, there is evidence to suggest the existence of age-related differences in susceptibility to informational masking. For example, middle-aged adults show speech-in-noise performance comparable to that of younger adults when presented with primarily energetic maskers (e.g., steady-state or fluctuating noise), but their performance more closely resembles that of older adults in the presence of an informational masker (Helfer & Jesse, 2015).

The distinction between energetic (i.e., peripheral) masking and informational (i.e., central) masking is somewhat artificial, however. Indeed, as a subset of energetic masking, informational masking can impact intelligibility both at the periphery and centrally (e.g., Cooke et al., 2008; Mattys et al., 2009). In practice, informational masking depends on the listener's

ability to understand and extract meaning from the masker. As the number of competing talkers in a given babble track increases, the overlap in auditory signals increases. This results in reduced intelligibility, and less informational masking. In other words, the relative balance of informational to energetic masking changes based on the number of interfering speech signals (e.g., Brungart et al., 2006). For example, Van Engen and Bradlow (2007) found that two-talker English babble was more disruptive than two-talker Mandarin Chinese babble to native English speakers during a speech transcription task. Yet, when completing the same task in either a six-talker English babble or six-talker Mandarin Chinese babble, the impact of the maskers was comparable.

The interplay of energetic and informational masking is complex yet plays a crucial role in how listeners manage speech perception in noise. In cases where energetic masking is the primary challenge, the task becomes one of detection: the listener must accurately detect the parts of the speech signal that are not obscured by the energetic masker (Darwin, 2008). On the other hand, informational masking gives rise to the additional challenge of allocation: the listener must disentangle the target signal from the competing signal(s) and correctly attribute each signal to the corresponding source (Darwin, 2008).

From the brief review of energetic and informational masking presented above, one thing is clear: knowledge of the type of masker used is crucial to the interpretation of speech in noise experiments. For this reason, the type of background noise/masker used in studies of interest will be provided where relevant in the following sections. Having established that, I now turn to the challenges posed by speech in noise.

3.2 The Challenges of Speech in Noise

Most individuals have an intuitive understanding that speech perception is more difficult in noisy environments compared to quiet conditions. It is helpful, however, to unpack the reasons that make speech perception in noise more demanding. In other words, what specific challenges does speech perception in noise pose to the listener?

Whether in the form of energetic or informational masking, background noise generally poses three distinct, yet connected challenges. First, the listener must discriminate between the target speech and the competing background noise (Wingfield & Tun, 2007). Second, meaning must be extracted from partial speech information (Mattys et al., 2012). The third challenge naturally follows from the first two: speech in noise often increases perceptual and processing

demands (e.g., Picou et al., 2011, 2016; Wendt et al., 2016), leaving fewer resources for successful comprehension.

3.2.1. The Framework for Understanding of Effortful Listening

The Framework for Understanding of Effortful Listening (FUEL; Pichora-Fuller et al., 2016) provides a useful way of conceptualizing the challenges of speech perception in noise. Although originally developed in the context of hearing impairment, the FUEL can easily be applied to more general speech perception, including speech perception in noise. At its core, the framework builds on Kahneman's (1973) Capacity Model of Attention. As such, it describes a finite pool of cognitive resources (i.e., capacity) which can be allocated to relevant tasks (e.g., speech perception). The FUEL builds upon this conceptualization by highlighting the importance of input-related demands on listening effort. For example, transmission factors (e.g., background noise), listener factors (e.g., sensory acuity), and message factors (e.g., semantic context) all factor into the allocation and depletion of one's available resources during speech perception. More specifically, listening effort varies as a function of input-related demands (e.g., noise, sensory loss) and motivation to engage in speech perception. The latter is thought to depend on the listener's appraisal of the importance of successful speech perception, which is in turn influenced by current levels of arousal and fatigue.

3.2.2. Measuring Listening Effort

The concept of listening effort is central to the FUEL, yet it can be difficult to measure. Over the years, various indices of listening effort have been put forth, with perhaps the simplest measure involving eliciting subjective ratings of effort from the listeners after they completed a speech in noise task (e.g., Krueger et al., 2017; Picou et al., 2017, Rudner et al., 2012). A more objective method of measuring listening effort is the dual-task paradigm (e.g., Broadbent, 1958). The basic idea behind this paradigm lines up quite nicely with the FUEL: given limited resources, performance on a given task begins to suffer as resources are taxed. When completing two tasks (i.e., primary and secondary) simultaneously, high performance can be maintained provided that the attentional and processing resources needed to perform said tasks are less than the sum of resources available (Gagné et al., 2017). Should the demands exceed capacity, however, priority will necessarily be given to one of the two tasks. If the individual is instructed to prioritize the primary task, a decrease in performance in the secondary task will occur (Gagné et al., 2017). This difference in performance can then be compared to the individual's

performance when completing the secondary task in isolation, yielding a dual-task cost. In turn, this cost is used to quantify the added effort from completing the two tasks simultaneously.

While a number of studies have used dual-task paradigms to quantify listening effort (e.g., Anderson-Gosselin & Gagné, 2011; Desjardins, 2016; Helfer et al., 2010; Ng et al., 2015, Sarampalis et al., 2009), the methodology has been criticized as indirect (e.g., McGarrigle et al., 2014). In response to this criticism, psychophysiological measures have been put forth as more direct indices of listening effort, including pupil dilation (Koelwijn et al., 2012; Zekveld et al., 2010, Zekveld et al., 2011), skin conductance (e.g., Mackersie & Cones, 2011), and electroencephalography (e.g., Bernarding et al., 2013; Obleser & Kotz, 2011).

3.2.3. Listening Effort and the Challenges of Speech Perception in Noise

As was previously mentioned, the first challenge of speech perception in noise consists of separating the target speech signal and the background noise. As Wingfield and Tun (2007) put it, this begins with a rather impressive perceptual operation known as source discrimination. In other words, the listener must somehow distinguish between the target speech signal and the distractor. This can be accomplished using acoustic features of the signals (e.g., pitch, vocal characteristics; Wingfield & Tun, 2007). Once the target speech signal has been discriminated from the background noise, however, the listener must determine which signal to attend to. Wingfield and Tun (2007) posited that this is a function of attentional processes (dubbed the attentional filter), which are engaged to determine where to allocate processing resources.

In the language of the FUEL, background noise increases input-related demands, and requires the allocation of limited processing resources (i.e., capacity) to disentangle the target signal from the noise. Consistent with the FUEL, there is evidence that listening effort is related to speech intelligibility in noise (primarily using energetic maskers, e.g., Krueger et al., 2017; Rennies et al., 2014; Zekveld et al., 2010). There is also evidence indicating that informational masking elicits greater listening effort compared to energetic masking alone. For example, Koelewijn and colleagues (2012) had young adults with normal hearing complete a sentence perception task. Crucially, these sentences were presented in either fluctuating noise (i.e., primarily energetic masking) or a single-talker masker producing interfering speech (i.e., informational masking). Overall, they found that listening effort, as measured by pupil dilation, was greater for the interfering speech condition compared to the fluctuating noise condition.

In sum, speech perception in noise poses a series of challenges to the listener, which must

be resolved using a set of limited processing resources. Having reviewed the general challenges brought by background noise in the context of speech perception, I now turn to additional difficulties faced older listeners and non-native listeners.

3.2.4 Age-related Challenges to Speech Perception in Noise

Speech perception is well-known to become difficult with aging (e.g., Helfer & Freyman, 2008; Sommers et al., 2005). This is perhaps unsurprising, given that older adults contend with age-related changes in hearing acuity (e.g., Schneider & Pichora-Fuller, 2000) in addition to the other challenges described in the previous section. Overall, older adults are often less accurate than young adults during speech perception in noise (e.g., Dubno et al., 1984; Helfer & Freyman, 2008; Tun & Wingfield, 1999), or require higher SNRs to show comparable performance (e.g., Pichora-Fuller et al., 1995, Sommers et al., 2005).

While age-related changes in hearing likely contribute to poorer speech perception in noise performance, it is not the only factor at play. Indeed, the relationship between pure-tone thresholds (a measure of hearing acuity) and speech perception in noise is relatively weak in older adults (e.g., Kim et al., 2006). Furthermore, changes in speech perception in noise begin relatively early in the aging process, and likely represent a combination of age-related changes in both auditory processing (central and peripheral) and cognitive processing (Helfer & Jesse, 2021). Indeed, there is evidence to suggest that changes in cognitive abilities contribute to difficulty with speech perception in noise. For example, work by Tun et al. (2002) investigated recall of target speech presented with a competing speaker uttering either meaningful speech or nonmeaningful speech. Older adults were less accurate in repeating the target speech in the presence of meaningful speech (i.e., informational masking) compared to nonmeaningful speech; this was not the case for young adults.

Returning to the principles outlined in the FUEL, older adults' increased sensitivity to informational masking may reflect difficulty with attentional processes. Consistent with this hypothesis, older adults tend recruit more working memory and attention related brain regions during word perception in noise compared to young adults (Wong et al., 2009).

While the above certainly do not constitute an exhaustive list of the additional challenges faced by older adults during speech perception in noise, it is nevertheless clear that perceiving speech in noisy conditions can often be more difficult with increasing age. Next, I turn to another group faced with additional challenges during speech perception in noise: non-native listeners.

3.2.5 Challenges of Non-native Speech Perception in Noise

Around the world, a substantial number of people speak two or more languages (e.g., Eurostat, 2015; Ryan, 2013; Statistics Canada, 2017). Despite this, most models of speech perception, including speech perception in noise, are based on monolinguals.

Non-native listeners are more adversely impacted by background noise compared to native listeners under both energetic masking (e.g., Bradlow & Alexander, 2007; Cooke et al. 2008; Mayo et al., 1997; Schmidtke, 2016; van Hapsburg & Bahng, 2006; van Wijngaarden et al., 2002) and informational masking (e.g., Cooke et al., 2008). One prominent explanation for this increased susceptibility to noise is that non-native listeners have less developed linguistic knowledge compared to native listeners of a given language (Garcia Lecumberri et al., 2010). In turn, this "imperfect" knowledge would lead to more potent masking effects, magnifying the impact of any loss of information. As was described in Chapter 2, auditory word recognition depends in part of the activation (or probability) of lexical competitors based on the incoming speech signal. In the context of non-native speech perception, less developed linguistic knowledge may potentially lead to a list of competitors which does not contain the appropriate target word.

Framing this in the context of the FUEL, listening to speech in a non-native language increases input-related demands due to listener-related factors (i.e., less developed linguistic knowledge). Consistent with this idea, Borghini and Hazan (2018) reported greater pupil dilation (i.e., increased listening effort) for non-native compared to native listeners during sentence perception in multi-talker babble (i.e., primarily energetic masking).

If non-native listeners' increased susceptibility to noise depends in part on less developed language knowledge, one may posit that this susceptibility should lessen with increased experience in the non-native language. This is indeed what several researchers have found: individuals who have learned a second language early typically perform better during speech in noise tasks compared to individuals who learned later in life. For example, Mayo and colleagues (1997) investigated speech perception in noise for Spanish-English bilinguals. Crucially, there were two groups of participants: individuals who had learned English before the age of 6 (i.e., early bilinguals), and individuals who learned English after the age of 14 (i.e., late bilinguals). Participants were presented with English sentences from the Speech Perception in Noise test (Bilger et al. 1984; Kalikow et al., 1977), and asked to repeat sentence terminal words; all

sentences were presented in multi-talker babble (i.e., primarily energetic masking). Using an adaptive noise calibration procedure, the authors found that early bilinguals could tolerate more adverse SNRs compared to late bilinguals, which was taken as evidence that age of acquisition of a non-native language plays a role in one's susceptibility to background noise. Since then, other work has found a similar effect of age of acquisition on susceptibility to noise (e.g., Bradlow & Alexander, 2007; Shi, 2010).

Using stimuli from the SPIN, Schmidtke (2016) analyzed sentence terminal word recognition as a function of word fluency. Participants were English monolinguals and Spanish-English bilinguals; the latter all learned English before the age of eight, but differed in English proficiency as measured by a vocabulary test and a verbal analogies test. Overall, Schmidtke found that monolinguals outperformed bilinguals during the speech perception in noise task. However, this effect was attenuated by proficiency, such that high proficiency was associated with high speech in noise accuracy in both groups. Furthermore, word frequency modulated speech in noise accuracy to a greater extent for low frequency words compared to high frequency words. Based on this, Schmidtke suggested that lower language exposure (e.g., later age of acquisition) may lead to poorer speech in noise performance due in part to word frequency effects.

In addition to less developed linguistic knowledge, non-native listeners may perceive speech sounds differently than native listeners. Several studies have put forth the idea that, when individuals learn a second language, their native language system operates as a "strainer" which accommodates incoming language information to the existing language structures (Sebastian-Gallés et al., 2005). An example of this phenomenon is found in Spanish-Catalan bilinguals who are exposed to the Catalan phonemes /e/ and /ɛ/. While both of these phonemes are naturally occurring in Catalan, /ɛ/ does not exist in Spanish. Furthermore, the Spanish /e/ is midway between the Catalan /e/ and /ɛ/. When Spanish-Catalan bilinguals are asked to discriminate between the Catalan /e/ and /ɛ/, they experience great difficulty and consistently report hearing the Spanish /e/ even when presented with the Catalan /ɛ/ (Bosch et al., 2000). This is even true for Spanish-Catalan bilinguals who acquired their second language very early in life and are considered highly proficient in it.

Yet another example is that of *perceptual repair* (Carlson et al., 2016). Carlson and colleagues noted that Spanish does not contain any native words beginning with a consonant

cluster starting with /s/ (e.g., /sp/, /st/). Rather, words typically have an initial /e/ before the /s/. When confronted with words beginning with /s/ (i.e., typically in words borrowed from other languages such as English), Spanish-English bilinguals report hearing an illusory /e/ before the /s/. Interestingly, this effect was modulated by proficiency in English, such that Spanish-dominant bilinguals reported fewer instances of perceptual repair than Spanish monolinguals, and English-dominant bilinguals reported fewer instances than Spanish-dominant bilinguals (Carlson et al., 2016).

In sum, non-native listeners are particularly affected by background noise. Furthermore, this susceptibility may be related to differences in the processing of speech sounds, as well as less developed linguistic knowledge, and the latter may depend in part on one's degree of experience with the non-native language.

3.2.6. Is Speech Perception in Noise a Hopeless Endeavour?

By now, it is clear that speech perception in noise gives rise to several challenges for the listener. Furthermore, some listeners are particularly vulnerable to the effects of background noise due to individual differences in sensory acuity (e.g., older adults), language knowledge (e.g., non-native listeners), or both (e.g., older adults listening to speech in a non-native language). Despite this, however, most individuals perceive speech successfully every day, suggesting the existence of facilitators which aid speech perception in noise. The next chapter focuses on some of these facilitators, and the mechanisms by which they operate.

Chapter 4: Facilitating Speech Perception in Noise

Over the years, numerous factors facilitating speech perception in noise have been identified, including clear speech (e.g., Payton et al., 1994), and spatial separation of the noise and target speech (e.g., Arbogast et al., 2002). In the context of this dissertation, however, I will focus on two particular facilitators: audiovisual speech and supportive sentence context. While not the only facilitators out there, they have both been the object of substantial scientific inquiry, and they are readily applicable in the context of everyday communication scenarios.

4.1 Audiovisual Speech

Regardless of the presence of background noise, speech perception is often an audiovisual task (Grant and Bernstein, 2019). Indeed, in many communication scenarios (e.g., face-to-face communication, videoconference), both auditory speech cues (i.e., the speech signal) and visual speech cues (e.g., lip movements, facial expressions) are available.

The term "visual speech cues" refers to a variety of different cues, including facial expressions, emotional expressions, and visemes. The latter are of particular interest in the context of this dissertation, and refer to specific movements of the lips, teeth, and tongue necessary to convey phonetic information (Bear & Harvey, 2017). As such, visemes are correlated with phonemes, although the relationship between the two is complex. In some cases, the two provide mostly correlated information (Campbell, 2008). At times, however, visemes offer complementary information which can be used to distinguish between similarly sounding phonemes (e.g., /m/ and /n/; Campbell, 2008). As such, visemes are particularly beneficial when discriminating between phonemes (e.g., MacLeod & Summerfield, 1987; Peelle & Sommers, 2015; Summerfield, 1992). Unless otherwise specified, the term "visual speech cues" refers to the availability of visemes in the context of this dissertation.

There is ample evidence that having access to visual speech cues facilitates speech perception in noise. For example, seminal work by Sumby and Pollack (1954) provided early evidence of the benefits of visual speech cues using a remarkably simple, yet clever design. The authors had speakers read lists of disyllabic English words, with signal-to-noise ratios ranging from 0 dB to -30 dB (energetic masker derived from a gas-tube source). Participants were instructed to identify each word uttered by the speaker using an alphabetical reference list of test items. Crucially, participants completed the task in two different presentation modalities: audiovisual (i.e., looking at the speaker's facial movements as they spoke) and auditory-only

(i.e., turned away from the speaker). Sumby and Pollack (1954) found that the percentage of correctly identified words predictably decreased with increasingly unfavourable SNR. Participants were, however, considerably more accurate in the audiovisual condition compared to the auditory-only.

Following Sumby and Pollack's work, numerous studies have shown that visual speech cues facilitate sentence perception in noise using both energetic maskers (e.g., Sommers et al., 2005; Smayda et al., 2016; Van Engen et al., 2014) and informational maskers (e.g., Van Engen et al., 2014). This phenomenon is often referred to as the *visual enhancement effect*, and the following section provides an overview of the ways in which visual speech cues facilitate speech perception in noise.

4.1.1. AV Speech, Multisensory Integration, and the Principle of Inverse Effectiveness

While the benefit of audiovisual speech is clear, the mechanism by which this enhancement occurs is not as readily apparent. In an attempt to explain this facilitatory effect, modern models of audiovisual speech perception typically account for both bottom-up (i.e., sensory) and top-down (i.e., cognitive) factors which influence the listener's ability to benefit from audiovisual speech (e.g., Grant et al., 1998; Grant & Bernstein, 2019). At its core, audiovisual speech perception is comprised of a series of processes which unfold both sequentially and in parallel.

During audiovisual speech perception, the listener must first extract cues from the auditory and visual streams. These cues range from relatively simple (e.g., phonemes and visemes) to comparatively more complex information such as prosody, words, and facial expressions. Eventually, these cues must be integrated into a coherent representation of the speech signal, although the exact manner in which this integration occurs varies across models of audiovisual speech perception. For example, Grant & Bernstein (1998) suggest auditory and visual speech cues are independently processed, translated into a common representation format (Summerfield, 1987), and subsequently integrated. Other accounts (e.g., Altieri et al., 2011; Tye-Murray et al., 2016) instead suggest that a common representation format is not needed; rather, integration could arise from crosstalk between different brain regions.

While a thorough investigation of the mechanism by which audiovisual integration occurs is beyond the scope of this dissertation, there is nevertheless interesting evidence in favour of the idea of crosstalk between brain regions. For example, work by Calvert and

colleagues (1997) suggests that lip movements presented in the absence of sound lead to activation of the primary auditory cortex, while this is not the case with non-linguistic facial movements. Additional work using magnetoencephalography shows decreased activation of auditory cortex when visual input is available compared to when it is not (e.g., Davis et al., 2008; Jääskeläinen et al. 2004), suggesting a facilitatory effect of visual information on auditory processing. While none of the studies cited above used sentence stimuli, they nevertheless provide evidence for crosstalk between brain regions.

Regardless of the mechanism by which auditory and visual cues are integrated into a coherent message, integration occurs relatively early. Indeed, electrophysiological evidence suggests that modulation of auditory processing during audiovisual speech perception can be seen as early as 40-70 milliseconds after the onset of speech (e.g., Besle et al., 2008, Doesburg et al., 2008; Winneke & Phillips, 2011). Finally, following integration of auditory and visual speech cues, top-down processes (e.g., linguistic knowledge, lexical context, semantic context) may come into play to further facilitate comprehension (Grant & Bernstein, 2019).

The Fuzzy Logic Model of Perception (FLMP; Massaro, 1987) offers additional insight into how different sources of speech information (e.g., auditory speech cues, visual speech cues) are combined during speech perception. According to the FLMP, incoming speech information is compared to *prototypes* of said information held in memory. Each prototype consists of a collection of *features*, each holding the expected value for an ideal exemplar of the prototype. For example, the prototype for the syllable /pa/ would have several features, including the phoneme /pa/ but also the articulatory movements necessary to produce said phoneme. While this simple example is useful to demonstrate the nature of features in the FLMP, prototypes may have many more features (e.g., patterns of formants, lexical and semantic information, duration, etc.). Importantly, prototypes are task-dependant. In the context of speech perception, these prototypes take the form of the perceptual units relevant to the language being spoken. This may include several types of language representations, including syllables and words. Finally, Massaro (1987) posited that the memory representation of a given prototype must be compatible with the sensory representation of said prototype. Reprising the example of the syllable /pa/, the listener must be able to map the information provided by the speech signal to a representation of the syllable /pa/ held in memory; this is thought to be a necessary condition for speech recognition.

The FLMP posits the existence of three operations: feature evaluation, feature integration, and pattern classification. During feature evaluation, the degree of match between the incoming speech information and prototypes held in memory is assessed. This is done for each feature of the incoming speech information and for each prototype. According to Massaro (1987), this evaluation process uses fuzzy truth values (Zadeh, 1965). These values range from 0 (completely false) to 1 (completely true), with a value of 0.5 representing complete ambiguity. Thus, a fuzzy truth value of 0.7 would represent an answer of "more true than false" to the question of whether a given feature in the incoming speech signal matches that of a given prototype. Conversely, a value of 0.3 would provide a "more false than true" answer to the same question. At the end of the feature evaluation process, each feature of the incoming speech information is assigned a set of fuzzy truth values corresponding to the degree of match with the features of the prototypes held in memory; importantly each feature of the incoming speech has one such value for each corresponding feature of each prototype.

The second operation, feature integration, follows directly from feature evaluation. During this step, the fuzzy truth values generated in the first step are combined, yielding an overall measure of match between the incoming speech information and each prototype held in memory. While all features of the incoming speech information contribute to the final model, those features that are less ambiguous have a greater impact on the outcome compared to their more ambiguous counterparts.

The third and final operation is one of pattern classification. In other words, the merit of each prototype (based on the aggregated values yielded by the feature integration step) is weighted relative to the merit of all other prototypes. Early work by Massaro and Cohen (1983) using audiovisual stimuli provides support for the FLMP. The authors used phonemes along a continuum from /ba/ to /da/, paired with videotaped articulations of either /ba/, /da/, or a neutral articulation. During a phoneme decision task, participants' reaction time was slower when the auditory and visual information was incongruent compared to when it is congruent. The authors posited that this longer reaction time reflected the processing time needed to resolve the ambiguity, and further framed this as evidence that each modality (i.e., feature or set of features) is processed independently and integrated further down in the processing stream.

One of the most important contributions of the FLMP is its prediction regarding the relative effects of individual cues: the effect of a given cue is greatest when other cues are at

their most ambiguous (Massaro, 1987). This idea is closely related to the *principle of inverse effectiveness* (Meredith & Stein, 1986; Stein & Standford, 2008), which posits that the benefit afforded by the combination of two sources of sensory information (e.g., auditory and visual speech cues) is inversely related to the quality of the sensory cues. In other words, having access to visual speech cues is likely most helpful when the auditory speech cues are degraded, such as in the presence of background noise. Thus, the FLMP and the inverse effectiveness hypothesis, often make very similar predictions in the context of audiovisual speech perception, although the FLMP is a more general model which can easily encompass more than just sensory cues (e.g., lexical context, sentence context).

Both the FLMP and the inverse effectiveness hypothesis would predict that, the magnitude of the benefit afforded by visual speech cues should theoretically be related to the SNR, with proportionally larger benefits under lower (i.e., less favourable) ratios. Indeed, the FLMP would regard unfavourable SNRs as inherently increasing the ambiguity of auditory speech cues, thus making visual speech cues more beneficial. Similarly, the inverse effectiveness hypothesis would stipulate that visual speech cues should be more beneficial as the quality of the auditory speech cues decreases (i.e., the SNR becomes more unfavourable). However, the evidence is mixed in the context of speech perception in noise. Some studies using word stimuli have found that the magnitude of the AV enhancement generally increases with the level of background noise (e.g., Ross et al., 2007), but may be optimal at intermediate SNRs compared to either high or low SNRs (e.g., Ma et al., 2009; Ross et al., 2007). Other studies have found relatively comparable AV benefit across all SNRs tested (e.g., Sumby & Pollack, 1954). Still using word stimuli, some researchers have found that the magnitude of the AV benefit is maximal at intermediate SNRs compared to either high or low SNRs (e.g., Ma et al., 2009; Ross et al., 2007). While there is limited work at the sentence level, a study by Tye-Murray and colleagues (2010) showed stable AV benefit across various SNRs. Additionally, work by Jesse & Janse (2012) suggests that older adults with greater degrees of hearing loss benefit from audiovisual speech to a greater extent than their counterparts with less severe hearing loss. This is also in line with both the FLMP and the inverse effectiveness hypothesis, as hearing loss effectively decreases the quality of the auditory speech signal that is perceived by the listener, hence making the visual information more beneficial.

While visual speech cues can indeed facilitate speech perception in noise. However, this may come at the cost of greater listening effort. For example, Anderson Gosselin and Gagné (2011) found greater dual-task costs when the primary task featured audiovisual speech compared to auditory-only speech; both were presented in steady-state speech shaped noise (i.e., primarily energetic masking). While AV presentation increased accuracy during the (primary) speech perception in noise task, it was associated with greater listening effort. Using a similar paradigm, Fraser and colleagues (2010) noted that self-reported listening effort was lower for sentences presented in AV compared to A-only conditions, although dual-task costs still suggested greater listening effort in the AV condition. The FUEL provides interesting insight into why AV speech may lead to greater listening effort. While visual speech cues are helpful in disambiguating auditory speech in the presence of background noise, they nevertheless represent an additional category of cues which must be parsed and integrated. In other words, AV speech likely increases input-related demands during speech perception in noise, which in turn necessitates more processing resources.

4.1.2. Aging and AV Speech Perception in Noise

Visual speech cues are undoubtedly helpful when listening to speech in noise. Based on the findings presented thus far, however, it is unclear to what extend older adults are likely to benefit from AV speech. On one hand, age-related changes in hearing acuity may render older adults particularly vulnerable to background noise; in this context, visual speech cues may be especially helpful. On the other hand, the increased listening effort brought on by AV speech may limit the efficacy of visual speech cues in older adults. In other words, it is possible that the added demands of processing and integrating visual speech cues with auditory speech cues may overtax older listeners' resources, thereby reducing the potential benefit of visual speech cues.

First, older adults certainly do benefit from visual speech cues during speech perception in noise using both energetic maskers (e.g., Avivi-Reich et al., 2018; Chauvin et al., 2021; Sommers et al., 2005; Tye-Murray et al., 2016) and informational maskers (e.g., Avivi-Reich et al., 2018). Second, older adults tend to expend more listening effort compared to young adults during sentence perception in noise with both energetic maskers (e.g., Anderson Gosselin & Gagne, 2011; Desjardins & Doherty, 2013; Fraser et al., 2010) and informational maskers (e.g., Desjardins & Doherty, 2013). Perhaps because of increased listening effort, evidence suggests

that the SNR at which the maximal benefit of AV speech is seen tends to shift towards quieter conditions with age (Jansen et al., 2018; using a four-talker babble).

4.1.3 Non-native listeners and AV Speech Perception in Noise

Before reviewing the literature on non-native AV speech perception in noise, it is important to establish a few things. First, despite how beneficial visual speech cues can be in native listeners, surprising little is known about audiovisual speech perception in non-native listeners. Second, when contrasting speech perception between languages (e.g., first language vs. second language), it is crucial to consider the nature of the languages that are compared. As was mentioned in a previous section, for example, non-native listeners have difficulty with non-native sound contrasts which do not appear in their native languages (e.g., Sebastian-Gallés et al., 2005), but are able to resolve them when provided with AV speech cues (e.g., Navarra & Soto-Faraco, 2007). In other words, AV speech cues may be particularly useful to disambiguate unfamiliar speech sounds that do not exist in one's first language, such as when the native and non-native languages are quite different from each other. Another important property to consider is whether a language is tonal. Indeed, tone provides an additional category of cues (e.g., lexical cues, Gao et al. 2019), which may in turn interact with AV speech cues. For these reasons, the languages investigated in the studies presented below (and in other sections) are listed where relevant.

There is some suggestion that non-native listeners rely on visual speech cues more than native listeners during non-native speech perception (Marian, 2009). Far removed from linguistic stimuli, Bidelman and Heath (2019) showed that compared to monolinguals, bilinguals are less susceptible to the double-flash illusion, a phenomenon by which the presentation of multiple sound cues with a single flash leads to the illusion of multiple flashes. The authors found that bilinguals were less susceptible to the double-flash illusion in part due to a narrower AV integration window. Bidelman and Heath (2019) took this as evidence for enhanced multisensory integration in the bilingual brain and suggested that this may be due to the plasticity afforded by speaking multiple languages.

Closer to the kinds of stimuli of interest in the context of this dissertation, Navarra et al. (2010) presented English and Spanish participants with audiovisual recordings of sentences in either their native or non-native language; no noise was used in this study. Crucially, the degree of synchronicity between the visual and auditory streams was manipulated. The authors found

that the visual stream had to precede the auditory stream by a larger interval in the native compared to non-native language. Furthermore, this difference tended to lessen with experience in the non-native language. Taken together, the results reviewed thus far suggest the existence of differences in AV integration between native and non-native listeners.

Studies that investigated AV speech perception in noise using sentence stimuli often compare non-native listeners to a group of native listeners (e.g., Xie et al., 2014; Reetzke et al., 2016). For example, Xie and colleagues presented native listeners and non-native listeners with English sentences spoken by a native English speaker; the non-native listeners all had Korean as a first language. All sentences were presented in pink noise (i.e., energetic masker), in either AV or auditory-only conditions at SNRs ranging from -4 dB to -20 dB). Overall, native and non-native listeners showed similar benefits from AV speech, although the magnitude of the benefit was positively related to self-reported English proficiency in the non-native listeners.

While comparing non-native listeners to native listeners provides interesting insight, it introduces many confounds. As was previously mentioned, non-native listeners tend to perceive speech sounds differently from native listeners (e.g., Catalan and Spanish: Bosch et al., 2000; Navarra et al., 2007). Further complicating things, extensive experience in a non-native language may impact the representation and processing of one's first language (e.g., Cook et al., 2003; Catalan and Spanish: Ramírez & Simonet, 2018). Additionally, monolinguals and bilinguals may differ on a number of uncontrolled variables (e.g., social and cultural experiences). For these reasons, simply comparing non-native listeners to native listeners is insufficient. Rather, a within-subject comparison of native and non-native AV speech perception in noise abilities is a crucial step for the development of a complete model of speech perception in noise. This is a gap that the present dissertation begins to address.

4.2 Supportive Sentence Context

Like AV speech, supportive sentence context can enhance sentence perception in noise. For example, Hutchinson presented young adult participants with sentences from the Speech Perception in Noise test (Bilger et al., 1984; Kalikow et al., 1977) embedded in multi-talker babble (i.e., primarily energetic masking) at a SNR of 0 dB. Crucially, these sentences were equally divided between high predictability (HP, e.g., "The bird of peace is the dove") and low predictability (LP, e.g., "Peter should consider the dove") sentences based on how much the preceding context allowed one to make predictions about the sentence terminal word. In addition

to these HP and LP sentences, Hutchinson used a set of sentences composed of the carrier phrase (CP) "I will now say the word the" followed by a terminal word. The results showed that participants were able to repeat approximately 30% more terminal words for HP sentences compared to either LP or CP sentences. In other words, participants benefited from the presence of supportive semantic context to disambiguate speech in noise. Numerous other studies have found similar benefits from supportive sentence context (e.g., Bradlow & Alexander, 2007; Kalikow et al., 1977; Miller et al., 1951; Miller & Isard, 1963; Pichora-Fuller et al., 1995; Van Engen et al., 2014).

The facilitatory effect of supportive sentence context is thought to work by helping the listener integrate information on-line, and/or generate expectations about upcoming information (Maguiness et al., 2011). As such, the benefit of context is often conceptualized as a top-down effect (e.g., Grant and Bernstein, 2019). However, using fMRI, Davis et al. (2011) showed a hierarchical organization of brain regions during speech perception in noise: peri-auditory regions of the posterior temporal lobe are typically activated before regions more distant from primary auditory cortices (e.g., frontal region). Based on this, Davis and colleagues (2011) posited a purely bottom-up account of speech perception in noise, although they stated that top-down influences could not be fully excluded.

Regardless of the exact mechanism by which supportive sentence context facilitates sentence perception in noise, the question of listening effort remains. In the language of the FUEL, supportive sentence context factors into the input-related demands; while the context is certainly helpful, it constitutes an additional source of information which must be attended to and integrated into a coherent representation of the speech signal (i.e., much like visual speech cues).

There is unfortunately a dearth of work investigating the impact of supportive semantic context on listening effort in the context of sentence perception. Borghini and Hazan (2020) presented plausible sentences (e.g., "The opera theater is full this evening") and grammatically correct anomalous sentences (e.g., "The vegetables open a difficult hat") in eight-talker babble to young adult native English speakers. Participants were instructed to repeat sentences after hearing them; each sentence contained four keywords for scoring purposes. The SNR was calibrated for each participant in order to reach 50% correctly identified keywords on average for each condition (i.e., plausible, anomalous). Results showed that the SNR was lower for plausible sentences compared to anomalous sentences (i.e., context allowed participants to tolerate more

adverse listening conditions). There was, however, no effect of semantic plausibility on pupil dilation, suggesting no difference in listening effort.

One possibility for the lack of difference in listening effort reported by Borghini and Hazan (2020) lies in the methodology. Indeed, equating performance across conditions may blur differences in listening effort which would emerge under a more constant (i.e., naturalistic) SNR. Although not in the context of speech in noise, there is some supporting evidence for this in the work of Winn (2016), who presented sentences from the Revised Speech in Noise (SPIN-R; Bilger et al., 1984) to a group of young adults with normal hearing. Results showed a faster release from listening effort in the form of decreased pupil dilation for high predictability sentences compared to low predictability sentences (Winn, 2016).

Whether supportive semantic context eases or increases listening effort is not entirely clear at this time. On the other hand, there is abundant evidence that supportive semantic context facilitates sentence perception in noise, at least in young native listeners with normal hearing. Next, I turn to potential age differences in the use/benefit of supportive sentence context.

4.2.1. Age differences in the Use of Supportive Sentence Context

As is often the case in the field of speech perception, the literature surrounding age differences in the benefit of supportive sentence context is mixed. Some studies have suggested that older adults benefit from supportive sentence context to a greater extent than young adults. For example, Pichora-Fuller and colleagues (1995) had participants repeat the terminal word of sentences that had either high predictability (HP, e.g., "The bird of peace is the dove") or low predictability (LP, e.g., "Peter should consider the dove"). All sentences were presented in eight-talker babble (i.e., primarily energetic masking). In this paradigm, older adults benefited from supportive sentence context to a greater extent than young adults, as evidenced by a greater increase in accuracy for HP sentences compared to LP sentences. Sommers and Danielson (1999) used a similar paradigm and found comparable results, with older adults showing a greater context benefit compared to young adults.

There are also electrophysiological differences between young adults and older adults when processing sentence context. Indeed, studies presenting sentences word-by-word on a screen typically show smaller and later N400 effects (i.e., often used as an index of semantic processing) for older adults compared to young adults (e.g., Federmeier & Kutas, 2005; Wlotko & Federmeier, 2012; Wlotko, et al., 2012). More recently, Payne and Federmeier (2018) have

investigated context processing during reading and found that older adults may be less able (or likely) to use ongoing contextual information during sentence processing.

On the other hand, there is evidence to suggest that older adults benefit from semantic context to the same extent as young adults. For example, Nittrouer and Boothroyd (1990) presented young and older participants with sentences in speech-shaped noise (i.e., primarily energetic masker) at SNRs of either 0 dB or +3 dB. Crucially, sentences differed in the level of predictability: low predictability (LP), high predictability (HP), or zero predictability (ZP; anomalous sentences). After each sentence, participants were instructed to write down as much of the sentence as they could. Overall, older adults were less accurate than younger adults across conditions but benefited from context to the same extent as young adults.

Work by Dubno and colleagues (2000) suggests that, at equivalent speech audibility, younger and older adults benefit from sentence context to a similar extent. More recently, a study by Buss et al. (2019) investigated age differences in the benefit of context using speech reception thresholds (the signal-to-noise ratio at which a participant can accurately repeat 50% of the words in target sentences). Although older adults had higher thresholds overall, the difference thresholds for low context compared to high context sentences was comparable across age groups.The results presented by Dubno et al. (2000) and Buss et al., (2019) raise an important point: it is possible that differences in context use/benefit emerge due to differences in sensory acuity rather than fundamental differences in the ability to process and benefit from context.

While it remains uncertain whether older adults benefit from supportive sentence context to the same extent as young adults, two things are clear. First, the nature of the experimental design (e.g., the SNR manipulation) is crucial to the interpretation of results. Second, older adults are certainly able to benefit from supportive sentence context to facilitate speech perception in noise. Next, I turn to potential differences in the use of supportive sentence context between native listeners and non-native listeners.

4.2.2. Supportive Sentence Context in Non-Native Listeners

The literature reviewed thus far supports the idea that native listeners benefit from supportive semantic context during sentence perception in noise. Of course, the ability to use sentence context depends in part on one's linguistic knowledge, and this may put non-native listeners at a particular disadvantage. Indeed, there is evidence that bilinguals (i.e., a specific subtype of non-native listeners) have weaker linguistic knowledge compared to native listeners,

including limited vocabulary (e.g., Bialystok et al., 2010) and less efficient phonological processing (e.g., Navarra et al., 2005). Based on these findings, one may posit that non-native listeners are less likely to benefit from supportive sentence context.

Work by Bradlow and Alexander (2007) suggests that non-native listeners can benefit from sentence context, but only in particularly favourable conditions. The authors presented English sentences in speech-shaped noise (i.e., primarily energetic masker) to native and non-native listeners, and instructed them to write down the last word of each sentence; the non-native listeners had a range of first languages, including Tamil, Mandarin, German, Korean, French, Hindi, Italian, Gujarati, Kikuyu, and Telugu. The sentence stimuli were similar to those of the SPIN and provided either low predictability or high predictability. Additionally, participants completed the sentence perception in noise task in either clear speech (i.e., very clear, precise enunciation) or plain/conversational speech. Overall, Bradlow and Alexander (2007) found that non-native listeners benefited from semantic context, but only in the clear speech condition.

In an early study, Mayo and collaborators (1997) investigated differences in speech perception in noise between monolinguals and bilinguals while manipulating semantic context. They presented English stimuli from the SPIN to three groups of participants: English monolinguals, early Spanish-English bilinguals who acquired there second language before the age of six, and late Spanish-English bilinguals who acquired their second language after the age of fourteen. Overall, participants performed better for high predictability sentences compared to low predictability sentences, suggesting that they benefited from semantic information. Additionally, all three groups performed similarly when the sentences were presented in quiet conditions. In noise (multi-talker babble, primarily energetic masking), monolinguals fared better than bilinguals. Furthermore, early bilinguals performed better than late bilinguals. Since early age of acquisition is often associated with higher proficiency, this suggests that second language proficiency is an important factor in determining *how much* one can benefit from semantic information when listening to speech in adverse conditions.

Recent work by Kousaie et al. (2019) is consistent with the idea that the age of acquisition of L2 matters. The authors used stimuli from the SPIN-R presented in multi-talker babble at a SNR of -6 dB, and had participants repeat the last word for each sentence. Participants were simultaneous French-English/English-French bilinguals, early French-English/English-French bilinguals (acquisition of L2 before six), and late French-English/English-French bilinguals

(acquisition of L2 after six and before ten). Overall, simultaneous and early bilinguals benefited from semantic context in their non-native language, while late bilinguals showed no benefit. Based on a similar paradigm (albeit with a SNR of 1 dB), Coulter et al. (2020) used electroencephalography to investigate context use in simultaneous bilinguals, early bilinguals, and late bilinguals. While all three groups benefited from context in their first (L1) and second language (L2), only late bilinguals performed more poorly in their second language compared to their first. In terms of electrophysiological evidence (i.e., the N400 component, an index of semantic semantic or lexico-semantic processing) during speech perception in noise in L2, simultaneous bilinguals showed a posterior scalp distribution similar to that seen in monolingual listeners, while early and late bilinguals showed a more distributed pattern. Interestingly, early bilinguals showed evidence for greater recruitment of anterior brain regions (i.e., stronger negativity at those electrode sites), compared to late bilinguals. The authors suggested that this additional recruitment may explain early bilinguals' comparable performance in L1 and L2.

In summary, there is certainly evidence that non-native listeners *can* benefit from supportive semantic context, although the parameters under which they do so are relatively unclear. While the literature on non-native sentence perception in noise is certainly growing, it is often limited to comparisons between native listeners and non-native listeners performing in their non-native language. Within-subject comparisons are rare (with a few exceptions, including Coulter et al., 2020), and represent a considerable gap in the current understanding of speech perception in noise.

4.2.3. Overview of the Current Project

From the review of the literature presented above, it is clear that speech perception in noise is challenging for most listeners; however, older adults and non-native listeners are at a particular disadvantage.

While there is abundant evidence that visual speech cues and supportive sentence context can facilitate speech perception in noise, most of the evidence to date comes from studies conducted with native listeners. Among those studies that investigated non-native listeners' ability to benefit from visual speech cues and sentence context, few used a within-subject design. For this reason, our current understanding of the extend to which young and older non-native listeners benefit from visual speech cues and sentence context in their non-native language *compared* to their native language is lacking. The studies presented in this dissertation begin to

address this gap, by investigating sentence perception in noise in both young and older English-French/French-English bilinguals (i.e., a specific type of non-native listeners).

To this end, I used English and French sentences presented in multi-talker babble (i.e., primarily energetic masking) under three modalities (visual, auditory, and audiovisual) and two levels of context (low context and moderate context). The goal of the first manuscript was to examine to what extent young adult bilinguals benefit from AV speech cues and supportive sentence context in L1 and L2 during sentence perception in noise. Crucially, SNRs were individually calibrated so as to equate performance across participants for L1 auditory-only sentences with low levels of context, and hopefully ensuring similar listening effort at baseline. I also examined individual differences in aspects of one's bilingual experience (e.g., age of acquisition of the L2, percentage of daily use) in relation to L2 performance during sentence perception in noise. The goal of the second manuscript was to expand on the methodology used in the first manuscript to investigate potential age differences in sentence perception in noise in L1 and L2.

Finally, the goal of the third manuscript was to investigate whether there were differences in gaze behaviour (i.e., time spent looking at the speaker's mouth) as a function of language, context, or age. Additionally, I examined whether individual differences in gaze behaviour predicted the extent to which one benefits from AV speech and/or supportive sentence context. The following three manuscripts provide detailed descriptions of these studies.

Chapter 5: Manuscript 1:

Bilinguals Show Proportionally Greater Benefit from Visual Speech Cues and Sentence Context in their Second Compared to their First Language

Submitted to *Ear and Hearing*

Alexandre Chauvin[1, 2] and Natalie A. Phillips[1, 2,]

[1]Department of Psychology/Centre for Research in Human Development, Concordia University, Montreal, QC, Canada

[2]Centre for Research on Brain, Language and Music, McGill University, Montreal, QC, Canada

Correspondence concerning this article should be addressed to Natalie A. Phillips, Department of Psychology, 7141 Sherbrooke Street West, Montreal, Quebec, Canada, H4B 1R6. Email: Natalie.Phillips@concordia.ca

5.1 Abstract

Objectives

Speech perception in noise is challenging, but evidence suggests that it may be facilitated by visual speech cues (e.g., lip movements) and supportive sentence context in native speakers. Comparatively few studies have investigated speech perception in noise in bilinguals, and little is known about the impact of visual speech cues and supportive sentence context in a first language compared to a second language within the same individual. The current study addresses this gap by directly investigating the extent to which bilinguals benefit from visual speech cues and supportive sentence context under similarly noisy conditions in their first and second language.

Design

Thirty young adult English-French/French-English bilinguals were recruited from the undergraduate psychology program at Concordia University and from the Montreal community. They completed a speech perception in noise task during which they were presented with video-recorded sentences and instructed to repeat the last word of each sentence out loud. Sentences were presented in three different modalities: visual-only, auditory-only, and audiovisual. Additionally, sentences had one of two levels of context: moderate (i.e., "In the woods, the hiker saw a bear.") and low ("I had not thought about that bear."). Each participant completed this task in both their first and second language; crucially, the level of background noise was calibrated individually for each participant and was the same throughout the first language and second language (L2) portions of the experimental task.

Results

Overall, speech perception in noise was more accurate in bilinguals' first language compared to the second. However, participants benefited from visual speech cues and supportive sentence context to a proportionally greater extent in their second language compared to their first. At the individual level, performance during the speech perception in noise task was related to aspects of bilinguals' experience in their second language (i.e., age of acquisition, relative balance between the first and the second language).

Conclusions

Bilinguals benefit from visual speech cues and sentence context in their second language during speech in noise and do so to a greater extent than in their first language given the same level of background noise. Together, this indicates that L2 speech perception can be

conceptualized within an inverse effectiveness hypothesis framework with a complex interplay of sensory factors (i.e., the quality of the auditory speech signal and visual speech cues) and linguistic factors (i.e., presence or absence of supportive context, L2 experience of the listener).

Bilinguals Show Proportionally Greater Benefit from Visual Speech Cues and Sentence Context in their Second Compared to their First Language

Speech perception is a complex process that is often taken for granted. From the initial reception of speech stimuli to the comprehension of the intended message, a multitude of steps must unfold in quick succession. In turn, this affords many opportunities for things to go awry. At times, this is due to characteristics of the speaker (e.g., mispronunciation, heavily accented speech; Mattys et al., 2012). In other instances, this stems from characteristics of the listener (e.g., second-language speech perception, hearing loss; Garcia Lecumberri et al, 2010; Mattys et al. 2012) or properties of the environment (e.g., presence of background noise; Mattys et al. 2012). Additionally, these factors can co-occur, posing an even greater challenge to speech perception. For example, given a specific level of background noise, non-native listeners require a louder speech signal than monolinguals to achieve the same level of accuracy during speech perception (e.g., van Wijngaarden et al., 2002). To date, the majority of studies investigating speech perception in noise have been in native listeners[1] and comparatively little is known about the factors that facilitate bilingual speech in noise.

5.2 Facilitating speech perception in noise

Speech perception in noise poses several challenges to the listener. For example, listeners must disentangle the speech signal from the background noise (Wingfield & Tun, 2007) and extract meaning from a partial speech signal (Darwin, 2008). Despite these challenges, most individuals perceive speech successfully on a daily basis, suggesting the existence of facilitators. One example is the presence of visual speech cues (e.g., lip movements, facial expressions), which provide complementary information that can aid speech perception and comprehension. Indeed, congruent auditory and visual speech cues (i.e., audiovisual speech) are known to facilitate speech perception (e.g., Ross et al., 2007; Sumby & Pollack, 1954).

Previous work on multisensory integration has established the principle of *inverse effectiveness* (Meredith & Stein, 1986; Stein & Stanford, 2008), which stipulates that the enhancement provided by multisensory integration (e.g., the combination of auditory and visual speech cues) should be inversely related to the quality of the cues that are combined. In other

---

[1] While many studies of native speech perception refer to monolingual samples, other studies do not make mention of whether participants know more than one language. Here, we use the term native listeners to include both monolinguals and individuals who know more than one language but listened to speech in what is considered their first (or native) language.

words, visual speech cues should be most beneficial when the quality of the auditory speech signal is degraded (e.g., in the presence of background noise) and comparatively much less beneficial under quiet conditions.

Consistent with the inverse effectiveness hypothesis, several studies have indicated that the availability of visual speech cues bolsters speech perception in noise (e.g., Bernstein et al., 2004; Ross et al., 2007; Smayda et al., 2016; Sommers et al., 2005; Sumby & Pollack, 1954; Tye-Murray et al., 2008). Results from these studies indicate that the combination of visual and auditory speech cues is synergistic; audiovisual performance is typically more than the simple "sum" of visual-only and auditory-only speech perception (Grant & Bernstein, 2019; Winneke & Phillips, 2011). Furthermore, the benefit of visual speech cues is smaller under quiet compared to noisy conditions (e.g., Crosse et al., 2016), and generally tends to increase with the level of background noise (e.g., Ross et al., 2007; Stevenson et al., 2015).

In addition to visual speech cues, supportive sentence context can also play a facilitatory role during speech perception in noise (e.g., Bradlow & Alexander, 2007; Hutchinson, 1989; Van Engen et al., 2014). Indeed, supportive sentence context allows the listener to generate expectations about upcoming information, or to integrate on-line information during speech perception (Maguinness et al., 2011).

Of course, visual speech cues and sentence context do not work in isolation; they can often provide complementary information. The combination of visual speech cues and sentence context is likely to be most beneficial when neither facilitator provides sufficient information to identify a target word or utterance with quasi-certainty. Thus, supportive sentence context is likely to be most helpful during speech perception in noise compared to speech perception in quiet. Furthermore, when supportive sentence context is available, visual speech cues are likely to be most helpful if the context allows for a few possible target utterances rather than only one. This can be construed as a special application of the inverse effectiveness hypothesis, one which takes into consideration both sensory and linguistic characteristics of the speech signal.

5.3 Bilingual speech perception in noise

Much of the literature on speech perception in noise and the factors that facilitate it has focused on native listeners; comparatively few studies have investigated speech perception in noise in bilinguals. Nevertheless, studies that have compared native listeners to non-native listeners typically found that the latter are more susceptible to background noise, especially if

they learned their second language relatively late (e.g., Mayo et al., 1997; Schmidtke, 2016). This may be due in part to less developed knowledge of the phonological, lexical, grammatical, and semantic aspects of the non-native language (Garcia Lecumberri et al., 2010; Mattys et al., 2012). This "imperfect" knowledge of the non-native language introduces an additional source of noise, albeit one that is intrinsic to the listener rather than to the listening environment.

There is behavioural (Bosch et al., 2000; Díaz et al., 2012; Mora & Nadeu, 2012; Sebastián-Gallés et al., 2005) and electrophysiological (Diaz et al., 2008) evidence to suggest that, under certain circumstances, bilinguals have difficulty perceiving non-native sound contrasts (e.g., the Catalan /e/ and /ɛ/ for native Spanish speakers, or the English /l/ and /r/ for native Japanese speakers). Additionally, this difficulty appears to have downstream effects on higher-order linguistic processes such as phoneme identification and lexical decision in both early and late bilinguals (e.g., Díaz et al., 2012; Sebastián-Gallés & Baus, 2005; Sebastián-Gallés et al., 2005). Overall, bilinguals may be at a greater disadvantage than monolinguals when perceiving speech in noise in their second language (L2), and the magnitude of this challenge likely depends on a complex interplay of variables related to their own bilingual experience (e.g., age of acquisition, daily L2 use, perceived L2 ability, etc.).

There is also evidence to suggest that extensive L2 experience in turn impacts first language (L1) representations and processing (e.g., Cook, 1995, 2003; Cook et al., 2003; Mora & Nadeu, 2012; Murphy & Pine, 2003; Ramírez & Simonet, 2018). This evidence is in line with the multi-competence model, which stipulates in part that individuals who know more than one language are both qualitatively and quantitatively different from monolinguals (Cook, 1995). Among other findings, there is evidence that L2 language experience affects the representation of L1 sound contrasts (e.g., Mora & Nadeu, 2012; Ramírez & Simonet, 2018) and L1 syntactic processing (Cook et al., 2003). Based on the multi-competence model and the findings presented above, merely comparing bilinguals' L2 speech perception abilities to that of native speakers of the same language is a false equivalency. Instead, a within-subject comparison of L1 and L2 speech perception abilities would likely yield more meaningful and actionable results.

It has been suggested that bilinguals may rely on visual speech cues to a greater extent than monolinguals to manage the increased "noise" (i.e., ambiguity) inherent to L2 speech perception (Marian, 2009). There is evidence that audiovisual speech presentation enhances the

perception of challenging L2 sound contrasts (Navarra & Soto-Faraco, 2007). However, little is known about L2 audiovisual speech perception in noise, especially using sentence stimuli.

Similarly, the potential benefits afforded by supportive sentence context during L2 speech perception in noise are understudied. Some evidence suggests that non-native listeners benefit from sentence context, but less efficiently than native listeners (e.g., Shi, 2014) or under particularly favourable conditions (e.g., clear speech, Bradlow & Alexander, 2007). Other work indicates that bilinguals benefit from context to a lesser extent that monolinguals, even when they perform similarly under semantically impoverished conditions in adults (Skoe & Karayanidi, 2019) and in children (Reetzke et al., 2016). Early work by Mayo et al. (1997) suggests that factors such as age of acquisition of L2 may play a role in one's ability to benefit from sentence context, with early bilinguals benefiting from context more than bilinguals who learned their second language after the age of 14 (Mayo et al., 1997). More recent work (e.g., Kousaie et al., 2019; Shi, 2010) further suggests that L2 experience is an important factor to consider. For example, Kousaie et al. (2019) reported that simultaneous bilinguals and early bilinguals both benefit from sentence context during L2 speech perception in noise, while late bilinguals did not. Work from our own laboratory (Coulter et al., 2020) examining the effect of sentence context on the identification of terminal words of sentences suggests that bilinguals benefit equally from sentence context in L1 and L2 despite lower overall performance in the latter.

5.4 Current Study

Overall, several aspects of bilingual speech perception in noise remain understudied. Indeed, while several studies have investigated bilingual speech perception in noise, these often use simple syllable and word stimuli (e.g., Burfin et al., 2014; Cutler et al., 2005, 2008; Garcia Lecumberri & Cooke, 2006; Rogers et al., 2006). Of the studies that used sentences, most compare non-native listeners to native listeners (e.g., Bradlow & Alexander, 2007; Lucks Mendel & Widner, 2016; Tabri et al., 2010; von Hapsburg et al., 2004). Finally, virtually no studies have examined the impact visual speech cues and sentence context during audiovisual speech perception in L1 and L2 within the same individuals.

This study begins to address these gaps by providing an in-depth examination of speech perception in noise in bilinguals' L1 and L2 and by investigating the influence of visual speech

cues and supportive sentence context. Furthermore, we consider the influence of individual differences in the bilingual experience (e.g., age of acquisition of L2) on L2 speech perception.

We used English and French sentences presented under three different modalities (i.e., visual-only, auditory-only, and audiovisual) and two levels of sentence context: low context and moderate context (i.e., supportive). All sentences were presented in multi-talker babble. Participants were all English-French or French-English bilinguals and completed the sentence perception task in L1 and L2. We posit that speech perception in noise will be more accurate when visual speech cues and sentence context are available. Furthermore, we expect the benefit of visual speech cues to be proportionally greater when sentence context is not available. Conversely, we hypothesize that sentence context will be most beneficial when visual speech cues are not available. Finally, while we expect overall better speech perception in noise in L1 compared to L2, we hypothesize that the benefit from visual speech cues and sentence context will be proportionally larger in L2 (i.e., as would be predicted by the inverse effectiveness hypothesis).

5.5 Materials and Methods

30 young adults between the ages of 19 and 34 were recruited for this study. All participants were in self-reported good health, free of any neurological disorders, had age-normative hearing, and had normal or corrected-to-normal vision. In addition, all participants were either English-French (n = 20) or French-English (n = 10) bilinguals with no functional knowledge of any other languages. Prior to testing, each potential participant completed a health history questionnaire over the phone to ensure eligibility based on the aforementioned criteria.

All participants were residents of the greater Montreal area at the time of testing. Table 1 summarizes participants' demographic and language characteristics. English-French and French-English participants were comparable in terms of age, education, hearing acuity, age of acquisition of the second language, percentage of time spent using L1 vs. L2, and most aspects of self-rated L1 and L2 proficiency. However, differences emerged in terms of self-reported writing ability in L2, with English-French bilinguals rating their L2 writing lower than French-English bilinguals. This pattern is not unexpected given the complexities of French grammar. Therefore, we grouped all participants together for further analyses.

Table 1

Demographic and language characteristics of the English-French and French-English participants

	L1 English / L2 French (n = 20)			L1 French / L2 English (n = 10)		
	M	*SD* (%)	Range	*M*	*SD* (%)	Range
Age (years)	23.30	4.19	19.00 – 34.00	21.70	2.87	19.00 – 27.00
Gender (males)	-	25%		-	0%	
Education (years)	14.65	1.27	13.00 – 17.00	14.30	1.64	11.00 16.00
Pure-Tone Average (dB)	8.11	3.37	3.00 – 15.00	7.88	4.15	0.00 – 11.50
Signal-to-Noise ratio (dB)*	-10.40	2.87	-14.00 – -6.00	-13.00	1.70	-16.00 – -10.00
L2 Age of Acquisition (years)	4.70	3.59	0.00 – 9.00	2.85	3.13	0.00 – 12.00
L2 % Spoken/Used	27.74	12.99	5.00 – 50.00	36.50	15.47	20.00 – 60.00
L2 Self- Reported Proficiency						
Listening (/5)	4.40	0.68	3.00 – 5.00	4.50	0.71	3.00 – 5.00
Speaking (/5)	3.90	0.85	2.00 – 5.00	4.10	0.74	3.00 – 5.00
Reading (/5)	4.20	0.83	2.00 – 5.00	4.50	0.53	4.00 – 5.00
Writing (/5) *	3.20	1.24	0.00 – 5.00	4.30	0.82	3.00 – 5.00

* $p < .05$

Most participants were undergraduate students at Concordia University, while the rest were recruited from the community. Participants were tested twice, approximately one week apart. Each testing session lasted approximately two hours, and participants were compensated with course credit or at a rate of $12/hr of participation. This project received approval from the Research and Ethics Advisory Committee at Concordia University.

5.5.1 Development of the Bilingual Speech Perception in Noise Task

The sentences used in this study were carefully developed using a set of stringent criteria (see Appendix A1 for a thorough description of the creation and validation process). First, all sentences (English and French) consisted of two parts: a carrier sentence stem and a terminal word. The stems ranged from 4 to 9 words ($M = 6.13$; $SD = 1.27$), and were carefully selected so as to provide either low levels of context (LC; e.g., "I had not considered the […]") or moderate levels of context (MC; e.g., "In the woods, the hiker saw a […]"). For each MC stem, three probable target words were generated (e.g., "In the woods, the hiker saw a bear/deer/wolf"). From this triplet of MC sentences, a corresponding triplet of LC sentences was created by simply replacing the stem (see Table, Appendix A2 for an example of the stimuli used in this study). In total, a total of 150 MC and 150 LC triplets were created for each language, for a total of 1,800 sentences. These triplets were then assigned to six different lists, with each list using a given terminal word only once. Each participant was presented with one list, for a total of 300 sentences (150 English, 150 French); importantly, participants were only exposed to a given terminal word once.

All terminal words began with a consonant and an effort was made to ensure that they consisted of only one syllable. A compromise had to be made for French terminal words, given that many monosyllabic French words have a much lower frequency compared to their English counterpart. For example, a cursory analysis of French monosyllabic words beginning with a consonant in the Lexique 3.82 database (New et al., 2004) reveals an average frequency per million of 55.46 ($SD = 638.11$). In contrast, monosyllabic English words beginning with a consonant in the SUBTLEX database (Brysbaert & New, 2009) have an average frequency per million of 119.76 ($SD = 1053.70$). In order to avoid biasing the French sentences towards extremely low frequency words, we allowed the French terminal words to be comprised of either one or two syllables (40% monosyllabic, 60% disyllabic; all English words were monosyllabic). Despite this, however, French terminal words had significantly lower word frequency across all

lists (see Table, Appendix A3). However, this was circumscribed to a main effect of language: while the frequency of French terminal words was significantly lower than that of English terminal words across all conditions, there were no differences between the lists or between conditions.

Recording the sentences. All 1,800 sentences were video-recorded by a proficient French-English bilingual woman in her early twenties who acquired both of her languages from birth. She was instructed to speak each sentence in a neutral, yet natural (i.e., conversational) manner, to keep a neutral face (i.e., without emotion), and to avoid blinks while recording a sentence. These recordings took place in a sound attenuated room.

For each video file, the audio was processed using Adobe Audition. First, the sound levels were normalized using Adobe Audition, with a level of -3 dB relative to full scale. Then, a two-step noise reduction procedure was used to reduce background noise picked up during the recording. Video recordings were color-corrected and centered using Adobe Premiere. Additionally, 1-second still frames of the speaker's face were added to the beginning and end of each video.

Once the video files were processed, they were separated into lists prior to data collection. Each list consisted of 150 English sentences, and 150 French sentences. Within each list, and for each language, half of the sentences (75) were LC while the other half were MC. Within each language, the sentences were divided into 6 blocks of 25 trials. Of these, 2 were presented in a visual-only modality (V), 2 in an auditory-only modality (A), and 2 in an audiovisual modality (AV). The AV modality consisted of the processed video recording for a given sentence, along with the processed audio signal. In the A modality, participants had access to the auditory signal produced by the bilingual speaker; however, a still frame of the speaker's face was presented in lieu of the video file. Finally, the V modality consisted of the processed video file with muted audio. While sentences were blocked by language and modality, level of context was intermixed within blocks. This yielded a total of 18 unique presentation lists (6 lists X 3 modality presentation orders), each with 150 French sentences and 150 English sentences.

At the start of each trial, participants were presented with a black screen with a fixation cross and a prompt to get ready ("Ready?" or "Prêt ?") for a total of 2000 milliseconds. Following this, the participants were presented with a still frame of the speaker's face for 1 second, after which the trial began. At the end of the trial, another 1-second still frame of the

speaker's face was presented, followed by a black screen with a response prompt which lasted 2 seconds ("Response" in English, "Réponse" in French). For each trial, participants were instructed to repeat the last word of the sentence spoken by the bilingual speaker. All trials were completed in the presence of multi-talker babble adapted from Bilger et al. (1984). The original babble (eight English talkers, low-pass filtered at 7500 Hz) was overlaid and temporally jittered three times in order to create a babble mask that was less variable in its intensity fluctuations. Pilot testing showed that the low-pass filtering and overlay of babble made it difficult to determine the language. Furthermore, an acoustic analysis of the babble suggested that it primarily provided energetic masking without intelligible content.

5.5.2 Procedure

In the first session, participants' hearing was screened using an audiometer (Welch Allyn AM 232) to determine the pure-tone air conduction thresholds at 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz for each ear. Participants were considered to have normal hearing if their threshold was 25 dB or lower, with no between-ear asymmetry of more than 10 dB. Participants also completed an extensive battery of cognitive and neuropsychological tests; these data were collected for purposes of comparison between young adults and older adults in a subsequent study.

On the day of the second session, participants were asked if they had any questions about the previous session or what they were about to do. They were then led to a sound-attenuated room where they sat in a comfortable chair in front of a computer screen located approximately 33 inches from the participant, with two speakers located on either side of the screen. Stimuli were presented free field through the computer screen and speakers.

Prior to the bilingual speech in noise task, a noise calibration procedure was conducted for each participant. The goal of this calibration was to equalize the perceptual load across participants. The noise (8-talker babble) was presented at ~ 70 dB SPL throughout the task. Therefore, variations in signal-to-noise ratio (SNR) came from manipulating the volume of the target speech signal. For all participants, the initial SNR was -10 dB SPL (i.e., target speech presented at ~ 60 dB SPL, noise presented at ~ 70 dB SPL). The calibration was done in the participants' first language using low context sentences, with the goal of finding the SNR at which approximately 60% of sentence terminal words were correctly repeated. Participants were presented with a pseudorandom list of auditory-only LC sentences different from those used

during the main experiment and were asked to repeat the last word of each sentence spoken by the bilingual speaker. This procedure was done in blocks of 10 trials, after which the current SNR was evaluated. If the participant's performance was below 60%, the SNR was adjusted by + 2 dB. Conversely, the SNR was adjusted by -2 dB if the participant's performance was above 60%; this procedure continued until the desired level was reached. The final SNRs used in this study ranged from -6 dB to -16 dB. The average SNR was slightly lower (i.e., less favourable) for French-English bilinguals compared to English-French bilinguals. Although this may be driven in part by the smaller number of French-English bilinguals, another possibility is that this is due to who these participants are. Indeed, all were L1 French speakers who were very proficient in English and chose to complete an undergraduate degree in an English university.

The first language (L1 vs. L2) in which participants completed the speech perception task was counterbalanced. For each trial, the experimenter noted whether the participant produced the correct answer (coded as 0 or 1). In case of errors, the experimenter also recorded the answer produced by the participant.

Overall, English-French and French-English participants performed similarly across the various experimental conditions, with one exception (see Table 2). French-English participants were slightly more accurate when identifying terminal words for sentences presented in L2 AV MC. Despite this, English-French and French-English bilinguals were comparable on the crucial baseline condition (L1 A LC) and, indeed, in all other conditions. Therefore, we collapsed the groups for analysis.

5.6 Results

Participants' accuracy in identifying sentence terminal words was analyzed with a series of linear mixed models using the *lme4* package (Bates et al., 2015) for R 4.0 (R Core Team, 2020). The specification of each model is reported below, along with unstandardized coefficients, standard errors, standardized coefficients, t-values, and p-values.

5.6.1 Average accuracy in identifying terminal words

A linear mixed model with three fixed effects was used: language (L1 vs. L2; reference = L1), modality (V, A, AV; reference = A), and context (LC vs. MC; reference = LC). Additionally, a random intercept was included for each participant:

$$Accuracy \sim Language * Modality * Context + (1|Participant)$$

Table 2

Percentage of sentence terminal words identified by English-French and French-English bilinguals respectively

Language	Modality	Context	L1 English / L2 French (n = 20)			L1 French / L2 English (n = 10)			t	df
			M	*SD*	Range	*M*	*SD*	Range	t	df
L1	Visual	Low	11.20	5.29	0.00 – 20.00	14.40	11.81	0.00 – 36.00	1.04	28
		Moderate	12.40	10.93	0.00 – 36.00	20.40	11.23	4.00 – 40.00	1.87	28
	Auditory	Low	47.20	9.14	32.00 – 68.00	54.80	14.85	36.00 – 80.00	1.74	28
		Moderate	73.60	11.85	56.00 – 92.00	68.00	7.75	56.00 – 80.00	-1.35	28
	Audiovisual	Low	76.20	12.28	36.00 – 92.00	82.40	10.36	60.00 – 100.00	1.37	28
		Moderate	90.40	8.04	72.00 – 100.00	91.20	7.01	80.00 – 100.00	0.27	28
L2	Visual	Low	7.60	7.10	0.00 – 24.00	12.00	7.06	4.00 – 24.00	1.60	28
		Moderate	8.80	13.34	0.00 – 56.00	16.40	13.13	4.00 – 40.00	1.48	28
	Auditory	Low	34.60	16.84	8.00 – 68.00	42.40	24.24	12.00 – 76.00	1.03	28
		Moderate	48.00	11.82	28.00 – 68.00	57.20	13.21	48.00 – 88.00	1.93	28
	Audiovisual	Low	62.40	15.16	40.00 – 100.00	70.40	13.75	36.00 – 84.00	1.40	28
		Moderate	74.40	13.26	40.00 – 92.00	88.40	8.73	68.00 – 96.00	3.01*	28

* $p < .05$

Table 3 and Figure 1 provide an overview of the results. The model intercept represents the predicted accuracy in identifying terminal words for the baseline condition (L1 A LC sentences) and was approximately 49.73%. All effects presented below are in direct contrast with the intercept, keeping factors not currently at play at their respective reference level. For example, the main effect of language directly investigates differences between auditory-only, low context sentences presented in L1 and L2, respectively.

There was a simple effect of language, whereby the predicted accuracy for auditory-only low context sentences was approximately 13% lower in L2 compared to L1. There was also a simple effect of modality: for low context sentences presented in L1, accuracy was approximately 30% higher for audiovisual sentences compared to auditory-only sentences, which were in turn 37% more accurate than visual-only sentences. Finally, there was a simple effect of context, such that for auditory-only sentences presented in L1, the predicted accuracy was approximately 22% higher for moderate context sentences compared to low context sentences.

There was an interaction of language and modality. The difference in accuracy between auditory-only and visual-only sentences with low levels of context was approximately 9% lower in L2 compared to L1. This interaction was primarily driven by lower accuracy for auditory-only, low context sentences presented in L2 compared to L1 (i.e., the main effect of language described above), as visual-only performance was comparable between the two languages. On the other hand, the difference in accuracy between auditory-only and audiovisual sentences with low levels of context was comparable in L1 and L2.

There was an interaction of language and context, by which the difference in accuracy between auditory-only low context sentences and auditory-only moderate context sentences was approximately 8% larger in L1 compared to L2. There was also an interaction of modality and context. As can be seen in Figure 2, the benefit of context in L1 was largest in the auditory-only modality (~22%), smaller in the audiovisual modality (~11%), and smallest in the visual-only modality (~3%). Finally, there was a three-way interaction of language, modality, and context which is primarily driven by a smaller difference in accuracy between auditory-only and audiovisual sentences with moderate levels of context in L1 compared to L2 (see Figure 1).

Because there were differences in the mean word frequency for French and English terminal words, we also ran a model including participants' L1 as a random intercept (see Table, Appendix A4). The goal was to see whether French-English and English-French bilinguals

Table 3

Results from the model predicting participants' accuracy when identifying sentence terminal words

	Estimates	*SE*	95% CI	*β*	*t*
Fixed Effects					
Intercept[a]	49.73***	2.23	45.34 – 54.12	0.07	22.34
Language	-12.53***	2.73	-17.91 – -7.16	-0.40	-4.59
Modality (V vs. A)	-37.47***	2.73	-42.84 – -32.09	-1.20	-13.71
Modality (AV vs. A)	29.67***	2.76	24.24 – 35.09	0.95	10.76
Context	22.00***	2.73	16.62 – 27.38	0.70	8.05
Language X Modality (V vs. A)	9.33*	3.86	1.73 – 16.94	0.30	2.41
Language X Modality (AV vs. A)	-1.80	3.88	-9.44 – 5.84	-0.06	-0.46
Language X Context	-8.13*	3.86	-15.74 – -0.53	-0.26	-2.10
Modality (V vs. A) X Context	-19.20***	3.86	-26.80 – -11.60	-0.61	-4.97
Modality (AV vs. A) X Context	-10.73**	3.88	-18.37 – -3.09	-0.34	-2.76
Language X Modality (V vs. A) X Context	7.60	5.47	-3.15 – 18.35	0.24	1.39
Language X Modality (AV vs. A) X Context	10.87*	5.48	0.09 – 21.64	5.48	1.98

	Variance	
Random Effects	Intercept	Slope
Participant	36.63	N/A
Residual	112.02	N/A

Note. Marginal R^2 = 0.85, Conditional R^2 = 0.89

[a] The intercept corresponds to the predicted accuracy for first language, auditory-only (A), low context sentences.

* $p < .05$ ** $p < .01$ *** $p < .001$

Figure 1

Accuracy in identifying terminal words of sentences across languages, modalities, and context levels
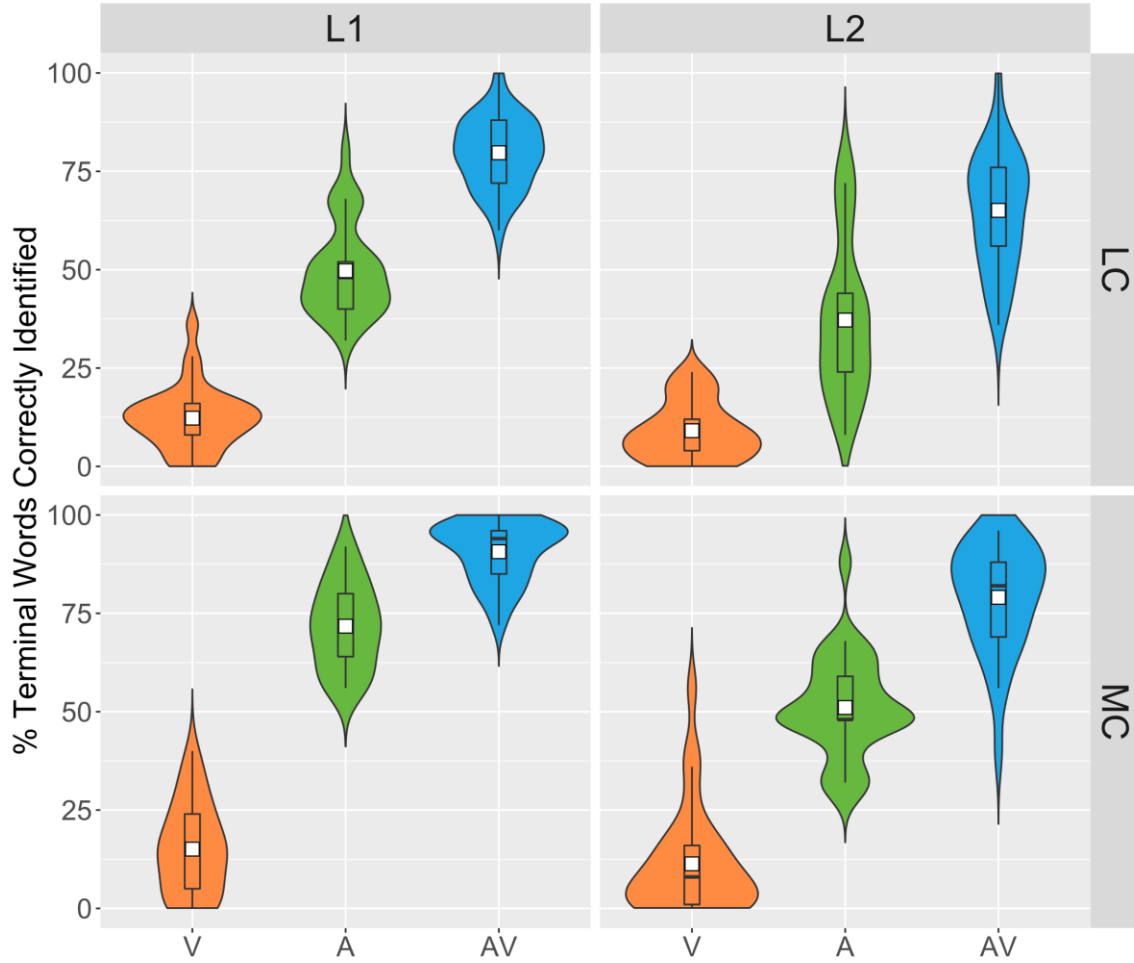
Note. L1 refers to the first language, L2 refers to the second language. V refers to the visual condition, A refers to the auditory condition, AV refers to the audiovisual condition. LC refers to low context and MC to moderate context. Square boxes represent the mean, solid horizontal lines represent the median, vertical rectangular boxes and whiskers represent interquartile range, and the violin represents the density of data points at any given value of the y-axis.

performed differently in L2 due to differences in the psycholinguistic properties of the stimuli. However, this new model was comparable to the one presented above, indicating that participants' L1 was not a significant source of variation in performance given the stimuli used in this study; thus, English-French and French-English participants can be collapsed together.

5.6.2 Visual enhancement in sentences

In addition to raw accuracy, the benefits from visual speech cues and sentence context were investigated through a measure known as the visual enhancement (VE). This refers to the improvement in speech perception when comparing audiovisual speech to auditory-only speech. VE was computed for each participant using the following equation:

$$VE = \frac{Accuracy_{AV} - Accuracy_A}{Accuracy_A}$$

VE is a measure of the difference in accuracy between AV and A expressed as a proportion of one's performance in the A-only modality. As such, VE can be interpreted as a *relative enhancement* measure, one that is closely linked to baseline performance in the auditory modality.

We investigated participants' visual enhancement using a model with two fixed factors: language (L1 vs. L2; reference = L1) and context (LC vs. MC; reference = LC). A random intercept was also added for each participant:

$$VE \sim Language * Context + (1|Participant)$$

Table 4 and Figure 2 provide an overview of the results; in particular, Figure 2 shows the wide range of visual enhancement for low context sentences presented in L2, which mirrors the range of performance on auditory-only, low context sentences presented in L2. The model intercept was 0.63, suggesting that the predicted difference in accuracy between LC auditory-only and audiovisual sentences presented in L1 was approximately 63% of the auditory-only performance.

There was a simple effect of language; for low context sentences, the predicted visual enhancement was approximately 0.38 units higher for low context sentences presented in L2 compared to L1. There was also a simple effect of context, such that the predicted visual enhancement was approximately 0.34 units lower for moderate context sentences compared to

Table 4

Results from the model predicting participants' visual enhancement when identifying sentence terminal words

	Estimates	*SE*	95% CI	*β*	*t*
Fixed Effects					
Intercept[a]	0.63***	0.10	0.44 – 0.83	0.01	6.32
Language	0.38**	0.13	0.11 – 0.65	0.63	2.82
Context	-0.34*	0.13	-0.60 – -0.08	-0.57	-2.60
Language X Context	-0.08	0.19	-0.45 – 0.30	-0.13	-0.41
			Variance		
Random Effects		Intercept		Slope	
Participant		0.04		N/A	
Residual		0.26		N/A	

Note. Marginal R^2 = 0.18, Conditional R^2 = 0.29.

[a] The intercept corresponds to the predicted visual enhancement for first language, low context sentences.

* $p < .05$ ** $p < .01$ *** $p < .001$

Figure 2

Visual enhancement for sentences across languages and context levels
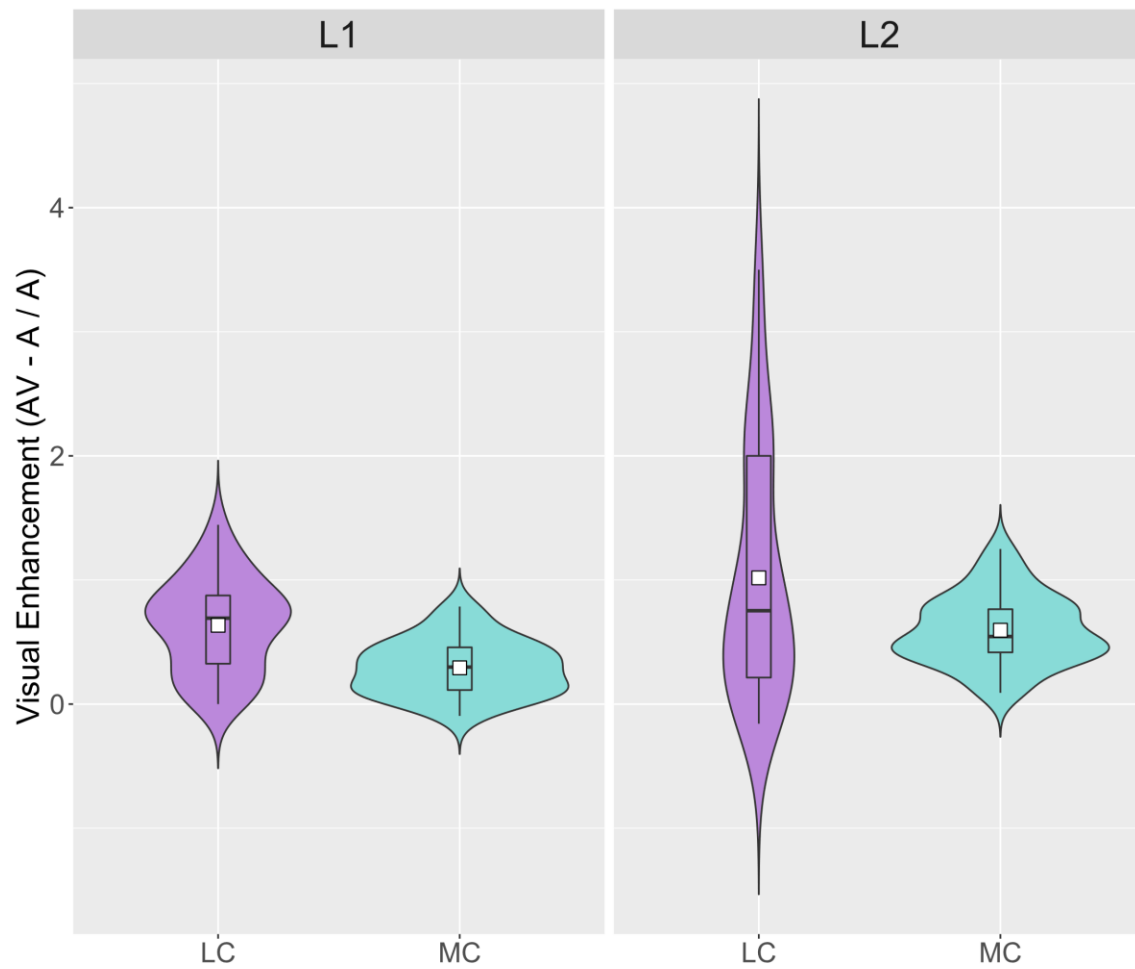
Note. L1 refers to the first language, L2 refers to the second language. LC refers to low context and MC to moderate context. Square boxes represent the mean, solid horizontal lines represent the median, vertical rectangular boxes and whiskers represent interquartile range, and the violin represents the density of data points at any given value of the y-axis.

low context sentences in L1; this indicates that both visual speech cues and supportive sentence context provide relatively greater enhancement to performance in the absence of the other, at least in L1. Furthermore, there was no language by context interaction, suggesting that this context effect is similar in L1 and L2.

5.6.3 L2 performance and aspects of the bilingual experience

The results thus far indicate that visual speech cues and sentence context improve speech perception in noise in both L1 and L2, but do so to a proportionally larger extent in L2. Next, we turn to aspects of the bilingual experience that may impact the extent to which individuals may benefit from these cues in L2.

We considered several factors (see Table, Appendix A5), including self-reported L2 ability on a 5-point scale, age of acquisition (AoA) of the second language, age of fluency in the second language, percentage of daily use of L2, as well as measures of letter and category fluency in L2 (Delis et al., 2001). In the letter fluency task, participants were asked to say as many words as they could that begin with a given letter of the alphabet in 60 seconds. In the category fluency task, participants were asked to say as many words as they could that belong to a given category (e.g., animals). For both of these tasks, the unit of interest was the number of correct words produced during the allotted time.

For verbal fluency, we considered both the raw L2 performance on the letter and category fluency tasks, as well as individuals' L2 performance expressed as a proportion of their L1 performance. While the raw performance provides information on L2 fluency and verbal ability, the proportional performance provides information about the balance of L1 and L2 ability within a bilingual individual.

A series of two-tailed Pearson correlations were used to investigate the association between participants' bilingual experience and the percentage of L2 terminal words correctly reported during the speech perception in noise task (see Table 5 and Appendix A6 Two participants were excluded from these analyses due to outlier values for self-reported L2 ability and proportional L2 verbal fluency as measured with the DKEFS; we noted although their accuracy data were in keeping with the rest of the participants, however.

For L2 sentences presented in the auditory-only modality with low levels of context, the percentage of correctly identified sentence terminal words was negatively correlated with age of acquisition of L2 and positively associated with self-rated L2 ability. This pattern suggests that

Table 5

Correlations between percentage of correctly identified terminal words and bilingualism variables

Percentage Correct	Age of acquisition (years)		Age of fluency (years)		Self-rated L2 ability		Percentage of daily L2 use		Pooled L2 Fluency		Proportional Pooled L2 Fluency	
	r	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
L2 A LC	-.42	.025*	-.33	.090	.40	.034*	.34	.081	.10	.617	.29	.149
L2 A MC	-.39	.041*	-.40	.034*	.49	.009*	.29	.136	.19	.343	.48	.011*
L2 AV LC	-.02	.938	.07	.740	.21	.294	.31	.115	.45	.018*	.59	.001*
L2 AV MC	-.40	.038*	-.43	.023*	.57	.001*	.45	.015*	.26	.195	.65	<.001*

* p < .05

those who learn their second language earlier, or report greater L2 ability, tend to perform more accurately during L2 speech perception in noise in the absence of visual speech cues or sentence context.

For L2, auditory-only sentences with moderate levels of context, there was again a negative correlation between participants' accuracy and age of L2 acquisition, and a positive association with self-reported L2 ability. Additionally, there was a negative correlation between participants' accuracy and age of L2 fluency. Finally, there was a positive correlation between percentage of correctly identified terminal words and participants' proportional L2 fluency scores. Taken together, these results suggest that earlier acquisition and mastery of L2, greater self-reported L2 abilities, and a more balanced performance during L1 vs L2 verbal fluency tasks were all associated with better accuracy when identifying terminal words of L2, auditory-only sentences with supportive context.

Turning to L2 audiovisual sentences with low levels of context, there were no associations between participants' accuracy and L2 age of acquisition, L2 age of fluency, self-reported L2 ability, or percentage of daily use of L2. There were, however, positive correlations between the percentage of correctly identified terminal words, and participants' L2 verbal fluency and proportional L2 fluency (both based on the DKEFS verbal fluency measures). In other words, when visual speech cues are available but semantic context is impoverished, greater verbal fluency in L2 and more balanced verbal fluency in L1 vs L2 are associated with more accurate speech perception in noise.

Finally, for L2 audiovisual sentences with moderate levels of context, there were negative correlations between participants' accuracy and L2 age of acquisition and age of fluency. There were also positive associations between accuracy and self-rated L2 ability, percentage of daily L2 use, and proportional L2 verbal fluency. Taken together, these results indicate that those bilinguals that learned their L2 early, became fluent young, use their L2 more frequently, and show a relative balance between their L1 and L2 verbal fluency scores as measured by the DKEFS tend to be more accurate in identifying terminal words of L2 sentences when both visual speech cues and supportive sentence context are available. While not causal, the results of the correlational analyses indicate that experience with L2 may be an important predictor of how much one benefits from visual speech cues and sentence context in their second language.

5.7 Discussion

This study investigated and compared the benefits afforded by visual speech cues and supportive sentence context in bilinguals' first and second language. We used an audiovisual speech perception in noise task for which the level of background noise was individually calibrated to elicit approximately 50% correct responses in auditory-only, low context sentences presented in L1. Crucially, the level of background noise was the same in L1 and L2, allowing us to compare the benefit of visual speech cues and supportive sentence context across the two languages under similar perceptual conditions. Overall, results indicate that highly proficient French-English/English-French bilinguals benefit from both visual speech cues and sentence context, and do so to a proportionally greater extent in L2 compared to L1 when the signal-to-noise ratio is the same. One possible explanation is that speech perception in one's second language is inherently "noisier" (i.e., more challenging), thus making visual speech cues that much more beneficial. This idea of noisier speech perception in L2 is supported by the fact that the benefit of visual speech cues was considerably more variable in L2 compared to L1, in the absence of supportive context.

Given the same level of noise, performance on auditory-only, low context sentences presented in L2 was significantly impacted. Interestingly, this is comparable to previous studies investigating speech perception in noise in low context sentences between native and non-native speakers (e.g., Bradlow & Alexander, 2007; Brouwer et al., 2012; Shi, 2012).

5.7.1 Visual enhancement

The bilinguals tested in this study showed a clear benefit from visual speech cues in both L1 and L2. Nevertheless, given similarly degraded auditory cues, the visual enhancement was proportionally larger in L2 compared to L1 (at least for proficient bilinguals), and largest in the absence of supportive sentence context. These results are consistent with the inverse effectiveness hypothesis (e.g., Meredith & Stein, 1986; Stein & Stanford, 2008) which posits that the enhancement provided by multisensory integration (e.g., the combination of auditory and visual speech cues) should be inversely related to the quality of the cues that are combined. While the inverse effectiveness hypothesis is generally concerned with the quality of *sensory cues*, the results presented here indicate that this hypothesis can be extended to suboptimal linguistic cues (in the context of this study: lack of supportive context, L2 speech perception). We note that although the visual enhancement is an informative measure, it varies as a function

56

of the denominator (i.e., auditory-only performance), and should therefore always be interpreted in tandem with the raw accuracy data. For example, the absolute difference in performance between auditory-only and audiovisual sentences with low levels of context was approximately 30% in L1 compared to approximately 28% in L2. In other words, the raw improvement in accuracy afforded by visual speech cues is comparable in L1 and L2, despite the fact that there is more room for improvement in L2. Nevertheless, given the lower baseline performance in L2, this suggests a proportionally larger benefit in one's second language compared to L1 when the SNR is kept equal.

5.7.2 Context enhancement

Like with visual speech cues, bilinguals show a clear benefit from sentence context in L2. This is consistent with previous findings showing robust effects of sentence context during speech perception in noise (e.g., Bradlow & Alexander, 2007; Coulter et al., 2020; Hutchinson, 1989). Furthermore, the benefit from context was largest for auditory-only sentences, indicating that these cues are most helpful when auditory speech information is available but difficult to perceive. Results from this study add to the growing literature suggesting that bilinguals do benefit from sentence context (Bradlow & Alexander, 2007; Coulter et al., 2020; Kousaie et al., 2019; Shi, 2010, 2014).

5.7.3 L2 performance and aspects of the bilingual experience

While the benefit afforded by visual speech cues and supportive sentence context observed in this study were larger in L2 compared to L1 on average, aspects of the bilingual experience appear to shape L2 performance at the individual level. Indeed, the bilingual experience is varied, and aspects of this experience are likely to impact speech perception in L2. For example, recent studies have shown that proficiency (e.g., Gor, 2014) and age of acquisition (e.g., Coulter et al., 2020; Kousaie et al., 2019) can modulate one's ability to benefit from sentence context in L2.

In the context of the current study, the interplay of L2 experience and accuracy in identifying sentence terminal words was complex. Age of acquisition modulated participants' ability to correctly identify sentence terminal words under most conditions, with the exception of when visual speech cues are provided without supportive sentence context. Under those conditions, participants' L2 verbal fluency (as objectively measured by a cognitive task) and the relative balance in verbal fluency in L1 vs. L2 were most strongly associated with accuracy

during speech perception in noise. When both visual speech cues and supportive sentence context are available, virtually all aspects of the bilingual experience measured in this study came into play, such that bilinguals who learned and mastered their L2 early, rate their own abilities higher, used their second language on a regular basis, and demonstrate a good balance in verbal fluency between their L1 and L2 tended to show the best speech in noise performance. Overall, these results highlight the complex interplay between L2 experience and speech perception in noise which, while out of the scope of this paper, merits further investigation.

5.7.4 Limitations

While this study provides important new insights into bilingual speech perception in noise, it is not without limitations. The participants are highly proficient bilinguals, and our findings may not generalize to speakers with lower levels of L2 proficiency. In addition, the sample consists mostly of undergraduate students, which may limit the generalizability of the findings. Additionally, given the individual noise calibration procedure used in this study, the range of signal-to-noise ratios is relatively restricted (-6 dB to -16 dB), potentially limiting the generalizability of the findings across a wider range of signal-to-noise ratios. More importantly, while we had pragmatic reasons to equate perception on the baseline condition across participants, this does not happen in the real world. Furthermore, while keeping the SNR constant between L1 and L2 allows for a direct comparison of speech in noise performance across languages, it likely reduces intelligibility in L2 and thus may limit the potential benefit of supportive sentence context. Therefore, an important avenue for future research is to investigate bilingual speech perception in noise when equating performance in L1 and L2.

Another limitation lies in the stimuli themselves. It is challenging to develop perfectly matched stimuli between languages, and we had to contend with several factors (e.g., word onset characteristics, word frequency, terminal word predictability, sentence length, sentence structure). In order to best balance these characteristics, we allowed French terminal words to be either monosyllabic or disyllabic, while English words were all monosyllabic. Although this decision helped balance most characteristics listed above and allowed to minimize differences in word frequency across languages, it nevertheless yielded an unbalanced design.

A second limitation pertaining to the stimuli lies in the fact that they were all recorded by the same talker. Due to physiological differences in the vocal apparatus, the same phonemes or words may have different acoustical properties across speakers (Sjerps et al., 2019). Given that

the current study only features one speaker, the benefit of visual speech cues and supportive sentence context in a multi-talker context remains to be elucidated. Another limitation pertains to the pair of languages investigated in this study. It is possible that other language pairs (e.g., English or French compared to a tonal language) would yield different results as tone provides another category of cues that can be used during speech perception.

Although we measured some individual differences in terms of the bilingual experience, other factors may be important to consider. For example, individual differences in cognitive abilities such as working memory or processing speed may play an important role in the integration of audiovisual speech cues and sentence cues during speech perception in noise. This is work that we are undertaking in an upcoming manuscript. Another interesting avenue for future research would be to compare monolinguals and bilinguals during speech perception in noise, making sure to contrast bilinguals' performance in both L1 and L2 to that of monolingual listeners.

Finally, while we addressed individual differences in the bilingual experience amongst young adults, this experience is not static across the lifespan. Thus, future research should investigate how bilingual speech perception in noise changes as a function of age; we are also currently working on this. Additionally, factors such as age-related hearing loss should be considered as they have important implications for speech perception.

5.7.5 Conclusion

There is ample evidence that audiovisual speech cues and supportive sentence context (e.g., Smayda et al., 2016) facilitate speech perception in noise in native speakers. To the best of our knowledge, this study is the first to provide evidence that proficient bilinguals do benefit from AV speech and sentence context in both their first and second language, and that the magnitude of the benefit from AV speech cues varies as a function of one's bilingual experience (e.g., age of acquisition). Furthermore, these cues appear to be proportionally more beneficial when processing speech in noise in a second language. Together, this indicates that L2 speech perception can be conceptualized within an inverse effectiveness hypothesis framework with a complex interplay of sensory factors (i.e., the quality of the auditory speech signal and visual speech cues) and linguistic factors (i.e., presence or absence of supportive context, L2 experience of the listener).

Chapter 6: Manuscript 2:

Audiovisual Speech Perception in Noise in Younger and Older Bilinguals

Submitted to *Psychology and Aging*

Alexandre Chauvin[1, 2], Sophie Pellerin[1], Anna-Francesca Boatswain-Jacques[1], Jean-Louis René[1], and Natalie A. Phillips[1, 2, 3]

[1]Department of Psychology/Centre for Research in Human Development, Concordia University, Montreal, QC, Canada

[2]Centre for Research on Brain, Language and Music, McGill University, Montreal, QC, Canada

[3]Bloomfield Centre for Research in Aging, Lady Davis Institute for Medical Research, Montreal, QC, Canada

Author Note

6.1 Abstract

Speech perception in noise becomes increasingly difficult with age. Similarly, bilinguals often have difficulty with speech perception in noise in their second language (L2) due to less developed language knowledge in L2. Little is known about older bilinguals, who experience age-related sensory and cognitive changes but have extensive L2 experience. Furthermore, while audiovisual (AV) speech cues and supportive sentence context facilitate speech perception in noise in native listeners, much less is known for bilingual listeners, particularly older bilinguals.

This study investigated how much young (n = 30) and older (n = 31) French-English/English-French bilinguals benefit from AV speech cues and sentence context in their first (L1) and second language during speech perception in noise. Participants completed the task in L1 and L2. Importantly, the level of background noise was individually calibrated for each participant to equate baseline perceptual load.

Overall, there were no age differences in accuracy during speech perception in noise, except for worse lip-reading in L1 for older adults. Furthermore, both young and older bilinguals benefited from AV speech cues and sentence context in both of their languages. However, during L2 speech perception in noise, visual speech cues were particularly important for young adults, especially those with less L2 experience/ability. In contrast, older adults show equal benefit from visual speech cues in L1 and L2.

Keywords: audiovisual speech perception, speech-in-noise, aging, bilingualism, sentence context

Audiovisual Speech Perception in Noise in Younger and Older Bilinguals

The past several decades have seen a considerable increase in the world's global population (Sander et al., 2015). However, life expectancy is increasing (Fuster, 2017; Sander et al., 2015), resulting in an aging population. Indeed, the proportion of individuals over the age of 60 years is projected to represent approximately 22% of the global population by the year 2050 (Bloom et al., 2010). This global trend makes it both timely and crucial to study aging.

Like aging, bilingualism (and multilingualism) research has enjoyed a considerable amount of scientific interest in recent years. This is perhaps unsurprising, as a substantial number of people around the world speak two or more languages (e.g., Eurostat, 2015; Ryan, 2013; Statistics Canada, 2017). Furthermore, bilingualism research has expanded from investigating language processing *per se*, to examining how experience with a second language (L2) can influence various aspects of cognitive functioning (e.g., executive function). However, a significant portion of the research conducted thus far has focused on young adults, with comparatively little known about the intersection of aging and speech perception in bilingualism.

6.2. Speech perception and the impact of background noise

Speech perception relies on the accurate perception of sensory cues. Furthermore, even under the most pristine listening conditions, speech perception requires a complex combination of bottom-up (i.e., sensory) and top-down (i.e., cognitive) processes (Grant & Bernstein, 2019), In many cases, however, speech perception takes place under adverse listening conditions. Sometimes, this reflects characteristics of the speaker (e.g., accented speech, mispronunciation; Mattys et al., 2012); in other instances, however, adverse listening conditions stem from properties of the environment (e.g., background noise; Mattys et al 2012).

Background noise poses a series of challenges to the listener. First, one must discriminate the target speech signal from the background noise (Wingfield & Tun, 2007). Indeed, when two auditory signals are presented simultaneously, overlapping portions may become unintelligible to the listener (Brungart et al., 2001; Mattys et al., 2012), thus creating the need to disentangle the two in order to successfully perceive the speech signal.

Second, the listener must extract meaning from partial speech information due to the gaps created by the overlapping background noise (Darwin, 2008). The third major challenge to speech perception in noise results directly from the first two: speech in noise increases listening

effort and processing demands for successful speech perception (e.g., Picou et al., 2011, 2016; Wendt et al., 2016).

Speech perception is well-known to become difficult with aging (e.g., Dubno et al., 1984; Helfer & Freyman, 2008; Pichora-Fuller et al., 1995; Sommers et al., 2005; Tun & Wingfield, 1999). This is due in part to changes in sensory acuity. For example, age-related hearing loss (presbycusis) is amongst the most common chronic conditions in older adults (Mick et al, 2021; Yueh et al., 2003). Even in older adults with age-normative hearing, subclinical reductions in hearing acuity are often seen (Schneider & Pichora-Fuller, 2000). Age-related changes in vision also take place, including changes in acuity and contrast sensitivity (e.g., Mick et al, 2021; Schneider & Pichora-Fuller, 2000).

While age-related changes in hearing acuity likely contribute to older adults' difficulties with speech perception in noise, they do not fully account for them. In fact, the relationship between hearing acuity (pure-tone threshold) and speech perception in noise is somewhat weak in older adults (Kim et al., 2006). Additionally, age-related cognitive changes have been well-documented in processes such as episodic memory (e.g., Lundervold et al., 2014), working memory (e.g., Salthouse, 1994), and processing speed (e.g., Salthouse, 1996). Given that speech perception involves bottom-up and top-down processes, age-related changes in sensory and cognitive functioning likely both contribute to difficult speech perception in noise.

6.3 Enhancing speech perception in noise

Despite the challenges outlined above, most individuals engage in successful speech perception every day, due in part to facilitators that help alleviate the impact of background noise. One such facilitator is the presence of visual speech cues, which include facial expressions, emotional expressions, and visemes. The latter have seen several definitions but can be construed as the specific movements of the lips, teeth, and tongue needed to convey phonetic information (Bear & Harvey, 2017). The relationship between phonemes and visemes is complex. At times, they provide largely correlated information. For example, the visual components of English labio-dental consonants (e.g., /v/ as in vine) closely map onto the auditory components (Campbell, 2008). In other cases, however, phonemes and visemes offer complementary information. For example, the phonemes /m/ and /n/ are easily confused on the basis of auditory cues alone (Campbell, 2008) while the corresponding visemes are easily

distinguishable; this is particularly helpful in disambiguating between phonemes (Campbell, 2008; MacLeod & Summerfield, 1987; Peelle & Sommers, 2015; Summerfield, 1992).

It has long been established that providing congruent auditory and visual speech cues (i.e., audiovisual speech) facilitates speech perception in noise (e.g., Ross et al., 2007; Sumby & Pollack, 1954). As a form of multisensory integration, audiovisual speech perception can be understood in the context of the principle of *inverse effectiveness* (Meredith & Stein 1986; Stein & Stanford, 2008). This principle stipulates that the relative benefit afforded by combining two sources of sensory information (e.g., auditory and visual speech cues) is inversely related to the quality of the combined cues. Thus, while visual speech cues can be helpful under quiet listening conditions, they should be most beneficial during speech perception in noise.

Consistent with the inverse effectiveness hypothesis, experimental evidence suggests that visual speech cues enhance speech perception in noise (e.g., Bernstein et al., 2004; Ross et al., 2007; Smayda et al., 2016; Sommers et al., 2005; Sumby & Pollack, 1954). In addition, this benefit is typically smaller under quiet listening conditions (e.g., Crosse et al., 2016), and generally increases as a function of the level of background noise present (e.g., Ross et al., 2007; Stevenson et al., 2015).

Much like visual speech cues, supportive sentence context can facilitate speech perception in noise (e.g., Bradlow & Alexander 2007; Hutchinson, 1989; Van Engen et al., 2014) by allowing the listener to generate expectations about upcoming information, or integrate information on-line (Maguiness et al., 2011). There is ample evidence that supportive sentence context facilitates speech perception, with improvements ranging from ~10-30% compared to anomalous sentences or sentences without supportive context (Bradlow & Alexander, 2007; Hutchinson, 1989; Van Engen et al., 2014).

With the respective benefits of audiovisual speech and supportive sentence context well established, two questions emerge. First, do all listeners benefit from visual speech cues and supportive sentence context? The answer to this first question is perhaps the most intuitive: sufficient visual acuity and linguistic knowledge are likely *sine qua non* to benefit from visual speech cues and supportive sentence context, respectively. When these conditions are met, however, the second question emerges: are the benefits from visual speech cues and sentence context comparable across all listeners? More specifically, do the listeners most susceptible to the adverse impact of background noise (e.g., older adults with age-related changes in sensory

acuity, non-native listeners) benefit most from the availability of visual speech cues and supportive sentence context?

6.4 Facilitating speech perception in noise in older adults

Based on the principle of inverse effectiveness, one may posit that older adults would benefit from visual speech cues to a greater extent than young adults during speech perception in noise. Indeed, in addition to the background noise itself, many older adults contend with age-related changes in hearing acuity (e.g., Humes, 2008). In effect, this acts as an additional layer of noise within an already suboptimal speech signal. Thus, the addition of visual speech cues should prove particularly beneficial in this case.

The evidence, however, is mixed. At the phoneme level, evidence suggests that the benefit afforded by visual speech cues increases with the level of background noise but is comparable for young adults and healthy older adults (Stevenson et al., 2015). Studies investigating sentence perception in noise provide mixed results. For example, some suggest a constant audiovisual benefit throughout adulthood (e.g., Avivi-Reich et al., 2018; Tye-Murray et al., 2016), while others indicate that the benefit depends largely on the signal-to-noise ratio (e.g., Stevenson et al., 2015). There is, however, some evidence that the signal-to-noise ratio at which the maximal audiovisual benefit emerges shifts towards higher (i.e., quieter) levels with age (Jansen et al., 2017). One possibility for this pattern of results may be that, given the same signal-to-noise ratio, older adults contend with a greater *perceptual load* than younger adults. Indeed, even when performance is equated, older adults tend to expend more listening effort than young adults (e.g., Anderson Gosselin & Gagné, 2011). Nevertheless, the evidence suggests that healthy older adults do indeed benefit from audiovisual speech cues during speech perception in noise.

Turning to potential age differences in the benefit afforded by supportive sentence context, the evidence is again mixed. For example, some studies have suggested that older adults benefit from sentence context to a greater extent than young adults. Work by Pichora-Fuller et al. (1995) used sentences in which the terminal word was either highly predictable (HP, e.g., "The bird of peace is the dove") or had low predictability (LP, e.g., "Peter should consider the dove"); participants were instructed to repeat the last word of each sentence. The authors found that older adults benefited from sentence context to a greater extent than young adults (i.e., showed a greater increase in accuracy for HP sentences compared to LP sentences). Using a similar

paradigm, Sommers & Danielson (1999) also found a greater benefit of sentence context in older adults compared to young adults.

There are also electrophysiological differences between young adults and older adults when processing sentence context. For example, studies using a paradigm in which sentences were presented word-by-word on a screen tend to show smaller and later N400 event-related brain potential effects (i.e., an index of semantic processing) for older adults compared to young adults (e.g., Federmeier & Kutas, 2005; Wlotko & Federmeier, 2012; Wlotko, et al., 2012). A more recent study investigating context processing during reading further indicates that older adults may be less able or likely to use ongoing contextual information during sentence perception (Payne & Federmeier, 2018).

Other work has indicated a comparable benefit of supportive sentence context in young and older adults. For example, Nittrouer and Boothroyd (1990) presented both young and older participants with sentences in speech-shaped-noise at signal-to-noise ratios of either 0 dB or +3 dB. The sentence stimuli used in this study differed in the level of predictability of the terminal word given the preceding sentence context. Three levels of predictability were used: low predictability (LP), high predictability (HP), or zero predictability (ZP; anomalous sentences). Following each sentence, participants were asked to write down as much of the sentence as possible. Older adults were less accurate than young adults overall across all conditions but benefited from sentence context to the same extent as young adults. Other work by Dubno and colleagues (2000) indicated that, at equivalent speech audibility, the benefit from supportive sentence context is comparable for young and older adults. More recently, Buss et al. (2019) investigated age differences in the benefit of context using speech reception thresholds (the signal-to-noise ratio at which a participant can accurately repeat 50% of the words in target sentences). While they found higher speech reception thresholds (i.e., needing a more favourable signal-to-noise ratio) for older adults compared to young adults, the difference in speech reception threshold for low context compared to high context sentences was comparable across groups.

The results presented by Dubno et al. (2000) and Buss et al., (2019) raise an important point: it is possible that differences in the benefit of sentence context emerge due to differences in sensory acuity rather than fundamental differences in the ability to process and benefit from context. However, there is evidence to suggest that although hearing acuity impacts word

recognition in a neutral context (i.e., a carrier sentence without useful semantic information), this effect diminishes with increasing contextual support (Benichov et al., 2012). Additionally, participants' age and cognitive functioning (operationalized as a composite of the scores obtained on an episodic memory task, a working memory task, and a processing speed task) were significant predictors of spoken word recognition at all levels of context.

Overall, while the existence of age differences in one's ability to use context remains unclear, there is no doubt that older adults can derive some benefit from supportive sentence context. However, this benefit may rely on a complex interplay of sensory acuity, language experience, and cognitive functioning.

6.5 Speech perception in noise in a second language

Much like older adults, non-native listeners may be at a particular disadvantage during speech perception in noise. Whereas older adults contend with age-related changes in sensory acuity, non-native listeners often have less developed knowledge of the phonological, lexical, grammatical, and semantic aspects of the non-native language (Garcia Lecumberri et al., 2010; Mattys et al., 2012), effectively introducing an additional layer of "noise". Indeed, bilinguals are more susceptible to background noise than monolinguals (e.g., Schmitdke, 2016). Thus, one may posit that, assuming "good enough" knowledge of the non-native language, non-native listeners should benefit from visual speech cues and sentence context to a proportially greater extent than native listeners during speech perception in noise.

Behavioural (e.g., Bosch et al., 2000; Díaz et al., 2012; Mora & Nadeu, 2012; Sebastián-Gallés et al., 2005) and electrophysiological (e.g., Diaz et al., 2008) evidence indicates that bilinguals have difficulty perceiving certain non-native sound contrasts (e.g., the English /l/ and /r/ for native Japanese speakers). There is also evidence to suggest a downstream impact on higher-order linguistic processes (e.g., phoneme identification, lexical decision) in both early and late bilinguals (e.g., Díaz et al., 2012; Sebastián-Gallés & Baus, 2005; Sebastián-Gallés et al., 2005). Taken together, these results suggest that bilinguals are at greater disadvantage than monolinguals when perceiving speech in noise in their second language (L2). Furthermore, with mounting evidence that extensive experience in a second language impacts the processing of one's first language (e.g., Cook, 1995, 2003; Cook et al., 2003; Mora & Nadeu, 2012; Murphy & Pine, 2003; Ramírez & Simonet, 2018), the simple comparison of bilinguals' L2 performance to that of monolinguals is unlikely to tell the full story; bilinguals are not two monolinguals in one.

While a within-subject comparison of first and second language performance is a stronger paradigm, few studies have done so to date and much of the evidence comes from comparisons of bilinguals to monolinguals. There is evidence to suggest that audiovisual speech facilitates the perception of challenging sound contrasts in L2 (Navarra & Soto-Faraco, 2007). The benefit of supportive sentence context during L2 speech perception in noise is similarly understudied. Some evidence suggests that non-native listeners only benefit from sentence context when speech is clear and slow (e.g., Bradlow & Alexander, 2007). Other work investigating the benefit of sentence context on the identification of terminal words of sentences indicates that young adult bilinguals can benefit from context to the same extent in L1 and L2 (Coulter et al., 2020), or event to a proportionally greater extent in their L2 (Chauvin & Phillips, under review).

6.6 Current study

Speech perception in noise is challenging to most listeners; however, older adults and bilinguals may be at a particular disadvantage. Furthermore, things are less clear for older adult bilinguals. On one hand, they must contend with age-related changes in sensory acuity and cognitive function, which may hinder speech perception in noise. On the other hand, compared to young bilinguals, they may have better developed linguistic skills in their second language, owing to a lifetime of experience in L2. This study addresses directly examines these questions by investigating speech perception in noise in both young and older bilinguals, and examining the impact of visual speech cues and sentence context.

To this end, we used English and French sentences presented in multi-talker babble under three modalities (visual, auditory, and audiovisual) and two levels of context (low context and moderate context). Participants were all English-French or French-English bilinguals who completed the speech perception task in both their first and second language. Importantly, we equated perceptual load at baseline for all participants, allowing us to directly compare how young and older adult bilinguals benefit from visual speech cues and sentence context under comparable baseline conditions. Additionally, equating perceptual load in L1 allowed for a direct investigation of L2 speech perception in noise given comparable baseline L1 performance. Data and results from the young bilingual participants were previously reported in Chauvin and Phillips (under review) and are re-analyzed here to investigate age differences in the benefit of visual speech cues and sentence context.

We hypothesize that speech perception in noise will be more accurate in L1 compared to L2 for both young and older adults. Furthermore, in accordance with the inverse effectiveness hypothesis, we expect that speech perception will be most accurate when visual speech cues and sentence context are available, for both age groups. Given that perceptual load was equated in the baseline condition for both young and older bilinguals, we expect to find comparable effects of context across the age groups, as seen in Dubno et al. (2000) and Buss et al. (2019). Additionally, based on results from Chauvin and Phillips (under review), we hypothesize that the benefit from visual speech cue and sentence context will be proportionally greater in L2 compared to L1 for both age groups.

Furthermore, we posit that in order to benefit from visual speech cues and supportive sentence context, one must be able to integrate them on-line as the speech signal unfolds. Therefore, we hypothesize that the magnitude of the visual enhancement may be positively related to one's working memory (i.e., the ability to keep relevant information in mind) and general information processing speed, and this association should be stronger when supportive sentence context is available. However, we expect that the strength of these associations may be weaker in older adults compared to young adults, due in part to age-related changes in cognition (e.g., Lundervold et al., 2014; Salthouse, 1994, 1996), and older adults' extensive language experience which may alleviate some of these age-related cognitive changes.

Finally, based on results from Chauvin and Phillips (under review), we hypothesize that one's bilingual experience (e.g., years of experience with L2, self-reported L2 ability, percentage of daily use of L2) will be associated with the magnitude of the benefit of visual speech cues and supportive sentence context. More specifically, we expect greater L2 experience will generally be associated with a greater visual enhancement and benefit from supportive sentence context in L2. Furthermore, we expect this association to be stronger in older adults, given their extensive L2 experience.

6.7 Methods

30 young adults and 31 older adults were recruited from the greater Montreal area for this study; the young adult sample was previously described in Chauvin and Phillips (under review). All participants were English-French or French-English bilinguals with no functional knowledge of other languages. Furthermore, they were all in self-reported good health, free of any neurological disorders, had age-normative hearing, and had normal or corrected-to-normal

vision. Before the first testing session, potential participants completed a health and language history questionnaire over the telephone to ensure eligibility. Table 1 summarizes the demographic and language characteristics of the participants.

Young adult participants were primarily recruited from the undergraduate student population at Concordia University (Chauvin & Phillips, under review), while older adults were recruited from the community. All participants were tested on two occasions, with approximately one week between sessions. Each testing session lasted approximately two hours. Participants were compensated with either course credit (when appropriate) or at a rate of $12/hr of participation. This project received approval from Concordia University's Research and Ethics Advisory Committee.

6.7.1 Stimuli

For the purpose of this study, a set of English sentences and a set of French sentences were created using stringent criteria. All sentences consisted of a carrier sentence stem and a terminal word. Across all stimuli, the stems ranged between 4 and 9 words ($M = 6.13$; $SD = 1.27$). Furthermore, the stems were carefully selected to provide either low levels of context (LC; e.g., "I did not know what to do with the […]") or moderate levels of context (MC; e.g., "In the mail, I received a […]") when combined with the terminal word. For each MC stem, three probable target words were chosen (e.g., "In the mail, I received a card/letter/bill"); this created a triplet of MC sentences, each combining one of the terminal words with the sentence stem. A corresponding triplet of LC sentences were created by simply replacing the stem with one that provides little contextual information (see Table 2 for a short example, and Supplemental Material for a detailed example of the stimuli used in this study). A total of 300 triplets (150 LC, 150 MC) were created for each language, yielding 1,800 sentences. These triplets were then separated into six different lists, each using a given terminal word once.

All terminal words used in this study began with a consonant. While an effort was made to choose only monosyllabic words, a compromise had to be made for French terminal words. Indeed, many monosyllabic French words have a significantly lower frequency compared to their English counterpart. A simple analysis of French monosyllabic words beginning with a consonant contained in the Lexique 3.82 database (New et al., 2004) indicates a mean frequency per million of 55.46 ($SD = 638.11$), compared to a mean frequency per million of 119.76 ($SD = 1053.70$) for equivalent English words (SUBTLEX; Brysbaert & New, 2009). For this reason,

Table 1

Demographic, language, and cognitive characteristics of the participants

	Young Adults (n = 30)		Older Adults (n = 31)	
	M	*SD* (%)	*M*	*SD* (%)
Age (years) ***	22.77	3.83	70.52	4.60
Gender (males)	-	16.67%	-	22.60%
Education (years) ***	14.53	1.38	16.97	3.19
Pure-Tone Average (dB) ***	8.03	3.58	15.50	6.85
Signal-to-Noise ratio (dB) ***	-11.27	2.80	-8.13	2.63
L2 Age of Acquisition (years) ***	3.47	3.35	7.65	5.09
L2 % Spoken/Used ***	30.66	14.22	18.19	15.03
L2 Self- Reported Proficiency				
Listening (/5)	4.43	0.68	4.37	0.77
Speaking (/5)	3.97	0.81	4.15	0.90
Reading (/5)	4.30	0.75	4.13	0.80
Writing (/5)	3.57	1.22	3.71	1.06
Working Memory				
WAIS-IV Letter-Number Sequencing **	20.66	4.11	19.00	1.79
WMS-III Spatial Span ***	18.45	2.44	15.51	3.00
Processing Speed				
WAIS-IV Digit Symbol Coding ***	81.78	12.08	62.27	12.29
WAIS-IV Symbol Search ***	38.41	8.03	27.45	6.17

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 2

Examples of moderate context and low context triplets in English and French

Language	Context	Stem	Terminal word	Full sentence
English	Moderate	In the woods, the hiker saw a	bear	In the woods, the hiker saw a bear.
			wolf	In the woods, the hiker saw a wolf.
			deer	In the woods, the hiker saw a deer.
	Low	I had not thought about that	bear	I had not thought about that.
			wolf	I had not thought about that wolf.
			deer	I had not thought about that deer.
French	Moderate	Les instructions sont dans le	livret	Les instructions sont dans le livret.
			manuel	Les instructions sont dans le manuel.
			pamphlet	Les instructions sont dans le pamphlet.
	Low	Mon ami m'a passé un	livret	Mon ami m'a passé un livret.
			manuel	Mon ami m'a passé un manuel.
			pamphlet	Mon ami m'a passé un pamphlet.

we allowed French terminal words to be monosyllabic (40%) or disyllabic (60%) in an effort to minimize bias towards low frequency French words. Despite this, French terminal words still had significantly lower word frequency overall (see Table 3).

6.7.2 Recording the stimuli

The 1,800 sentence stimuli used in this study were all video-recorded by a proficient French-English bilingual woman in her early twenties who acquired both languages from birth. She spoke each sentence in a neutral, conversational manner while keeping a neutral face and avoiding blinks. All of these recordings took place in a sound attenuated room.

6.7.3 Processing the stimuli

Following these recording of the stimuli, a series of processing steps were applied to each video. First, the sound levels were normalized to -3 dB (relative to full scale) using Adobe Audition. Next, a two-step noise reduction process was used to reduce extraneous background noise. The video recording was then color-corrected and centered using Adobe Premiere. Finally, each video file was bookended by 1-second still frames of the speaker's face were inserted at the beginning and at the end of each video file.

After processing, the video files were separated into presentation lists for data collection. Each list contained 150 English sentences and 150 French sentences, for a total of 300 sentences. For each language, half of the sentences (75) were LC and the other half were MC. Further, sentences were divided into 6 blocks of 25 trials within each language: 2 visual-only blocks (V), 2 auditory-only blocks (A), and 2 audiovisual blocks (AV). In the AV blocks, participants were exposed to both the processed audio and video for each trial. In the A blocks, the video was replaced by a still face of the bilingual speaker, but participants had access to the audio. Finally, the V blocks consisted of the video file with muted audio. During the task, stimuli were blocked by language and modality, for a total of 12 blocks per participant. The level of context, however, was intermixed within each block. In total, there were 18 unique presentation lists (i.e., 6 lists X 3 modality presentation orders).

Each trial began with a black screen with a fixation cross and a prompt (English: "Ready?"; French: "Prêt") lasting 2 seconds, followed by a still frame of the speaker's face for 1 second. After the trial, another 1-second still frame of the speaker's face was presented, followed by a prompt (English: "Response"; French "Réponse") which lasted 2 seconds. For each trial, participants were instructed to repeat the last word of the sentence. All sentences were presented

Table 3

ANOVA investigating differences in (log) word frequency across stimulus lists

	Sum of Squares	df	Mean Square	F
List	72,9314.23	17	42,900.84	0.69
Language ***	1.92e +6	1	1.92e +6	30.65
Modality	62.87	2	31.437	5.02e -4
Context	0.03	1	0.03	5.41e -7
List X Language	3739.72	17	219.98	0.00
List X Modality	2.30e +6	34	67,691.53	1.08
List X Context	22,4842.91	17	13,226.05	0.21
Modality X Language	63.98	2	31.98	5.11e -4
Modality X Context	25.55	2	12.78	2.04e -4
Context X Language	4.71	1	4.71	7.52e -5
Modality X Language X List	1.99e +6	34	58,448.59	0.93
Modality X Context X List	1.53e +6	34	44,993.30	0.72
Modality X Context X Language	15.92	2	7.96	1.27e -4
Context X Language X List	31,342.49	17	1843.68	0.03
Modality X Context X Language X List	1.08e +6	34	31,710.54	0.51
Residuals	3.25e +8	5,184	62,624.16	

*** p < .001

in multi-talker babble adapted from Bilger et al. (1984). The original babble (eight English talkers, low-pass filtered at 7500 Hz) was overlaid and jittered three times to increase the stability of the mask; this procedure resulted in primarily energetic masking, without intelligible content.

6.7.4 Procedure

Hearing was screened using an audiometer (Welch Allyn AM 232) in the first testing session; pure-tone air conduction thresholds were collected at 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz for each ear. Young adult participants were considered to have normal hearing if their thresholds were all ≤ 25 dB, with no between-ear asymmetry of more than 10 dB. Older adults were considered to have age-normative hearing if they met the same criteria as the young adults at all frequencies except 4000 Hz; at that frequency, their threshold had to be ≤ 35 dB. Older adults who had thresholds between 25 dB and 60 dB at any frequency from 250 Hz to 4000 Hz, were considered to have age-related hearing loss. This latter group was allowed to have between-ear asymmetries greater than 10 dB. Using the criteria described above, the sample of older adults included in this study was comprised of 15 participants with age-normative hearing, and 16 participants with hearing loss.

In addition to hearing, visual contrast sensitivity was measured for older adults using the Mars Letter Contrast Sensitivity Test (Arditi, 2005). Participants were presented with printed letters of decreasing contrast and instructed to read as many letters out loud as they could. This was done for each eye individually, as well as for both eyes together. In order to be included in the study, participants had to have a binocular contrast sensitivity of at least 1.52 on the Mars Letter Contrast Sensitivity Test.

All participants (i.e., young adults and older adults) completed an extensive battery of cognitive and neuropsychological tests. The results presented in this manuscript focus on four specific measures: visual working memory (Spatial Span; Wechsler, 1997), verbal working memory (Letter-Number Sequencing; Wechsler, 2007), and two measures of processing speed (Digit-Symbol Coding, Symbol Search; Wechsler, 2007).

On the day of the second session participants completed the speech perception in noise task. This took place in a sound-attenuated room, where participants sat in a comfortable chair in front of a computer screen located approximately 33 inches from them. All stimuli were

presented free-field through the computer screen and two speakers located on either side of the screen.

Before the speech-in-noise task, each participant completed a noise calibration procedure; the goal was to equalize perceptual load across participants for the baseline condition (i.e., first language, low context, auditory-only sentences). The noise was presented at approximately 70 dB SPL for the duration of the task. Thus, calibration of the signal-to-noise ratio (SNR) was achieved by manipulating the volume of the target speech signal. For each participant, the initial SNR was set at -10 dB SPL (i.e., target speech at ~ 60 dB, babble at ~ 70 dB). The calibration was done in participants' first language, using a bank of auditory-only, low context sentences not used again in the experiment. The goal of the calibration procedure was to determine the SNR at which a given participant could correctly identify approximately 60% of sentence terminal words. The procedure took place in blocks of 10 trials, following which the current SNR was re-evaluated. If performance was above 60%, the SNR was adjusted by -2 dB. On the other hand, the SNR was adjusted by +2 dB if performance was below 60%. This calibration procedure continued until the desired performance level was attained; the final SNRs resulting from this procedure ranged from -6 dB to -16 dB for young adults, and from -4 dB to -16 dB for older adults.

The first language in which participants completed the speech perception in noise task was counterbalanced, such that half began with L1 and the other began with L2. Throughout the task, the experimenter noted whether the participant produced the correct terminal word for each trial (coded as 0 or 1). In case of erroneous answers, the experimental also recorded the answer produced by the participant verbatim.

6.8 Results

Participants' accuracy when identifying sentence terminal words was analyzed with a series of linear mixed models using the *lme4* package (Bates et al., 2015) for R 4.0 (R Core Team, 2020). The specification of each model is reported below.

6.8.1 Preliminary analyses

Prior to comparing older adults to young adults, we investigated whether the performance of older adults with normal hearing differed from that of older adults with age-related hearing loss. To this end, we used a linear mixed model with four fixed effects: language (L1 = -0.5, L2

= 0.5), modality (auditory-only = -0.5, audiovisual = 0.5), context (low context = -0.5, moderate context = 0.5), and hearing status (normal hearing = -0.5, hearing loss= 0.5).

$$Accuracy \sim Language * Modality * Context * Hearing\ Status +\ (1|Participant)$$

Table 4 outlines the model results. Crucially, there was no main effect or interactions involving hearing status, suggesting that performance was comparable for older adults with normal hearing and older adults with age-related hearing loss. Therefore, subsequent analyses (including comparisons to younger adults) collapsed all older adults into a single group.

6.8.2 Age differences in speech perception in noise

Sentence accuracy. Participants' accuracy in identifying sentence terminal words was analyzed with a linear mixed model. Four fixed factors (language, modality context, age group) were entered into the model. All fixed factors were contrast coded using the following specification: language (L1 = -0.5, L2 = 0.5), modality (auditory-only = -0.5, audiovisual = 0.5), context (low context = -0.5, moderate context = 0.5), and age group (older adults = -0.5, younger adults = 0.5). Additionally, random intercepts and slopes were entered into the model. Following Barr et al. (2013)'s recommendation to keep models maximal, all random intercepts and slopes were initially entered into the model. Due to lack of convergence, several random effects had to be removed; the final model included a random intercept of participant, along with random slopes of language and modality for each participant.

$$Accuracy \sim Language\ *\ Modality\ *\ Context\ * Age\ group$$
$$+\ (1 + Language|Participant) + (1 + Modality|Participant)$$

Table 7, Figure 1, and Figure 2 outline the results. The intercept, which represents the grand mean of participants' accuracy during the speech perception task when collapsing all conditions, was 67.20%. There was a main effect language, by which participants were approximately 13% less accurate in L2 compared to L1. There was also a main effect of modality, with greater accuracy for audiovisual sentences compared to auditory-only sentences. A main effect of context was also found: accuracy was higher for moderate context sentences compared to low context sentences. There was no main effect of age, indicating that older and young adults performed similarly during the speech perception task overall.

There was an interaction of modality and context, indicating that the benefit of context was more pronounced in the absence of visual speech cues (i.e., in the auditory-only condition compared to the audiovisual condition). An interaction of modality and age was also found, with

a somewhat larger modality effect for younger adults compared to older adults. Finally, a three-way interaction of language, modality, and context was found: in participant's first language, each category of cue (i.e., visual speech cue, supportive sentence context) was most beneficial when the other type was not available. The same was not found in L2.

Visual enhancement in sentences. The benefits afforded by visual speech cues and sentence context were examined by computing the visual enhancement effect (VE). This refers to the difference in performance (typically an improvement) between auditory-only and audiovisual speech perception using the following equation:

$$VE = \frac{Accuracy_{AV} - Accuracy_A}{Accuracy_A}$$

VE is a measure of the difference in accuracy between AV and A expressed as a proportion of one's performance in the A-only modality. In other words, VE is a *relative enhancement* measure expressed as a function of one's performance in the auditory modality.

We investigated the magnitude of the visual enhancement for older adults and younger adults model with three fixed factors: language (L1 = -0.5, L2 = 0.5), context (L1 = -0.5, MC = 0.5), age group (older adults = -0.5, younger adults = 0.5). The final model also included a random intercept of participant, and a random slope of age for each participant.

$$VE \sim Language * Context + (1 + Age\ Group\ |Participant)$$

Table 6 and Figure 2 provide an overview of the results. The model intercept was 0.63, indicating a visual enhancement of approximately 53% of the auditory-only performance for audiovisual, low context sentences presented in L1. There was a main effect of language, with the visual enhancement being approximately 0.25 units larger in for L2 compared to L1. There was also a main effect of context, with the visual enhancement being approximately 0.28 units larger for low context sentences compared to moderate context sentences. Finally, there was a main effect of age, with older younger adults showing a larger visual enhancement overall compared to older adults.

While no statistically significant interactions were found, there were trends towards a two-way context by age interaction and a three-way interaction of language, context, and age. These trends primarily reflect a pattern by which young adults show a greater context effect,

Table 4.

Results from the model predicting accuracy identifying terminal words for older adults with and without related hearing loss.

	Estimates	*SE*	95% CI	β	t
Fixed Effects					
Intercept	68.85	1.77	65.38 – 72.32	-0.01	-0.07
Language	-10.97***	1.39	-13.69 – -8.25	-0.54	-7.90
Modality	21.19***	1.39	18.47 – 23.91	1.04	15.26
Context	15.80***	1.39	13.08 – 18.52	0.77	11.38
Hearing Status	-3.46	3.54	-10.40 – 3.48	-0.17	-0.98
Language X Modality	3.30	2.77	-2.14 – 8.73	0.16	1.19
Language X Context	-3.48	2.77	-8.91 – 1.96	-0.17	-1.25
Language X Hearing Status	1.08	2.78	-4.36 – 6.52	0.14	0.39
Modality X Context	-5.13	2.77	-10.56 – 0.31	-0.25	-1.85
Modality X Hearing Status	1.94	2.78	-3.50 – 7.38	0.09	0.70
Context X Hearing Status	-0.57	2.78	-6.01 – 4.87	-0.03	-0.20
Language X Modality X Context	8.18	5.55	-2.71 – 19.06	0.40	1.47
Language X Modality X Hearing Status	1.98	5.55	-8.89 – 12.85	0.10	0.36
Modality X Context X Hearing Status	-4.74	5.55	-15.60 – 6.13	-0.23	-0.85
Language X Modality X Context X Hearing Status	-9.94	11.11	-31.71 – 11.83	-0.49	-0.89
			Variance		
Random Effects		Intercept		Slope	
Participant		82.02		N/A	
Residual		115.96		N/A	

Note. Marginal $R^2 = 0.52$, Conditional $R^2 = 0.72$

* p < .05 ** p < .01 *** p < .001

Table 5

Results from the model predicting accuracy when identifying sentence terminal words for young and older adults.

	Estimates	*SE*	95% CI	β	*t*
Fixed Effects					
Intercept	67.20	1.10	65.04 – 69.36	-0.00	-0.04
Language	-13.12***	1.29	-15.64 – -10.59	-0.63	-10.19
Modality	23.70***	1.16	21.42 – 25.98	1.13	20.37
Context	15.50***	0.89	13.75 – 17.26	0.74	17.33
Age Group	-3.39	2.20	-7.71 – 0.94	-0.16	-1.54
Language X Modality	3.14	1.79	-0.37 – 6.65	0.15	1.76
Language X Context	-3.24	1.79	-6.75 – 0.27	-0.15	-1.81
Language X Age Group	-3.38	2.57	-8.43 – 1.66	-0.16	-1.31
Modality X Context	-5.47**	1.79	-8.98 – -1.97	-0.26	-3.06
Modality X Age Group	4.88*	2.33	0.32 – 9.44	0.23	2.10
Context X Age Group	-0.49	1.79	-3.99 – 3.02	-0.02	-0.27
Language X Modality X Context	9.33**	3.58	2.32 – 16.35	0.45	2.61
Language X Modality X Age Group	0.89	3.58	-6.12 – 7.91	0.04	0.25
Language X Context X Age Group	1.17	3.58	-5.84 – 8.19	0.06	0.33
Modality X Context X Age Group	0.26	3.58	-6.76 – 7.27	0.01	0.07
Language X Modality X Context X Age Group	3.25	7.16	-10.78 – 17.29	0.16	0.45
		Variance			
Random Effects	Intercept		Slope		
Participant	54.06		N/A		
Language Factor | Participant	-		52.19		
Modality | Participant	-		33.62		
Residual	95.96		N/A		

Note. Marginal $R^2 = 0.61$, Conditional $R^2 = 0.77$

* p < .05 ** p < .01 *** p < .001

Figure 1

Accuracy in identifying terminal words of sentences across languages, modalities, and context

levels
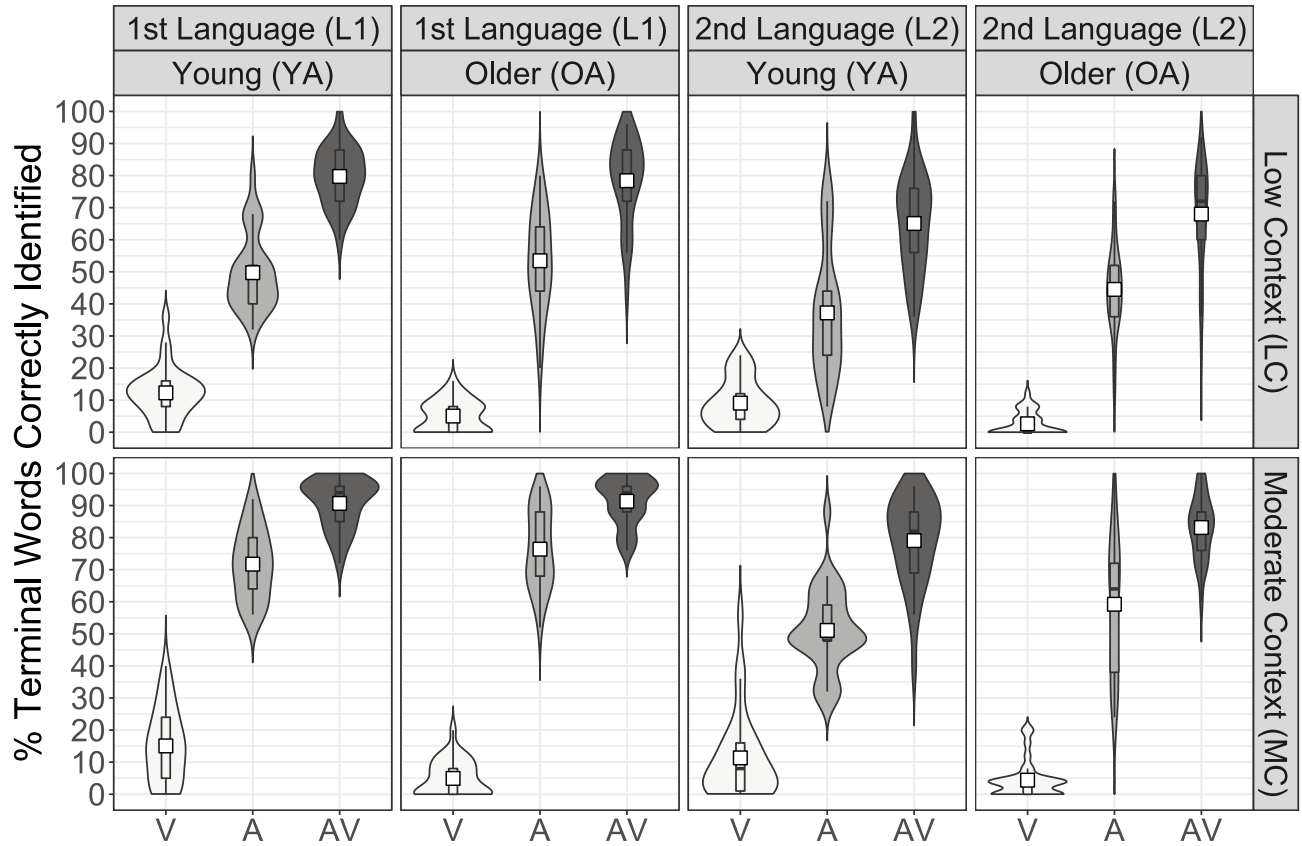
Note. For this and subsequent figures, V refers to the visual condition, A refers to the auditory condition, AV refers to the audiovisual condition. Square boxes represent the mean, solid horizontal lines represent the median, vertical rectangular boxes and whiskers represent interquartile range, and the violin represents the density of data points at any given value of the y-axis.

particularly in L2. Furthermore, while younger adults show proportionally larger visual enhancement in L2 compared to L1, older adults appear to show comparable visual enhancements in both languages.

6.8.3 Individual differences in visual enhancement

We investigated potential factors which may explain the difference in visual enhancement in L2 for young adults and older adults. To explore this, we investigated correlations between the magnitude of the visual enhancement for L2 LC sentences (i.e., the condition in which young adults and older adults differed), and cognitive performance (e.g., working memory, processing speed) and aspects of the bilingual experience (e.g., age of acquisition of the second language, percentage of daily use of the second language).

We examined the correlations between the magnitude of the visual enhancement and two measures of visual working memory and verbal working memory. For both young and older adults, working memory was unrelated to the magnitude of the visual enhancement, regardless of language or sentence context (see Table 7). Likewise, processing speed was not correlated to the magnitude of the visual enhancement (see Table 7).

Similar analyses were conducted to investigate possible correlations between the magnitude of the visual enhancement and aspects of the bilingual experience (age of acquisition, years of experience with L2, self-reported L2 fluency, percentage of daily use of the L2; see Table 7). For young adults, there was a negative correlation between self-reported L2 fluency and the magnitude of the visual enhancement during low context sentences presented in L2: lower self-reported fluency was associated with a larger visual enhancement. Although not statistically significant, there was a positive correlation between young adults' age of L2 acquisition, and the magnitude of the visual enhancement for low context sentences presented in L2. No significant correlations were found for older adults.

6.9 Discussion

This study investigated the benefits of visual speech cues and supportive sentence context in bilinguals' first and second language in both young bilinguals and older adult bilinguals. To this end, we used an audiovisual speech perception in noise task and calibrated the level of background noise individually for each participant to elicit about 50% correct responses in auditory-only, low context sentences presented in the first language. The level of background noise was then held constant between L1 and L2, allowing for a direct comparison of the impact

of visual speech cues and supportive sentence context between the two languages under similar perceptual conditions.

The results indicate that highly proficient English-French/French-English bilinguals benefit from visual speech cues and supportive sentence context in both of their languages when the signal-to-noise ratio is the same, and this is the case for both young bilinguals and older bilinguals. Importantly, the mean signal-to-noise ratio was approximately 3 dB higher (i.e., more favourable) for the older adults compared to the young adults, which represents a statistically significant difference. Additionally, older adults had higher listening thresholds (i.e., pure-tone average) than young adults. This means older adults has poorer hearing acuity than young adults. Nevertheless, having equated baseline perceptual load equal across individuals, older bilinguals were as accurate as young bilinguals during speech perception in noise.

6.9.1 Context enhancement

While the benefit of supportive sentence context was largest in L1 in absolute terms, both young and older participants showed a clear benefit from supportive sentence context in L2. This adds to an emerging literature suggesting that bilinguals benefit from supportive sentence context (e.g., Bradlow & Alexander, 2007; Coulter et al., 2020; Kousaie et al., 2019; Shi, 2010, 2014). Furthermore, the benefit afforded by supportive context was largest for auditory-only sentences for both age groups, indicating that both young and older bilinguals benefit from context most when auditory information is available and one cannot rely on additional information (e.g., visual speech cues). This finding can be conceptualized within an expanded inverse effectiveness hypothesis framework. While the inverse effectiveness hypothesis generally pertains to the sensory quality of cues, the results from this study suggest that linguistic cues (e.g., supportive sentence context) may play a role akin to that of a second sensory modality during speech perception in noise.

In terms of age differences in the ability to benefit from context, results from this study are in line with those of Dubno et al. (2000) and Buss et al. (2019): when baseline perceptual load is equated between participants, both young and older adults show similar benefits from supportive sentence context. This highlights the importance of using noise calibration procedures when attempting to investigate age differences in language processing independently of (or at least less dependent on) age-related differences in sensory acuity.

6.9.2 Visual enhancement

The bilinguals tested in this study showed a clear benefit from visual speech cues in both L1 and L2. There were, however, age differences in the pattern of visual enhancement across languages and levels of context. For young bilinguals, the visual enhancement was largest in L2 when there was no sentence context. This is consistent with the inverse effectiveness hypothesis, as visual speech cues appear to be particularly useful in suboptimal linguistic cues (i.e., lack of supportive context, perceiving speech in L2). Consistent with this idea, the extent to which younger bilinguals benefitted from visual speech cues for low context sentences presented in L2 was related to their self-reported L2 ability: lower ability was associated with greater benefit from visual speech cues when context is unavailable.

For older adults, the picture is different. While visual speech cues were helpful in both L1 and L2, there was no reliable difference between the two languages and no correlation with L2 experience. This suggests that bilinguals' reliance on visual speech cues may decrease as they accumulate experience in L2; they still benefit from visual speech cues but do so in a way that is comparable to their first language.

6.9.3 Limitations

Despite providing novel and important insights into bilingual speech perception in noise in young and older bilinguals, this study is not within limitations. The participants were all highly proficient bilinguals; therefore, the findings may not be applicable to individuals who are less proficient in their second language.

The noise calibration procedure allowed us to directly compare young and older bilinguals by equalizing perceptual load at baseline (i.e., first language, auditory-only, low context sentences). However, the benefits of visual speech cues and sentence context depend in part on the signal-to-noise ratio (e.g., Ross et al., 2007; Stevenson et al., 2015), and the findings presented here may not generalize to higher/lower baseline perceptual loads. Furthermore, while we had pragmatic reasons to equate perceptual load across participants, this does not happen in the real world. Therefore, an important avenue for future research is to investigate bilingual speech perception in noise at constant SNRs across participants.

Another set of limitations pertain to the stimuli themselves. They were all recorded by the same speaker. However, due to physiological differences in the vocal apparatus (e.g., Sjerps et al., 2019), the same sounds or words can present different acoustical properties across speakers, which may affect speech perception. Furthermore, there is evidence for age-differences in the

ability to selectively attend to a target voice in a multi-talker context, but these age differences disappear when the target voice is familiar (Johnsrude et al., 2013). It is possible that participants gained familiarity with the speaker's voice over the course of the experiment, thereby minimizing potential age differences in speech perception in noise.

Another limitation lies in the fact that only one language pair was investigated in this study. It may be that other language pairs, for example a combination of tonal and non-tonal languages, would yield different results, especially given that tone provides an additional category of cues that may aid speech perception in noise.

Finally, while we investigated age differences and are speculating about a developmental trajectory when it comes to the benefit afforded by visual speech cues, our results are cross sectional. A true test of this hypothesis requires longitudinal studies following bilingual participants throughout the lifespan.

6.9.4 Conclusion

To the best of our knowledge, this is the first study to systematically compare speech perception in noise in a first and second language, within the same bilingual individuals, while also investigating age differences. Both young and older bilinguals benefit from visual speech cues and supportive sentence context in L1 and L2. However, during L2 speech perception in noise, visual speech cues appear to be particularly important for young adults, especially those with less experience/ability. Furthermore, older adults show equal benefit from visual speech cues in L1 and L2. Taken together, these results highlight the importance of L2 experience during speech perception in noise. In conclusion, one thing is clear: providing visual speech cues and ample supportive context is an effective way to facilitate speech perception in noise, regardless of language.

Table 6

Results from the model predicting the visual enhancement when identifying sentence terminal words

	Estimates	*SE*	95% CI	*β*	*t*
Fixed Effects					
Intercept	0.53	0.04	0.46 – 0.61	0.00	0.07
Language	0.25***	0.06	0.14 – 0.36	0.49	4.56
Context	-0.28***	0.06	-0.39 – -0.17	-0.54	-5.06
Age	0.20**	0.07	0.05 – 0.34	0.38	2.71
Language X Context	0.13	0.11	-0.09 – 0.34	0.25	1.15
Language X Age	0.18	0.11	-0.04 – 0.39	0.34	1.60
Context X Age	-0.20	0.11	-0.42 – 0.02	-0.39	-1.82
Language X Context X Age	-0.40	0.22	-0.84 – 0.03	-0.78	-1.83

	Variance	
Random Effects	Intercept	Slope
Participant	0.01	N/A
Age | Participant	-	0.08
Residual	0.26	N/A

Note. Marginal R^2 = 0.13, Conditional R^2 = 0.29.
* $p < .05$ ** $p < .01$ *** $p < .001$

Figure 2

Visual enhancement for sentences across languages and context levels

(A) Young adults

(B) Older adults
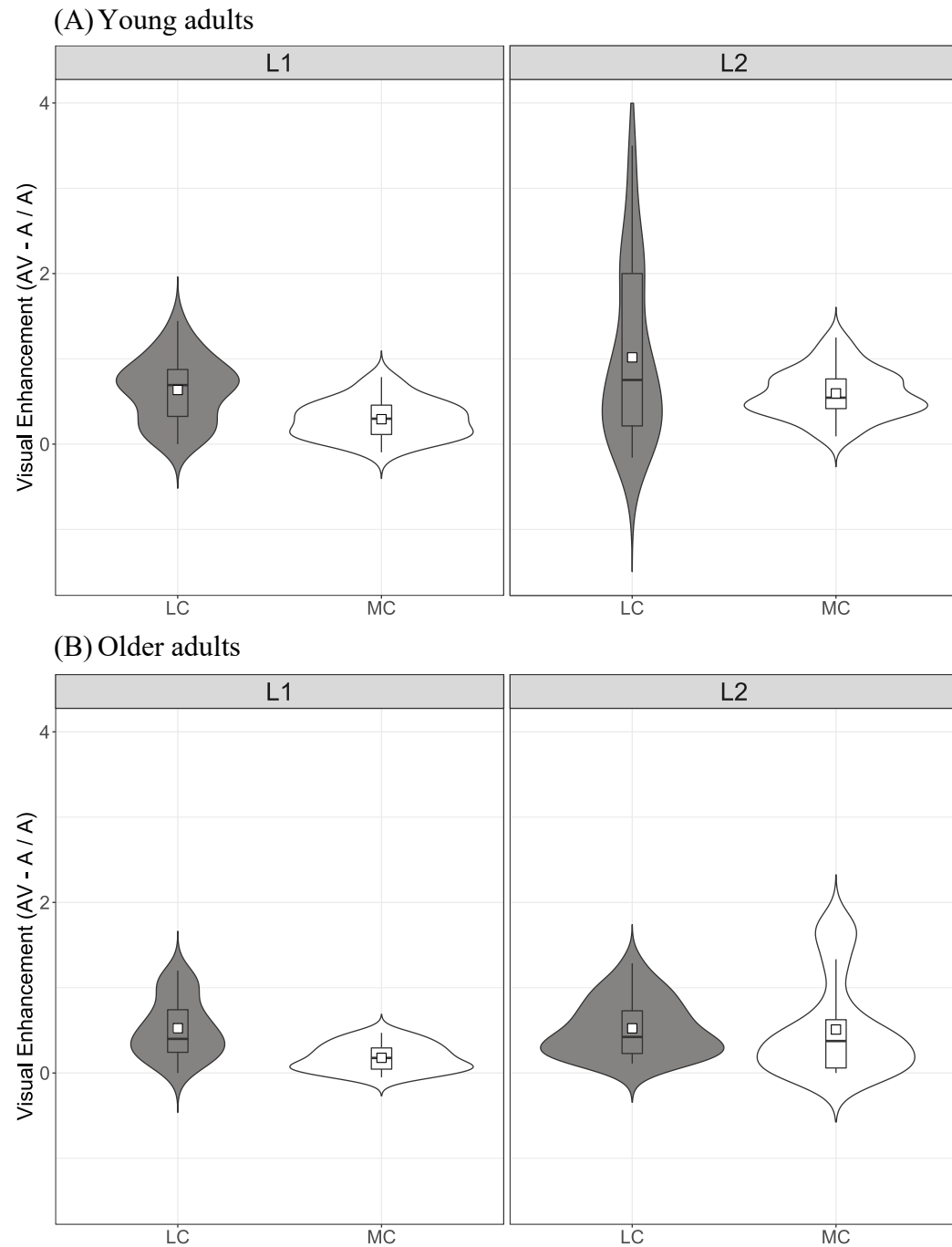
Note. L1 refers to the first language, L2 refers to the second language. LC refers to low context and MC to moderate context. Square boxes represent the mean, solid horizontal lines represent the median, vertical rectangular boxes and whiskers represent interquartile range, and the violin represents the density of data points at any given value of the y-axis.

Table 7

Pearson correlations between second language, low context visual enhancement and cognitive and bilingualism variables

	Young Adults (n = 28)		Older Adults (n = 28)	
	r	p-value	r	p-value
Cognitive Variables				
Working Memory				
Letter-Number Sequencing	-.02	.902	.21	.285
Spatial Span	-.08	.681	-.12	.555
Processing Speed				
Digit-Symbol Coding	.18	.370	-.03	.885
Symbol Search	.01	.972	-.21	.292
Bilingualism Variables				
Age of acquisition	.33	.085	.09	.651
Years of experience	.00	.996	-.14	.473
Daily usage of L2	-.21	.278	.10	.620
Self-reported L2 fluency	-.39	.038*	.18	.358

Note. 2 young adults and 3 older adults were excluded as outliers based on the cognitive variables

Chapter 7: Manuscript 3:

Younger and Older Bilinguals Show Similar Gaze Behaviours During Audiovisual
Speech Perception in Noise

Alexandre Chauvin[1, 2] & Natalie A. Phillips[1, 2, 3]

[1]Department of Psychology/Centre for Research in Human Development, Concordia University,
Montreal, QC, Canada

[2]Centre for Research on Brain, Language and Music, McGill University, Montreal, QC, Canada

[3]Bloomfield Centre for Research in Aging, Lady Davis Institute for Medical Research, Montreal,
QC, Canada

Author Note

7.1 Abstract

Adults have a natural tendency to look at a speaker's eyes and/or nose, depending on cultural and societal norms. When speech perception occurs in background noise, however, native adult listeners tend to look at the speaker's mouth, likely in an attempt to disambiguate the incoming speech signal using visual speech cues. Much less is known about gaze behaviour during speech perception in noise for bilinguals, particularly when listening to speech in their second language. Similarly, age differences in gaze behaviour during speech perception in noise remain understudied.

This study investigated the proportion of time spent looking at a speaker's nose/mouth (i.e., where visual speech cues are likely to be seen) in younger (n = 16) and older (n = 14) English-French/French-English bilinguals during speech perception in noise in their first (L1) and second (L2) language. To this end, we presented participants with English and French sentences in multi-talker babble under three modalities (visual, auditory, and audiovisual) and two levels of context (low context and moderate context). Although all participants were presented with sentences in all three modalities, this paper focuses on the auditory and audiovisual conditions; during the auditory condition, a still face of the speaker was presented throughout each trial. Importantly, the signal-to-noise ratio was individually calibrated for each participant, thereby equating the baseline perceptual load across individuals.

Unsurprisingly, both younger and older bilinguals looked at the speaker's nose/mouth more when visual speech cues were available compared to when they were not. Interestingly, participants still spent over 25% of the time looking at the area of interest even when presented with a still face, suggesting a certain degree of automaticity in looking towards a speaker's nose/mouth during speech perception in noise.

There were no age differences in the proportion of time spent looking at the speaker's mouth around the onset of sentence terminal words. Furthermore, there were no differences in the proportion of spent looking at the speaker's mouth in L1 and L2, nor were there associations between L2 experience and attention towards the speaker's nose/mouth. Additionally, there was almost no correlation between the proportion of time spent looking at the speaker's mouth/nose and how much one benefited from visual speech cues; there was one exception in the case of young adults during L1, moderate context sentences. Overall, the proportion of time spent looking at the speaker's nose/mouth in L1 and L2 were generally positively correlated,

suggesting that bilinguals' tendency to attend to visual speech cues in L2 may be more related to individual preferences/styles rather than language experience.

Keywords: audiovisual speech perception, speech-in-noise, aging, bilingualism, sentence context, eye tracking

Younger and Older Bilinguals Show Similar Gaze Behaviours During Audiovisual

Speech Perception in Noise

The human face is a rich source of information. In fact, faces are so important that the human brain appears to possess a specialized module (i.e., the fusiform face area) dedicated to processing them (Kanwisher & Yovel, 2006). Therefore, it is no surprise that an interlocutor's face often plays an integral role in interpersonal communication.

7.2 What is in a face?

During face-to-face interactions, the interlocutor's face provides a variety of information (e.g., facial expressions, markers of emotional state, and lip movements) collectively known as *visual speech cues*. Interestingly, different parts of the face provide different types of visual speech cues. For example, a speaker's eyes often provide information about social and emotional factors (e.g., Buchan et al., 2007; Emery, 2000; Frischen et al., 2007). On the other hand, a speaker's mouth typically provides information complementary to that carried by the auditory speech signal (Yehia et al., 1998).

During speech perception, gaze preference typically follows a developmental trajectory. Indeed, infants generally show more interest in the eyes compared to the mouth (e.g., Leukowicz & Hansen-Tift, 2012), but gaze towards the latter tends to increase over the first year of life (e.g., Pons et al., 2015). This tendency later reverses, with adults generally spending more time gazing at a speaker's eyes rather than their mouth under quiet/favourable listening conditions (e.g., Lansing & McConkie, 2003; Morin-Lessard et al., 2019; Vatikiotis-Bateson et al., 1998).

One popular explanation for this developmental trajectory is the language expertise hypothesis (e.g., Leukowitz & Hansen-Tift, 2012), which posits that infants and children start looking at speakers' mouths more as their own language skills develop. Over time, and with further development of linguistic skills and knowledge, there is less of a need to focus on the cues provided by the mouth (e.g., lip movements).

7.3 The importance of the mouth during speech perception in noise

Thus far, we reviewed gaze preferences during speech perception in favourable or quiet conditions. However, speech perception often occurs in the presence of background noise, which brings a unique set of challenges. Under noisy listening conditions, successful speech perception requires the listener to discriminate the target speech signal from the background noise (Wingfield et al., 2007), and derive meaning from degraded speech information (Darwin, 2008).

Due in part to the challenges mentioned above, mouth/lip movements become less redundant during speech perception in noise. In fact, they may be particularly helpful in disambiguating phonemes that sound similar (e.g., /m/ and /n/) but have distinct visual presentations (Campbell et al., 2008). Consistent with this idea, seminal work by Sumby and Pollack (1954) has shown that having access to a speaker's lip movements during speech perception in noise greatly improves accuracy. This benefit of combined auditory and visual speech cues (i.e., audiovisual speech) during speech perception in noise has since been replicated numerous times (e.g., Bernstein et al., 2004; Ross et al., 2007; Smayda et al., 2016; Sommers et al., 2005), and is typically larger in noise compared to quiet conditions (e.g., Crosse et al., 2016). Furthermore, a benefit of audiovisual speech has been demonstrated across a wide range of populations, including young adults (e.g., Sommers et al., 2005), older adults with age-normative hearing (e.g., Tye-Murray et al., 2010), older adults with hearing loss (e.g., Tye-Murray et al., 2007), and even older adults with mild cognitive impairment and Alzheimer's disease (Chauvin et al., 2021).

Recent work from our group investigated whether adult bilinguals benefit from audiovisual speech during speech perception in noise (Chauvin & Phillips, under review; Chauvin et al., under review). Overall, speech perception in noise was more accurate in L1 compared to L2, but bilinguals benefited from audiovisual speech in both languages (Chauvin & Phillips, under review; Chauvin et al., under review). Furthermore, when performance is equated across participants during L1, auditory-only speech perception in noise, young and older adult bilinguals achieved largely similar performance.

7.4 Gaze during audiovisual speech perception in noise

Given that audiovisual speech can facilitate speech perception in noise, it seems logical to assume that individuals would tend to focus on a speaker's mouth during speech perception in noise. Indeed, under noisy listening conditions, gaze patterns become more centralized and directed towards the speaker's nose and mouth (e.g., Buchan et al., 2007; Buchan et al., 2008; Lasing & McConkie, 2003; Vatikiotis et al., 2018; Yi et al., 2013). Furthermore, fixations to the speaker's mouth increase in length at higher levels of background noise (Šabić et al., 2020).

This switch in gaze patterns is consistent with the cognitive relevance framework of visual attention (Henderson et al., 2009), which stipulates that an individual's attention is allocated based on task goals and the individual's knowledge. In the context of speech perception

in noise, where the goal is typically to understand what the speaker is uttering, individuals' gaze is drawn to the speaker's mouth because the mouth typically provides more speech-relevant information compared to the eyes.

There may also be individual differences in one's tendency to look at the speaker's mouth during speech perception in noise. For example, Alsius et al. (2016) found that young adult participants who benefit most from audiovisual speech during word perception in noise spent more time fixating on the speaker's mouth compared to participants who showed a small audiovisual benefit. In a different study, Rennig and colleagues (2020) have found a positive correlation between the amount of time one spends looking at the speaker's mouth in quiet listening conditions, and performance during audiovisual speech perception in noise. In other words, there may be individual differences in one's propensity to look at the speaker's mouth in general, whether in quiet or in noise, which may in turn influence how much one benefits from audiovisual speech. One possible explanation for this is one of experience: those individuals who spend more time gazing at speakers' mouths may gain valuable knowledge and experience about lip movements and corresponding phonemes. In turn, this experience may help one benefit from lip movements on-line during speech perception in noise. Overall, there seems there seems to be a general tendency to shift gaze towards the speakers' mouth under noisy listening conditions. Furthermore, there are likely individual differences in one's propensity to direct and maintain their gaze on the speaker's mouth during speech perception in noise, the full extent of which is currently unclear.

The literature reviewed thus far has focused on gaze patterns and gaze preferences in one's native language. However, bilingualism and multilingualism are increasing (e.g., Statistics Canada, 2017; Ryan, 2013), highlighting the importance of understanding speech perception in noise in both native and non-native languages.

In the context of gaze behaviour during speech perception under quiet conditions, there is an emerging literature suggesting that language familiarity modulates one's tendency to look at a speaker's mouth. For example, Barenholtz et al. (2016) had English monolinguals and English/Spanish bilingual participants listen to audiovisual sentences in either English or Spanish. Using an eye tracker, they found that monolinguals' attention to the mouth increased in a non-native language compared to the native language. In contrast, this pattern was not found for bilinguals who reported equal familiarity with both languages. Work by Birulés et al. (2020)

directly investigated the impact of L2 proficiency. They had participants (a mix of Catalan-English and Spanish-English bilinguals) watch videos of a speaker reciting English monologues and found that L2 proficiency was unrelated to the extent to which bilinguals attend to the speaker's mouth. However, the sample consisted entirely of young adults. One possibility is that the impact of L2 proficiency/expertise unfolds over a longer period of time (e.g., in older adults who have had considerable experience in their second language).

7.5 Current study

Despite an emerging literature, the intersection of gaze and bilingual speech perception in noise remain understudied. However, there is growing evidence that adults tend to pay more attention to the mouth during difficult speech perception tasks (e.g., L2 speech, noisy listening conditions). The current study further investigates gaze behaviours during speech perception in noise in bilinguals, in both their L1 and L2. Furthermore, this study examines potential age differences between young and older adults during speech perception in noise.

To this end, we presented bilingual participants with English and French sentences in multi-talker babble under three modalities (visual, auditory, and audiovisual) and two levels of context (low context and moderate context). We note that although all participants were presented with sentences in all three modalities, this paper focuses on the auditory and audiovisual conditions. Participants were all English-French or French-English bilinguals, and they completed the speech perception in noise task in L1 and L2. Crucially, the signal-to-noise ratio was individually calibrated for each participant, so as to equate the perceptual load at baseline. During the speech perception task, we recorded participants' gaze using an eye tracker (during the auditory condition, a still face of the speaker was presented throughout each trial).

First, we hypothesize that participants will spend a greater proportion of time looking at the speaker's mouth during audiovisual trials compared to auditory-only trials. Second, we expect that both young and older bilinguals will spend proportionally more time looking at the speaker's mouth in L2 compared to L1. Following from the results of Birulés et al. (2020), we do not expect L2 experience to be related to L2 gaze behaviours in young adults. However, we expect that the proportion of time spent looking at the speaker's mouth in L2 may be negatively associated with L2 experience in older adults, who have had the chance to develop L2 expertise over a longer period of time. Finally, for both young and older bilinguals, we expect to find a positive relationship between the proportion of time spent looking at the speaker's mouth in the

audiovisual condition, and the magnitude of the audiovisual benefit, regardless of language and context.

7.6 Methods

16 young adults and 14 older adults (see Table 1) were recruited from the greater Montreal area for this study; all were part of the sample described in Chauvin & Phillips (under review). Participants were English-French or French-English bilinguals with no functional knowledge of other languages.

All participants were tested on two separate occasions lasting approximately two hours each time; sessions were separated by about one week. During the first session, participants completed sensory screening measures, as well as an extensive battery of cognitive and neuropsychological tests. On the day of the second visit, participants completed the speech perception in noise task described below. During this latter task, gaze data were recorded using a GazePoint GP3 60 Hz eye tracker.

Participants received either course credit (when appropriate) or monetary compensation at a rate of $12/hr of participation. This project was approved by Concordia University's Research and Ethics Advisory Committee.

7.6.1 Stimuli

English and French sentence stimuli were specifically created in-house as described in Chauvin & Phillips (under review). Each sentence was comprised of a carrier stem ranging from 4 to 9 words (M = 6.13, SD = 1.27), and a terminal word. The stems were carefully selected to provide either low levels of context (LC, e.g., "I had not considered the […]") or moderate levels of context (MC, e.g., "In the woods, the hiker saw a […]") in relation to the terminal word (see Appendix B for a list of the stimuli used in this study).

All sentence terminal words began with a consonant. English terminal words were all monosyllabic, but French words had either one or two syllables; this was done to avoid biasing French terminal words towards lower frequency words. Indeed, a cursory analysis of French monosyllabic words beginning with a consonant contained in the Lexique 3.82 database (New et al., 2004) suggests a mean frequency per million of 55.46 (SD = 638.11). While this is certainly not *infrequent*, the English counterparts have a mean frequency per million of 119.76 (SD = 1053.70) according to the SUBTLEX database (Brysbaert & New, 2009).

Table 1

Demographic and language characteristics of the participants

	Young Adults (n = 16)		Older Adults (n = 14)	
	M	*SD* (%)	*M*	*SD* (%)
Age (years)***	22.13	3.59	70.5	4.59
Education (years) *	14.38	1.26	16.86	3.72
Pure-Tone Average (dB)***	6.87	3.65	14.51	6.20
Signal-to-Noise ratio (dB)*	-11.13	3.18	-8.57	3.18
L2 Age of Acquisition (years)	4.19	3.62	6.57	6.15
L2 % Spoken/Used	30.45	15.28	21.07	18.50
L2 Self- Reported Proficiency				
Listening (/5)	4.44	0.73	4.29	0.73
Speaking (/5)	3.94	0.93	4.11	0.88
Reading (/5)	4.25	0.68	4.00	0.88
Writing (/5)	3.63	1.03	3.50	1.09

* $p < .05$, ** $p < .01$, *** $p < .001$

Thus, we used both monosyllabic (40%) and disyllabic (60%) words to minimize differences in word frequency across stimuli. Despite this, however, French terminal word still had significantly lower word frequency across all lists (see Table 2).

7.6.2 Recording the stimuli

The sentence stimuli used in this study were all video-recorded by a proficient French-English bilingual woman in her early twenties who acquired both languages from birth. She wore a black t-shirt, her hair was tied up, and she did not wear makeup. She was positioned in front of a white background, and the recordings were done from the shoulders up. She spoke each sentence in a neutral, conversational manner while keeping a neutral face and avoiding blinks. All of these recordings took place in a sound attenuated room. A thorough description of the processing steps applied to each video file is provided in Chauvin & Phillips (under review).

7.6.3 Procedure

Participants were tested on two occasions as described in Chauvin & Phillips (under review). Particularly relevant to the current paper is the procedure for the second testing session, during which participants completed the speech perception in noise task. Participants were seated in a comfortable chair, approximately 33 inches from a computer screen. Two speakers were located on either side of the screen; stimuli were presented free field through the computer screen and the speakers. Throughout the speech perception in noise task, participants' gaze was recorded using the GazePoint GP3 60 Hz eye tracker.

Prior to beginning the speech in noise task, two calibration procedures were conducted for each participant. The first procedure consisted of calibrating the signal-to-noise ratio (SNR) in order to equalize perceptual load across participants. The level of the background noise (multi-talker babble) was set at ~ 70 dB SPL, and manipulations of the SNR was achieved by adjusting the volume of the target sentences. Importantly, the SNR calibration was done in participants' first language, using auditory-only, low context sentences not otherwise presented during the experimental task. The initial SNR was set a -10 dB SPL (i.e., sentences at ~ 60 dB SPL, noise at ~ 70 dB SPL), and participants were asked to repeat the last word of each sentence spoken by the bilingual speaker. The calibration procedure was completed in blocks of 10 trials, and the current SNR was evaluated after each block. If participants' performance was significantly below 60%,

Table 2

ANOVA investigating differences in (log) word frequency across stimulus lists

	Sum of Squares	df	Mean Square	F
List	72,9314.23	17	42,900.84	0.69
Language ***	1.92e +6	1	1.92e +6	30.65
Modality	62.87	2	31.437	5.02e -4
Context	0.03	1	0.03	5.41e -7
List X Language	3739.72	17	219.98	0.00
List X Modality	2.30e +6	34	67,691.53	1.08
List X Context	22,4842.91	17	13,226.05	0.21
Modality X Language	63.98	2	31.98	5.11e -4
Modality X Context	25.55	2	12.78	2.04e -4
Context X Language	4.71	1	4.71	7.52e -5
Modality X Language X List	1.99e +6	34	58,448.59	0.93
Modality X Context X List	1.53e +6	34	44,993.30	0.72
Modality X Context X Language	15.92	2	7.96	1.27e -4
Context X Language X List	31,342.49	17	1843.68	0.03
Modality X Context X Language X List	1.08e +6	34	31,710.54	0.51
Residuals	3.25e +8	5,184	62,624.16	

*** p < .001

the SNR was adjusted by + 2 dB. On the other hand, the SNR was adjusted by -2 dB if performance was significantly above 60%. The calibration continued until the participant's accuracy was approximately 60%. Using this procedure, the SNRs used in this study ranged from -16 dB to -6 dB for younger adults, and from -14 dB to -4 dB for older adults.

With the noise calibration completed, a second procedure took place prior to beginning the speech perception in noise task. During this procedure, the eye tracker was calibrated using a 9-point routine to ensure proper detection of participants' gaze. The device was positioned approximately 25 inches from the participant and the recording software was visually inspected to ensure that the participant's eyes were properly detected. Following this, the calibration procedure proper was done. White circles appeared one at a time on an otherwise black screen. Participants were instructed to look at and follow each circle with their eyes, minimizing head movements (no chin rest was used in the present study). This calibration procedure was repeated as needed prior to beginning the speech perception in noise task and was also repeated any time the participant stepped away from the apparatus (e.g., during breaks).

Following the calibration procedures described above, participants completed the speech perception in noise task. The first language in which they completed the task (i.e., L1 vs. L2) was counterbalanced. For each trial, participants were instructed to repeat the terminal word of the sentence produced by the bilingual speaker, and the experimenter noted whether participants produced the correct word (coded as 0 or 1). Errors were recorded verbatim.

Each trial began with a black screen with a fixation cross and a prompt lasting 2 seconds (English: "Ready?"; French: "Prêt"), followed by a still frame of the speaker's face for 1 second. After the trial, another 1-second still frame of the speaker's face was presented, followed by a prompt (English: "Response"; French "Réponse") which lasted 2 seconds. For each trial, participants were instructed to repeat the last word of the sentence. All sentences were presented in multi-talker babble adapted from Bilger et al. (1984). The original babble (eight English talkers, low-pass filtered at 7500 Hz) was overlaid and jittered three times to increase the stability of the mask; this procedure resulted in primarily energetic masking, without intelligible content.

7.6.4 Area of interest

For the purpose of this study, three areas of interest (AOIs) were initially identified for each videorecording: the nose, the mouth, and the face (see Figure 1). After inspection of the

Figure 1

Screenshot of the bilingual speaker, outlining the areas of interest
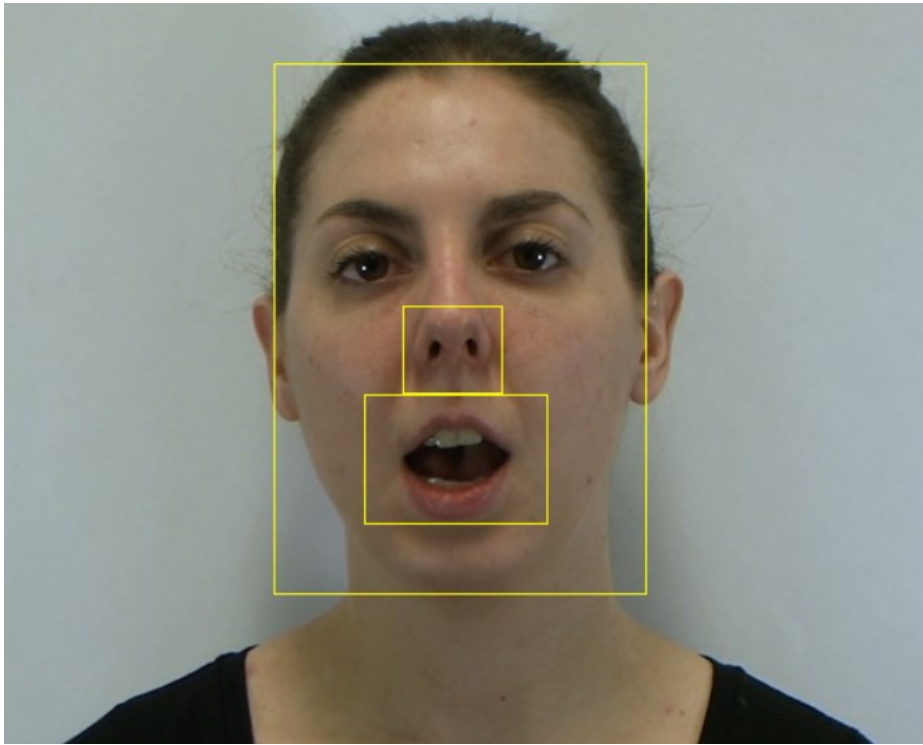
data and based on evidence suggesting that direct gaze towards the mouth is not necessary to be influenced by audiovisual speech (e.g., Paré et al., 2003), we combined the nose and mouth AOIs for analysis. Of note, the mouth AOI was selected such that it encompassed the mouth at its point of maximum opening over the course of a given video: as such, the coordinates were computed separately for each trial while keeping the width and height of the AOI constant across trials.

7.6.5 Processing of the gaze data

All gaze data were processed and prepared prior to data analysis using the *eyetrackingR* package for R version 4.0 (R Core Team, 2020). Trials with more than 25% missing data were excluded from further data analysis. Additionally, we planned to exclude any participant with more than 25% missing data across all trials; however, none of the participants presented here fell below this threshold.

Each trial was divided into 100 millisecond time bins, and was baseline corrected such that Time 0 corresponded to the onset of the video recording after the 1-second still-frame of the speaker's face; the mean onset of sentence terminal words was 4.20 seconds, with a standard deviation of 0.59 seconds. Within each time bin, the proportion of time spent looking at each AOI was computed using the eyetrackingR package. Furthermore, the raw proportion values was transformed to elog values with the following formula: log(Proportion + e / (1 – Proportion + e); the eyetrackingR package uses an epsilon value of 0.5 for this transformation. The goal of this transformation is to deal with the bounded nature of proportions, which complicates the interpretation of results. Following their computation, these elog values were exported for analysis.

7.7 Results

7.7.1 Preliminary analyses

Prior to investigating potential age differences in gaze behaviour, we analyzed participants' accuracy in identifying sentence terminal words during speech perception in noise. To this end, a repeated measures ANOVA was conducted with Language (L1, L2), Modality (A, AV), Context (LC, MC) as within-subject factors, and Age Group (YA, OA) as a between-subject factor; the dependent variable was the percentage of sentence terminal words correctly identified in each condition. Consistent with what was found in the larger sample (Chauvin et al.,

under review), there were no age differences in accuracy (see Table 3) in any of the conditions listed above.

7.7.2 Baseline gaze comparisons

The proportion of time that participants spent looking at the area of interest encompassing the speaker's nose and mouth was investigated using a series of repeated measures analysis of variance. Unless otherwise indicated, $\alpha = .05$ was used, although a stronger emphasis is placed on effect size rather than statistical significance.

Figures 2 and 3 show the average proportion of time participants spent looking at the combined nose/mouth AOI over the course of the trials. The first step in investigating participants' gaze behaviour is to verify whether there were baseline differences in the proportion of time spent looking at the area of interest. To do so, a repeated measures ANOVA was conducted with Language (L1, L2), Modality (A, AV), and Context (LC, MC) as within-subject factors, and Age Group (YA, OA) as between-subject factors. The dependent variable was the elog looking time (as an elog unit) at the beginning of the trial, but after the offset of the fixation cross (i.e., in the 0 to 100 milliseconds time bin).

Table 4 outlines the results of the ANOVA. There were no statistically reliable main effects for any of the within-subject or between-subject factors, indicating that young and older participants spent a similar proportion of time looking at the nose/mouth area of interest when the speaker's face first appeared on screen, regardless of language, modality, or context. This finding is not particularly surprising, given that the position of the pre-trial fixation cross was within the area of interest. There was a statistically reliable interaction of Language and Modality, which may reflect some impact of the blocking of trials. However, we note that the size of this effect was rather small, explaining approximately 6% of the variance in time spent looking at the area of interest.

7.7.3 Looking time at terminal word onset

Having established that there are no age group differences in gaze behaviour at baseline, we now turn to potential differences at the onset of sentence terminal words. A repeated measures ANOVA with factors Language, Modality, Context, and Age Group was conducted. For this analysis, the dependent variable was the mean elog looking time between 3,900 milliseconds and 4,500 milliseconds. This window was selected based on the average auditory onset of the sentence terminal word (approximately 4,200 milliseconds), allowing for a buffer of

Table 3

ANOVA for participants' accuracy in identifying sentence terminal words

Effect	Sum of Squares	df_N	df_D	F	p	η^2
Language	10409.34	1	28	37.88	< .001***	.10
Modality	35711.34	1	28	186.49	< .001***	.36
Context	11745.10	1	28	110.64	< .001***	.12
Age Group	2.63	1	28	0.01	.942	2.617e-5
Language X Modality	310.86	1	28	5.59	.025**	.00
Language X Context	199.14	1	28	1.60	.216	.00
Language X Age Group	73.81	1	28	0.27	.608	7.344e-4
Modality X Context	197.20	1	28	2.00	.168	.00
Modality X Age Group	0.74	1	28	0.00	.951	7.403e-6
Context X Age Group	12.63	1	28	0.12	.733	1.257e-4
Language X Modality X Context	561.87	1	28	4.52	.042**	.01
Language X Modality X Age Group	0.53	1	28	0.01	.923	5.224e-6
Language X Context X Age Group	15.74	1	28	0.13	.725	1.567e-4
Modality X Context X Age Group	156.87	1	28	1.60	.218	.00
Language X Modality X Context X Age Group	1.00	1	28	0.01	.929	9.962e-6

* $p < .01$, ** $p < .05$, *** $p < .001$

Figure 2

Average proportion of time spent looking at the speaker's mouth during L1 speech perception in noise
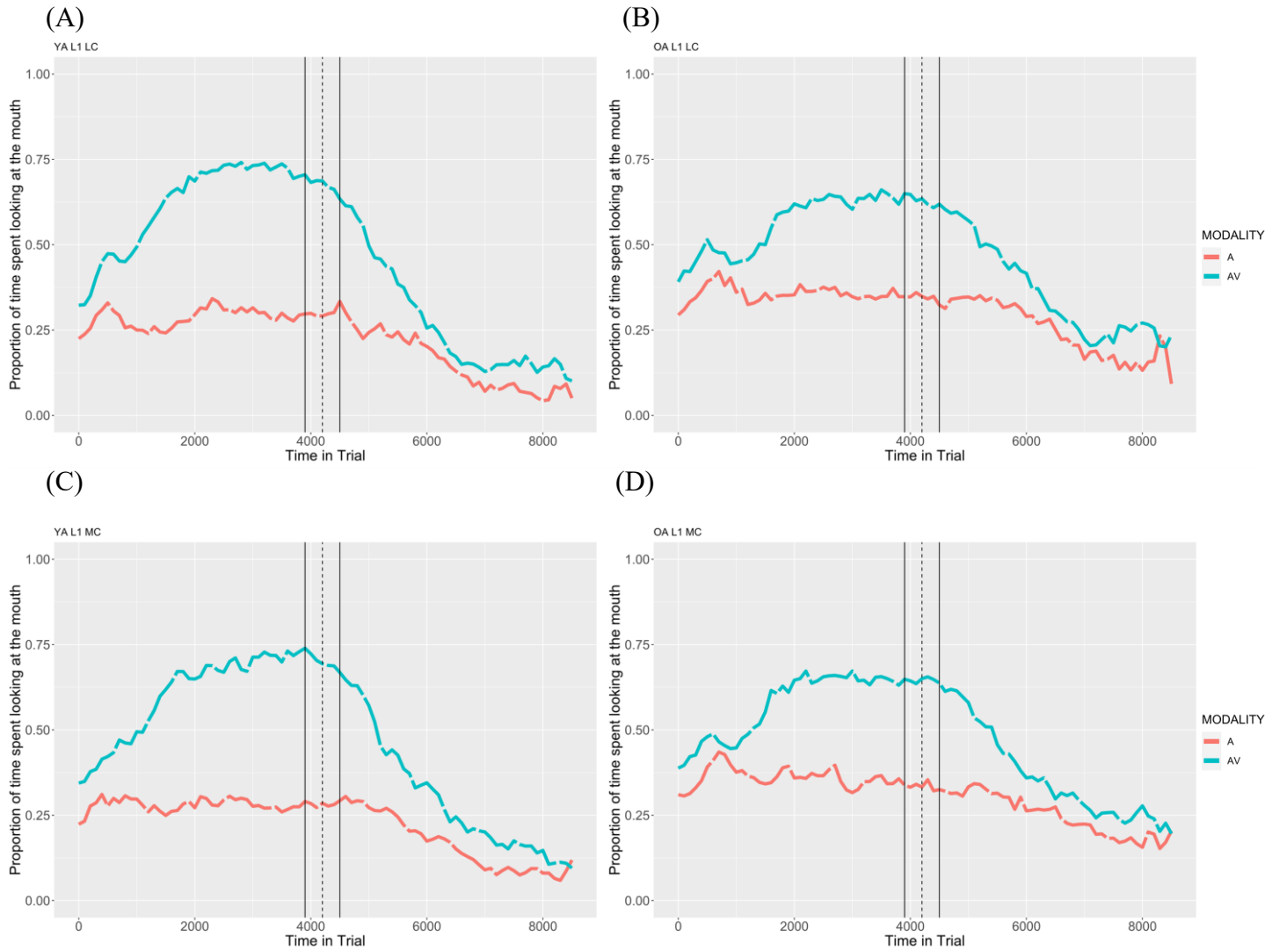
Note. Young adults are presented in panels A and C, while older adults are presented in panels B and D. Low context sentences are in the top row, and moderate context sentences in the second row. The solid vertical lines denote the 600-millisecond time window used in the analyses, while the dotted line corresponds to the average auditory onset of sentence terminal words (4200 milliseconds).

Figure 3

Average proportion of time spent looking at the speaker's mouth during L2 speech perception in noise
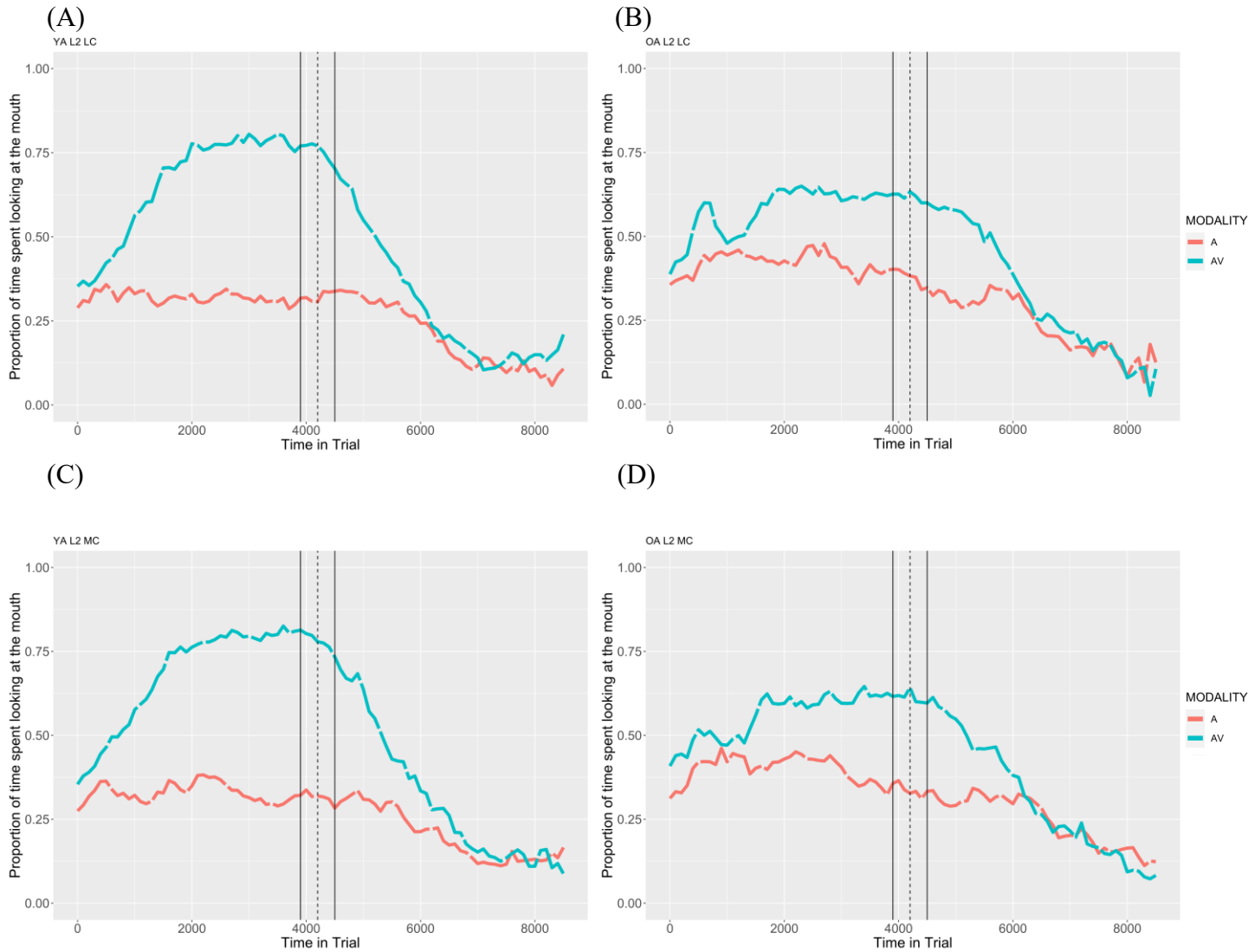
Note. Young adults are presented in panels A and C, while older adults are presented in panels B and D. Low context sentences are in the top row, and moderate context sentences in the second row. The solid vertical lines denote the 600-millisecond time window used in the analyses, while the dotted line corresponds to the average auditory onset of sentence terminal words (4200 milliseconds).

Table 4

ANOVA for the proportion of time spent looking at the nose/mouth between 0 and 100 milliseconds

Effect	Sum of Squares	df_N	df_D	F	p	η^2
Language	6.63	1	28	3.56	.070	.02
Modality	1.05	1	28	1.06	.311	.00
Context	0.48	1	28	1.99	.169	.00
Age Group	13.73	1	28	2.61	.117	.05
Language X Modality	19.49	1	28	38.79	< .001***	.06
Language X Context	0.04	1	28	0.24	.628	1.152e -4
Language X Age Group	0.27	1	28	0.15	.706	8.881e -4
Modality X Context	1.272e -6	1	28	5.922e -6	.998	4.184e -9
Modality X Age Group	0.07	1	28	0.07	.793	2.291e -4
Context X Age Group	0.01	1	28	0.02	.880	1.836e -5
Language X Modality X Context	0.15	1	28	1.20	.283	4.808e -4
Language X Modality X Age Group	0.46	1	28	0.91	.347	.00
Language X Context X Age Group	0.03	1	28	0.18	.673	8.721e -5
Modality X Context X Age Group	0.19	1	28	0.88	.355	6.238e -4
Language X Modality X Context X Age Group	3.41	1	28	0.32	.577	1.278e -4

* p < .01, ** p <. 05, *** p < .001

approximately half a standard deviation on either side. This helps account for differences in onset across trials, while still keeping the window relatively restricted (i.e., at total of 600 milliseconds). We note that a similar ANOVA was conducted with the proportion of time spent looking at the area of interest in the 4,200 to 4,300 milliseconds window, with comparable results.

Table 5 outlines the results of the ANOVA described above. As with the previous analysis, there was no main effect or interaction involving Age Group. Furthermore, there was no main effect of Language or Context. There was a main effect of Modality, with participants spending a significantly greater proportion of time looking at the area of interest in the audiovisual condition compared to the auditory-only condition. Finally, there was an interaction of Modality and Context, with a slightly larger Modality effect for sentences with moderate levels of context compared to low context; we note, however, that this effect is quite small, representing less than 1% of the variance in time spent looking at the area of interest.

7.7.4 Relationship between gaze behaviour and visual enhancement

Having established that young and older adults show similar gaze behaviours during the speech perception in noise task, we turn to whether individual differences in time spent looking at the speaker's nose/mouth predict how much one benefits from audiovisual speech presentation. More specifically, we investigated whether individual differences in the visual enhancement effect (i.e., the difference in performance between the auditory-only and audiovisual conditions) are related to individual differences in the proportion of time spent looking at the speaker's mouth. For the purpose of these analyses, the visual enhancement was computed for each participant using the following formula:

$$VE = \frac{Accuracy_{AV} - Accuracy_A}{Accuracy_A}$$

A series of two-tailed Pearson correlations were used to investigate the potential relationship between the magnitude of the visual enhancement effect and the proportion of time spent looking at the area of interest. As with the ANOVA results presented above, a stronger emphasis is placed on effect size rather than statistical significance.

Young adults. For sentences presented in L1, there was no correlation between the proportion of time spent looking at the speaker's mouth in the audiovisual condition, and the magnitude of the visual enhancement for low context sentences ($r = -.02$, $p = .955$, $r^2 < .01$). In

contrast, there was a positive correlation between the visual enhancement for L1 moderate context sentences and the proportion of time spent looking at the speaker's nose/mouth ($r = .64$, $p < .05$, $r^2 = .41$). These results suggest that more time spent looking at the speaker's nose/mouth in L1 is associated with a larger visual enhancement effect in young adults, but only when context is also available.

Similar to L1, there was no correlation between the proportion of time spent looking at the area of interest in the audiovisual condition, and the magnitude of the visual enhancement for L2 low context sentences ($r = .07$, $p = .811$, $r^2 < .01$). Surprisingly, there was a negative trend between the visual enhancement for L2 moderate context sentences and the proportion of time spent looking at the speaker's nose/mouth ($r = -.38$, $p = .152$, $r^2 = .14$).

Older adults. Like with young adults, there was no correlation between the proportion of time spent looking at the speaker's nose/mouth in the audiovisual condition, and the magnitude of the visual enhancement for L1 low context sentences ($r = -.19$, $p = .510$, $r^2 < .04$). There was also no association between the visual enhancement for L1 moderate context sentences and the proportion of time spent looking at the area of interest ($r = .09$, $p = .765$, $r^2 = .01$). The same was true in L2, for both low context ($r = .09$, $p = .758$, $r^2 = .01$) and moderate context sentences ($r = -.04$, $p = .890$, $r^2 < .01$).

7.7.5 Relationship between L2 gaze behaviour and L2 experience

A series of two-tailed Pearson correlations were used to investigate the potential relationship between the number of years of experience in L2 and the proportion of time spent looking at the area of interest during L2 speech perception in noise.

Young adults. There was no correlation between the number of years of L2 experience and the proportion of time spent looking at the area of interest in L2 for young adults. This was true for both low context sentences ($r = -.08$, $p = .780$, $r^2 = < .01$) and moderate context sentences ($r = .03$, $p = .913$, $r^2 = <.01$).

Older adults. As with young adults, there was no correlation between the number of years of L2 experience and the proportion of time spent looking at the area of interest in L2 for older adults for either low context sentences ($r = -.15$, $p = .621$, $r^2 = .02$) or moderate context sentences ($r = -.05$, $p = .854$, $r^2 = <.01$).

Table 5

ANOVA for the proportion of time spent looking at the nose/mouth between 3900 and 4500 milliseconds

Effect	Sum of Squares	df_N	df_D	F	p	η^2
Language	0.65	1	28	0.29	.597	.00
Modality	167.93	1	28	61.74	< .001 ***	.29
Context	0.01	1	28	0.04	.840	9.191e-6
Age Group	0.15	1	28	0.02	.895	2.591e-4
Language X Modality	0.02	1	28	0.08	.75	4.205e-5
Language X Context	0.00	1	28	0.03	.860	6.373e-5
Language X Age Group	0.12	1	28	0.05	.821	2.080e-4
Modality X Context	1.06	1	28	8.61	.007**	.00
Modality X Age Group	8.00	1	28	2.94	.097	.01
Context X Age Group	0.05	1	28	0.37	.547	8.175e-5
Language X Modality X Context	0.01	1	28	0.22	.641	2.226e-5
Language X Modality X Age Group	0.43	1	28	1.48	.234	7.421e-4
Language X Context X Age Group	0.02	1	28	0.18	.672	3.651e-5
Modality X Context X Age Group	0.01	1	28	0.06	.807	1.312e-5
Language X Modality X Context X Age Group	0.06	1	28	0.99	.327	9.949e-5

* p < .01, ** p <. 05, *** p < .001

7.7.6 Relationship between L1 and L2 gaze behaviour

Given the lack of association between the time spent looking at the area of interest in L2 and one's experience in L2, one possibility is that gaze behaviour depends more on individual preferences/style. To test this, we used a series of two-tailed Pearson correlations to investigate the association between the proportion of time spent looking at the speaker's nose/mouth in L1 and L2 for audiovisual sentences.

Young adults. For young adults, there was a positive association between the time spent looking at the speaker's face in low context sentences in L1 and L2 ($r = .50$, $p = .024$, $r^2 = .25$). However, there was no such association for moderate context sentences in L1 and L2 ($r = .35$, $p = .09$, $r^2 = .09$).

Older adults. For older adults, there was a positive association between the time spent looking at the speaker's face in low context sentences in L1 and L2 ($r = .83$, $p < .001$, $r^2 = .69$). A positive association was also found for moderate context sentences in L1 and L2 ($r = .67$, $p = .004$, $r^2 = .45$), although relatively smaller compared to low context sentences.

7.8 Discussion

This study investigated the proportion of time young and older bilinguals spent looking at a speaker's mouth during speech perception in noise in L1 and L2. To this end, we used an audiovisual speech perception in noise task. Furthermore, we calibrated the level of background noise individually for each participant to elicit approximately 50% correct responses in auditory-only, low context sentences presented in the first language. The level of background noise was then held constant between L1 and L2, allowing for a direct comparison of gaze behaviour between the two languages.

Consistent with our a-priori hypothesis, participants looked at the area of interest encompassing the speaker's nose and mouth a greater proportion of the time during audiovisual sentences compared to auditory-only sentences. In the latter, participants still spent >25% of the time looking at the area of interest. This is consistent with the idea that one's gaze shifts towards the mouth in noisy conditions (e.g., Buchan et al., 2007; Buchan et al., 2008). That this occurs to some extent even when no information is provided by the mouth (e.g., with a still face image) may suggest a certain degree of automaticity rather than a deliberate strategy in the allocation of one's attention. However, in the absence of a quiet speech perception task, this remains speculative.

Contrary to our expectations, young and older bilinguals did not spend more time looking at the speaker's nose/mouth during speech perception in noise in L2 compared to L1. Indeed, attention directed towards a speaker's mouth increases during sentence perception in challenging listening conditions (e.g., Buchan et al., 2007; Buchan et al., 2008). Furthermore, L2 speech perception is often thought to be more challenging than L1 speech perception (e.g., Garcia Lecumberri et al., 2010). Therefore, we expected the combination of background noise (calibrated to be challenging in L1) and L2 speech perception to be particularly challenging, and lead to a greater proportion of time spent looking at the speaker's mouth. One possibility is that the noise calibration procedure used in this study already affected participants' gaze maximally, leading to a sort of ceiling effect. While possible, this explanation seems unlikely given that the proportion of time spent looking at the speaker's mouth was never greater than 80% on average. Another possible explanation lies in the participants themselves. The bilingual participants in this study were generally highly proficient in L2, which may in turn bring their L2 gaze behaviours in line with L1.

In line with Birulés et al. (2020), we did not find an association between L2 experience and the proportion of time spent young adult bilinguals spent looking at the speaker's nose/mouth in L2. Contrary to our prediction, we found no such association in older bilinguals either. Taken together, this suggests that one's propensity to look at a speaker's mouth during speech perception in noise in L2 may be influenced by individual preferences/styles rather than language experience. Correlational analyses comparing the proportion of time spent looking at the speaker's mouth in L1 and L2 support this interpretation to some extent. Indeed, both young and older bilinguals showed a positive association between the time spent looking at the area of interest in L1 and L2, in the absence of supportive context. However, older adults also show a similar association when supportive sentence context is available, albeit to a lesser extent. This may hint at a differential processing of sentence context by young and older adults, perhaps as a result of greater linguistic knowledge in the latter group.

Finally, there was almost no correlation between the proportion of time spent looking at the speaker's mouth/nose, and how much one benefited from visual speech cues. One notable exception was seen for young adults during L1, moderate context sentences. At first glance, this correlation is not surprising. Many models of auditory word recognition (e.g., Cohort model; Marlsen-Wilson & Welsch, 1978) suggest that plausible words become activated as semantic

information (i.e., sentence context accumulates). In this optic, looking at the speaker's mouth provides valuable information in the form of visemes, which may then help truncate the cohort of plausible sentence terminal words. However, it is unclear why a similar correlation did not emerge for low context sentences, in which the visual speech cues should be particularly helpful in identifying the sentence terminal word. One possibility is that moderate context sentences yield more diverse cohorts of plausible sentence terminal words, making visual speech cues particularly useful in trimming said cohorts.

While it is unclear why the same pattern of correlation did not emerge for L2 sentences, one possible explanation relates to language experience. Although the young adults who took part in this study were all proficient in their second language, they may not have yet attained sufficient L2 experience to generate particularly diverse cohorts of plausible sentence terminal words during L2 MC sentences.

Based on the interpretations presented above, one may expect older adults to show positive correlations between the proportion of time spent looking at the speaker's nose/mouth and the magnitude of the benefit of visual speech cues during moderate context sentences in both L1 and L2. Once again, this may point to a differential processing of supportive sentence context amongst young and older adults, although both *benefit* from context to the same extent.

7.8.1 Limitations

Like all studies, the work presented here is not without limitations. First, the sample is small, limiting the generalizability of the results. Although finding relevant effect sizes in the literature proved to be challenging, an a-priori power analysis using a conservative effect size of 0.02 suggested that a total of 38 participants would be needed to achieve at least 80% power (α = .05). In reality, many of the actual effect sizes observed in the context of this study were even smaller, indicating that the study is indeed underpowered.

Second, the participants included in this study were all highly proficient bilinguals, and our findings may not extend to speakers with lower L2 proficiency. Next, the noise calibration produce allowed for a direct comparison of young and older bilinguals' tendency to look at a speaker's nose/mouth under comparable performance during speech perception in noise. While this provides valuable insights, it may not represent real-life gaze behaviours during speech perception in noise, where perceptual load is not equalized and differences in sensory acuity may

play a larger role. Nevertheless, the results presented here provide insight on gaze behaviours during speech perception in noise on an even "perceptual playing field".

Another category of limitations stems from the stimuli used in this study. All stimuli were recorded by the same bilingual speaker. Thus, participants may have become more accustomed to the speaker's voice over the course of the experiment, reducing the need for visual speech cues and subsequently affecting the proportion of gaze towards the speakers' nose/mouth. Crucially, there is evidence for age-differences in the ability to selectively attend to a target voice, but these age differences disappear when the target voice is familiar (Johnsrude et al., 2013). Therefore, it is possible that potential age differences in gaze behaviour were hidden by familiarity effects. Finally, only one language pair was investigated in this study, raising the possibility that the results presented here depend in part on the specific languages studied.

As with all studies of age-related differences, cross-sectional data provide a first glimpse into a potential developmental trajectory. Nevertheless, longitudinal designs are needed to truly elucidate age differences in gaze behaviour during speech perception in noise.

7.8.2 Conclusion

As far as we know, this is the first study to systematically compare gaze behaviours in a first and second language in a first and second language within the same individuals, for young and older bilinguals with comparable accuracy during speech perception in noise. Predictably, both young and older bilinguals tend to look at a speakers' mouth more when visual speech cues are available compared to when they are not. However, the time spent looking at the speaker's mouth appears to be similar in L1 and L2, with and without supportive sentence context, and for young and older adults. At the individual level, young adults who spent more time looking at the speaker's nose/mouth appear to benefit more from visual speech cues, but only in L1 in the presence of supportive sentence context. No such association was found for older adults, which may reflect better use of context in healthy aging and thus lower reliance on visual speech cues, provided that sensory acuity is adequate. Interestingly, for both young and older bilinguals there was no association between L2 experience, and the amount of time spent looking at the speaker's mouth in L2. Instead, individual differences in the time spent looking at the speaker's mouth

appear to reflect in part individual preferences/tendencies regardless of language, at least in proficient bilinguals.

Chapter 8: General Discussion

Through multiple studies, this dissertation aimed to investigate how bilinguals perceive speech in noise in their first and second language, using a within-subject design. Specifically, the first manuscript examined how young adult bilinguals benefit from visual speech cues and supportive sentence context in L1 and L2, along with how L2 experience influences speech perception in noise in one's second language. Following this, the goal of the second manuscript was to investigate potential age differences in the use of visual speech cues and supportive sentence context during bilingual speech perception in noise, using the same paradigm as the first manuscript. Finally, while the first two manuscripts focused on bilinguals' performance during speech perception in noise, the third manuscript investigated the proportion of time younger and older bilinguals spent attending to visual speech cues coming from the speaker's mouth in L1 and L2. In the following sections, I will first summarize the results of the three studies. I will then discuss the implications of equating baseline perceptual load when investigating speech perception in noise, as it is the context in which to consider the results presented in this dissertation. I will then expand on the implications of the results, highlighting specific limitations at the same time. This will be followed by a broader discussion of the limitations of the dissertation, and a reflection on potential directions for future research.

8.1 Summary of the studies

In the first manuscript, I presented a study (Chauvin & Phillips, under review) investigating speech perception in noise in a group of proficient young adult English-French/French-English bilinguals when perceptual load was equated across participants at baseline (i.e., first language, auditory-only sentences without supportive context). The study compared the identification of sentence terminal words across three different modalities (visual-only, auditory-only, audiovisual) and two levels of context (low context, moderate context). Importantly, L1 and L2 performance was directly compared within the same bilingual individuals. Results showed that young adult bilinguals benefited from visual speech cues (i.e., audiovisual speech) and supportive sentence context in both L1 and L2. Both visual speech cues and supportive sentence context were most helpful when the other was not available. Furthermore, although performance was greater in L1, the benefit of visual speech cues was proportionally greater in L2 compared to L1. These results are consistent with the inverse effectiveness hypothesis (e.g., Meredith & Stein, 1986; Stein & Stanford, 2008), and suggests

that this hypothesis can be extended to suboptimal linguistic cues (e.g., L2 speech perception, absence of supportive sentence context). At the individual level, results also showed a complex interplay between L2 experience and accuracy during L2 speech perception in noise. In general, young adult bilinguals who learned their second language earlier, rated their L2 abilities higher, and showed a greater balance between their two languages typically performed better during L2 speech perception in noise.

In the second manuscript (Chauvin et al., under review), I presented a study contrasting speech perception in noise in younger and older bilinguals using the same paradigm as the first study; the younger sample was that same as in the first study. Speech perception in noise was more accurate in L1 compared to L2, but participants showed a clear benefit from visual speech cues and supportive sentence context in both languages. Although older adults had higher listening thresholds (i.e., poorer hearing acuity) compared to younger adults, both age groups performed similarly during the speech perception in noise task; the only notable exception was poorer L1 lip-reading performance for older adults compared to younger adults. These findings were interpreted as evidence that, when baseline perceptual load is equated, older bilinguals are just as capable of benefitting from visual speech cues and supportive sentence context as their younger counterparts. Additionally, visual speech cues were proportionally more beneficial in L2 compared to L1 for young bilinguals, and the extent to which they benefitted from visual speech cues in L2 was related to their self-reported L2 ability (i.e., lower ability was associated with a greater visual enhancement when sentence context was unavailable). In contrast, older adults benefitted from visual speech cues to the same extent in both languages, and there was no correlation with L2 experience. Taken together, these results were interpreted as evidence that bilinguals' reliance on visual speech cues may decrease as they accumulate experience in L2. Finally, for both younger and older adults, the benefit of visual speech cues was unrelated to working memory capacity and processing speed.

In the third manuscript. I presented a study examining bilinguals' tendency to look at an area of interest encompassing the speaker's mouth and nose (i.e., where visual speech cues are likely to be seen) around the auditory onset of sentence terminal words during speech perception in noise. The study used an eye tracker to compare the proportion of time spent looking at the speaker's mouth as a function of language (L1 vs. L2), availability of visual speech cues (still-face vs. audiovisual speech), presence of supportive sentence context, and age group (younger

117

bilinguals vs. older bilinguals); importantly, baseline perceptual load was equated across participants, and there were no age differences in performance during the speech perception in noise task. Unsurprisingly, the results demonstrated that both younger and older bilinguals look at the area of interest more when visual speech cues are available compared to when they are not, although they still spent over 25% of the time looking at the area of interest even when presented with a still face. Given that participants were always informed whether they were in an auditory-only (i.e., still face) or audiovisual block, this latter finding potentially indicates a certain degree of automaticity in looking towards a speaker's nose/mouth during speech perception in noise.

When comparing gaze behaviour between languages, there were no differences in the proportion of time spent looking at the area of interest in L1 and L2. Furthermore, there were no associations between L2 experience and the proportion of time spent looking at the speaker's nose/mouth; this was the case for both younger or older adults. There was almost no correlation between the proportion of time spent looking at the speaker's mouth/nose, and how much one benefited from visual speech cues; there was one exception for young adults during L1 moderate context sentences, perhaps indicating a differential use of context in young and older adults. Finally, the proportion of time spent looking in L1 and L2 were generally positively correlated. Taken together, these results suggest that bilinguals' tendency to look at a speaker's nose/mouth area in L2 may be related more to individual preferences/style rather than language experience, at least in proficient bilinguals. Surprisingly, there were generally no associations between the time spent looking at the speaker's nose/mouth and the magnitude of the benefit afforded by visual speech cues for both younger and older adults, in either language. This latter finding suggests that the benefit of visual speech cues may depend more on looking "at the right time" rather than gaze duration.

8.2 Implications of equating perceptual load

Schneider and Pichora-Fuller (2000) put forth idea of an integrated information processing system in which a shared, limited pool of processing resources can be flexibly allocated to perceptual and cognitive processes. In this optic, perceptual and cognitive processes are reciprocal, and increasing processing demands on either part of the system leaves fewer resources for further processing. Schneider and Pichora-Fuller (2000) posited that having a shared pool of processing resources can be beneficial, as it allows one to compensate for either perceptual or cognitive difficulties as needed. On the other hand, increased allocation of

resources towards perceptual processing (e.g., during speech perception in noise) leaves fewer resources available for higher-order cognitive processes (e.g., extract meaning from speech-in-noise). The idea of a limited pool of resources is also central to the Framework for Understanding of Effortful Listening (FUEL; Pichora-Fuller et al., 2016).

There is indeed evidence to support the idea of a shared pool of resources between perceptual and cognitive processes (e.g., Baltes & Linderberger, 1997; Salthouse et al, 1996). Applied to the study of speech perception in noise, the idea of a shared pool of processing resources raises an important methodological question: should perceptual load be equated across participants, or should a single signal-to-noise ratio (or set of signal-to-noise ratios) be used? This question becomes particularly important when comparing two groups (e.g., younger vs. older adults) or conditions (e.g., L1 vs. L2). Both approaches have merit, and each is best suited to answer specific types of research questions. For example, using a constant signal-to-noise ratio across participants provides a more ecologically valid design, and potentially more generalizable results. However, if group differences emerge, it can be challenging to determine whether they are due to perceptual differences, higher-order cognitive resources, or both. On the other hand, when equating baseline perceptual load, any group/condition differences that emerge are likely due to differences in higher-order cognitive processing, or perhaps due to a more limited pool of resources. In either case, the influence of baseline group differences in sensory/perceptual processes tends to be minimized.

The studies presented in this dissertation used a combination of the two methods. Indeed, perceptual load was equated in participant's first language, in the absence of visual speech cues or supportive sentence context. This allowed for an investigation of potential age differences in the *ability* to benefit from visual speech cues and supportive sentence context, when differences in auditory acuity are controlled for. Importantly, this type of comparison does not directly address the question of age differences in speech perception in noise in everyday listening environments, although it certainly has implications for those scenarios as well.

In terms of comparisons between L1 and L2, the studies presented in this dissertation opted to use the same signal-to-noise ratio for each language, although said signal-to-noise ratio was individually calibrated for each participant. This was done for two reasons. First, it more closely resembles real-life conditions, in which listeners cannot simply adjust the signal-to-noise ratio on demand during L2 speech perception in noise. Second, it allows for a direct comparison

of the benefits afforded by visual speech cues and supportive sentence context in L1 vs. L2, under similarly degraded auditory signals.

Overall, equating baseline perceptual load across participants allowed me to investigate whether younger and older bilinguals *can* benefit from visual speech cues and supportive sentence context, albeit in less ecologically valid conditions. On the other hand, keeping the same signal-to-noise ratio in L1 and L2 allowed me to directly investigate L2 performance *in contrast* to L1 performance under the same listening conditions. Taken together, the experimental paradigm used in the context of this dissertation offers a good balance of within-subject and between-subject comparisons. This latter point is crucial, as the results presented here are a first step towards better understanding speech perception in noise in different types of listeners (e.g., bilinguals, older adults, older bilinguals).

8.3 The use of visual speech cues

The results of Manuscripts 1 and 2 indicated that younger and older bilinguals can both benefit from visual speech cues, and do so in both languages. Additionally, as was previously discussed, the findings from the studies presented in this dissertation have implications for the inverse effectiveness hypothesis (Meredith & Stein, 1986; Stein & Standford, 2008). As discussed in Chapter 3 of the General Introduction, the principle of inverse effectiveness posits that the benefit afforded by the combination of two sources of sensory cues (e.g., auditory and visual speech cues) is inversely related to the quality of said sensory cues. In other words, visual speech cues should be most beneficial in the presence of poor auditory speech cues, such as in background noise.

While the inverse effectiveness hypothesis generally pertains to the quality of sensory cues, results from Manuscripts 1 and 2 suggest that the hypothesis may be extended to suboptimal linguistic cues. Indeed, both younger and older participants benefited from visual speech cues more in the absence of supportive sentence context, regardless of language. These results can also be interpreted in the context of the Framework for Understanding of Effortful Listening (FUEL; Pichora-Fuller et al., 2016). Indeed, as described in Chapter 3 of the General Introduction, the FUEL highlights the importance of input-related demands during speech perception in noise. Particularly applicable to the current results is the idea that factors pertaining to the message itself (e.g., the presence of supportive sentence context) affects the allocation and depletion of processing resources during speech perception. In this optic, the finding from the

first two manuscripts indicating a greater benefit of visual speech cues in the absence of supportive sentence context can be interpreted in at least two different ways.

First, it is possible that supportive sentence context already greatly helps disambiguate the auditory speech signal, decreasing the need for additional supportive cues (e.g., visual speech cues). This view is certainly compatible with the results presented here, as both younger and older adults showed a considerable improvement in performance when supportive sentence context was available during auditory-only sentences compared to when it was not. However, it is also possible that supportive sentence context enhanced speech perception in noise to such an extent that there was little room for visual speech cues to play a facilitatory role. While there is no strong evidence for systematic ceiling effects in the audiovisual, moderate context condition, a paradigm using a lower baseline perceptual load (e.g., 30% for L1, auditory-only, low context sentences) may be better suited to elucidate this question.

Another possible explanation lies at the intersection of multisensory integration and the FUEL. Indeed, audiovisual speech perception is fundamentally a multisensory experience, during which auditory and visual speech cues must be extracted and subsequently integrated into a coherent whole (e.g., Altieri et al., 2011; Grant & Bernstein, 2019; Tye-Murray et al., 2016). While the integration process may appear seamless, it likely requires processing resources. Consistent with this idea, there is evidence that listening effort (measured using a dual-task paradigm) during speech perception in noise is greater in audiovisual conditions compared to auditory-only conditions (e.g., Anderson Gosselin & Gagné, 2011; Fraser et al., 2010). Therefore, it is possible that visual speech cues deplete processing resources during their integration with auditory speech cues. In turn, this would leave fewer resources for top-down (i.e., semantic) processes. Other studies have suggested that AV speech stimuli engage *fewer* neural resources compared to auditory-only stimuli (e.g., Frtusova et al., 2013; Winneke & Phillips, 2011). However, we note that the tasks used in these studies differ from typical AV speech experiments. For example, Frtusova et al. (2013) had participants complete visual-only, auditory-only, and audiovisual versions of an n-back task. Winneke and Phillips (2011) used more frankly linguistic stimuli (i.e., spoken words) in the context of an object categorization task. It is certainly possible that AV stimuli engage fewer neural resources in some cases, and lead to greater listening effort in others, depending on the task at hand and the types of stimuli used. Once again, the results from the studies presented in this dissertation cannot fully elucidate

this question, but future research may consider measuring and comparing listening effort during audiovisual speech perception in noise with and without supportive sentence context, perhaps using pupillometry.

Results from Manuscript 1 contrasting the benefit of visual speech cues in L1 and L2 are also consistent with a conceptualization of the inverse effectiveness hypothesis applied to suboptimal linguistic cues. Indeed, proficient young adult bilinguals benefited from visual speech cues more in their second language compared to their first, given the same level of background noise. This greater benefit of visual speech cues makes sense, given that non-native listeners are often thought to be more impacted by background noise (e.g., Bradlow & Alexander, 2007; Cooke et al., 2007; Mayo et al., 1997), due in part to less developed linguistic knowledge compared to native listeners (e.g., Garcia Lecumberri et al., 2010; Schmidtke, 2016). In practice, this less developed language knowledge in L2 may add an extra layer of "noise" to the auditory speech cues during speech perception in noise. In turn, this creates less favourable listening conditions in L2 compared to L1, even when the level of background noise is the same in both languages. In this context, it is perhaps unsurprising that visual speech cues are particularly helpful in L2 compared to L1, at least in proficient young adult bilinguals.

Experience with L2 also matters, as indicated by the results presented in Manuscript 2. Indeed, while younger bilinguals showed a greater visual enhancement in L2 compared to L1, older bilinguals showed equivalent benefit from visual speech cues in both languages. Furthermore, amongst the younger adults lower self-reported L2 ability was associated with a greater visual enhancement when supportive sentence context was unavailable. Although not statistically significant, a later age of acquisition of the L2 was associated with a greater visual enhancement for young adults, when supportive sentence context was not available. For older bilinguals, individual differences in L2 experience were unrelated to the magnitude of the benefit afforded by visual speech cues. Taken together, these results highlight the role of L2 experience during audiovisual speech perception in noise and suggest that the benefit of visual speech cues in L2 may become more similar to that seen in L1 with increased L2 experience. Of course, the results presented here are cross-sectional, and additional work is needed to support the interpretations presented above. Longitudinal investigations of the visual enhancement as L2 experience develops would be particularly powerful, and an important step towards a

comprehensive model of speech perception in noise which includes bilingual (or multilingual) listeners.

Results from Manuscript 3 indicate that both younger and older bilinguals direct their gaze to attend to visual speech cues during speech perception in noise. However, there is no generally correlation between the time spent attending to visual speech cues and one's benefit from said cues (i.e., the magnitude of the visual enhancement). Furthermore, there were no age differences in time spent looking at the speaker's nose/mouth area, nor were there differences in L1 compared to L2. The latter finding was particularly surprising, as there is evidence that attention towards the mouth increases under challenging listening conditions (e.g., Buchan et al., 2007; Vatikiotis-Bateson et al., 1998), and speech perception is typically considered more challenging in L2 compared to L1 (e.g., Garcia Lecumberri et al., 2010). Instead, the results presented in Manuscript 3 are consistent with previous work indicating that there are individual differences in the tendency to look at a speaker's mouth during speech perception in noise (e.g., Alsius et al., 2016; Renning et al., 2019), and suggest that these individual differences may be relatively consistent across languages, at least in proficient bilinguals. Additionally, consistent with previous work by Birulés et al. (2020), there were no associations between L2 experience and the proportion of time spent looking at the speaker's nose/mouth area in L2 for either younger or older adults.

However, one important thing to consider is the possible automaticity of directing one's gaze to a speaker's mouth when available, even when doing so is not useful. Indeed, both younger and older bilinguals looked at the speaker's nose/mouth more than 25% of the time on average in the auditory-only condition, when only a still face was presented; this was true across languages and levels of sentence context. There is certainly evidence to suggest other relatively automatic gaze behaviours. For example, Thompson and collaborators (2019) found that individuals' first fixation when looking at a face tends to be on the eyes, even when prompted to look at the mouth. A similar pattern was found for Eastern observers, albeit with initial fixations to the nose rather than the eyes (Kawagoe et al., 2021). While not in the context of speech perception, much less speech perception in noise, these studies highlight the existence of deeply ingrained, likely automatic gaze behaviours when seeing a face.

Although it is currently unclear whether attention is automatically drawn to the mouth to some extent during speech perception in noise, this is a crucial question to consider. Indeed, if

such a bias exists, it would effectively reduce the variance between conditions (e.g., L1 vs. L2), making it more challenging to detect potential differences between said conditions. One interesting avenue to investigate this would be to compare gaze patterns during speech perception in quiet conditions and in background noise. This ratio of performance-in-noise to performance-in-quiet could then be used as the basis for comparison across conditions (e.g., L1 vs. L2) or groups (e.g., younger adults vs. older adults).

8.4 The use of supportive sentence context

The results presented in this dissertation have implications regarding the benefit afforded by supportive sentence context during speech perception in noise. First, results from Manuscripts 1 and 2 add to the evidence that bilingual listeners can indeed benefit from supportive sentence context in L2 (e.g., Coulter et al., 2020; Kousaie et al., 2019; Mayo et al. 1997; Shi 2014). Additionally, the benefit from context was largest in the absence of visual speech cues for both younger and older adults. This latter result fits within an expanded inverse effectiveness hypothesis which includes suboptimal linguistic cues (as described in the previous section). In other words, bilinguals seem to benefit from supportive sentence context most when there are no visual speech cues available.

Consistent with previous work (e.g., Buss et al., 2019; Dubno et al., 2000), results from Manuscript 2 support the idea that younger and older adults benefit from supportive sentence context to similar extents when baseline perceptual load is equated. This result has important implications for a comprehensive model of speech perception in noise, which incorporates the effects of aging. Indeed, while equating baseline perceptual load reduces the ecological validity, the results indicates that there is no fundamental deficit in context processing in older adults during speech perception in noise, provided adequate intelligibility.

Unlike visual speech cues, the benefit from sentence context was greater in L1 compared to L2, and this was true for both younger and older adults. This may speak to a fundamental difference between the ways in which visual speech cues and supportive sentence context facilitate speech perception in noise. Indeed, while visual speech cues provide an additional, often complementary source of information, supportive sentence context is inherently linked to the intelligibility of the auditory speech signal. For example, supportive sentence context is unlikely to facilitate speech perception if the level of background noise is such that the listener cannot perceive the target speech signal.

The relationship between intelligibility and the benefit of sentence context is an important consideration, given that non-native listeners are more adversely impacted by background noise compared to native listeners (e.g., e.g., Bradlow & Alexander, 2007; Cooke et al. 2008; Mayo et al., 1997; Schmidtke, 2016; van Hapsburg & Bahng, 2006; van Wijngaarden et al., 2002), and exert more listening effort compared to native listeners during speech perception in noise (Borghini & Hazan, 2018). Therefore, it is likely that the L2 speech perception in noise task used in this dissertation was inherently "noisier" (i.e., less intelligible), even under the same signal-to-noise ratio as in L1. In turn, this decreased intelligibility may limit how much one benefits from supportive sentence context in L2. One potential solution would be to use different signal-to-noise ratios in each language, such that the baseline perceptual load is the same in L1 and L2; this would allow for a direct comparison of the benefit of supportive sentence context in L1 and L2, under comparable listening conditions.

8.5. Limitations and future directions

While this dissertation provides important insights into the interaction of speech perception in noise, bilingualism, and aging, it is not without limitations. The first set of limitations pertains to the participants themselves. Indeed, all participants included in this dissertation were proficient bilinguals, and the findings presented here may not apply equally across levels of L2 proficiency. Related to this is the issue of quantifying L2 experience. The studies presented here used relatively coarse measures of L2 experience (e.g., age of acquisition, percentage of daily use of L2, self-rated L2 ability). However, recent advances in the field of bilingualism research recognize the complexity of the bilingualism experience, and the importance of understanding individual and social factors which may influence one's L2 experience (e.g., Gullifer & Titone, 2020). Future work on bilingual speech perception in noise would benefit from using more sophisticated measures of language experience. One promising measure is that of language entropy (Gullifer & Titone, 2020), which provides an index of the relative balance and the diversity (i.e.., compartmentalized vs. integrated across contexts) in the daily usage of one's languages.

Another limitation lies in the fact that only one language pair (English-French/French-English) was investigated in the context of this dissertation, raising potential problems regarding the generalizability of results. It is of course possible that other language pairs would yield

different results. For example, comparing tonal and non-tonal languages may be particularly interesting, as tone provides an additional category of cues (e.g., lexical cues, Gao et al., 2019).

A second category of limitations pertains to the experimental design itself. First, the background noise consisted primarily of an energetic masker. Thus, the results presented here may not fully extend to situations in which the background noise consists of an informational masker (i.e., a masker with intelligible information). For example, the presence of an informational masker may primarily interfere with one's ability to benefit from supportive sentence context compared to visual speech cues. As the relative balance of energetic to informational masking depends in part on the intelligibility of the maskers (e.g., Van Engen & Bradlow, 2007), one may posit that the same background noise may act as a primarily informational masker in L1, but have more energetic masking properties in L2, especially for bilinguals with less L2 experience. Second, as was previously discussed, manipulating the signal-to-noise ratio to equate baseline perceptual load allowed for a direct comparison between younger and older bilinguals. However, there is evidence that the benefit of visual speech cues depends in part on the signal-to-noise ratio (e.g., Ross et al., 2007; Stevenson et al., 2015), raising the possibility that the results presented in this dissertation may not generalize to higher or lower baseline perceptual loads. Furthermore, real-world conditions rarely allow for equal perceptual loads across individuals. As such, future research should investigate bilingual speech perception in noise at constant SNRs across participants.

The next set of limitations relates to the stimuli used in this dissertation. Every sentence was recorded by the same speaker, which eliminates potential confounds of having multiple speakers. Nevertheless, there are physiological differences in the vocal apparatus (e.g., Sjerps et al., 2019), which influence the acoustical properties of sounds and words across speakers. Furthermore, there are age differences in the ability to selectively attend to a target voice in a multi-talker context, which disappear when the target voice is familiar (Johnsrude et al., 2013). This raises the possibility that participants gained familiarity with the speaker's voice over the course of the experiment, thus minimizing potential age differences during speech perception in noise. Therefore, future research should study the impact of using multiple speakers within the same speech-in-noise experiment.

There are a few limitations specific to Manuscript 3. First, the sample size is small, which decreases the power to detect both between-group and between-language differences in time

spent looking at the speaker's nose/mouth. Second, the proportion of time spent looking at the area of interest was averaged based on the mean terminal word onset. However, given that the onset of terminal words differed across trials, averaging may dampen potential age/language differences. Furthermore, there were no age differences in speech perception in noise between the younger and older bilinguals presented in Manuscript 3, which may also minimize potential age differences in gaze behaviours. Future work may revisit these questions using a paradigm which produces age differences in accuracy during speech perception in noise, potentially by using a constant signal-to-noise ratio across participants. Another potential avenue for future research is to investigate potential differences in listening effort during speech perception in noise, perhaps using pupillometry.

Finally, the data presented in this discussion are cross-sectional. While such data provide interesting insights into potential developmental trajectories (e.g., age-related differences in speech perception in noise, impact of accumulating L2 experience), longitudinal designs would provide valuable and complementary data towards a more comprehensive model of speech perception in noise in diverse listeners.

8.6 Conclusion

In conclusion, the data presented in this dissertation contribute to the established literature on the benefits of visual speech cues and supportive sentence context during speech perception in noise and extends it to younger and older bilinguals. Overall, the results support the idea that younger and older bilinguals can benefit from audiovisual speech cues and supportive sentence context during speech perception in noise in both of their languages, and each type of cue is most helpful when the other is unavailable. Furthermore, one's experience in a second language appears to play a role in how much bilinguals benefit from visual speech cues in L2. On a more theoretical level, the results presented here represent a first step towards developing more comprehensive models of speech perception in noise which include diverse listeners (e.g., older adults, bilinguals, older adult bilinguals). On a practical level, the results from the current manuscripts have implications for communication in situations where access to accurate information is crucial (e.g., online education, medical settings). In those scenarios, providing access to high quality visual speech cues and abundant semantic context will likely create favourable conditions for successful communication, and do so for diverse listeners.

References

Altieri, N. A., Pisoni, D. B., & Townsend, J. T. (2011). Some normative data on lip-reading skills (L). *The Journal of the Acoustical Society of America, 130*(1), 1–4. https://doi.org/10.1121/1.3593376

Alsius, A., Wayne, R. V., Paré, M., & Munhall, K. G. (2016). High visual resolution matters in audiovisual speech perception, but only for some. *Attention, Perception, & Psychophysics*, *78*(5), 1472-1487.

Anderson Gosselin, P., & Gagné, J.-P. (2011). Older adults expend more listening effort than young adults recognizing audiovisual speech in noise. *International Journal of Audiology, 50*(11), 786–792. https://doi.org/10.3109/14992027.2011.599870

Arbogast, T. L., Mason, C. R., & Kidd Jr, G. (2002). The effect of spatial separation on informational and energetic masking of speech. *The Journal of the Acoustical Society of America*, *112*(5), 2086-2098.

Arditi, A. (2005). Improving the design of the letter contrast sensitivity test. *Investigative ophthalmology & visual science*, *46*(6), 2225-2229.

Avivi-Reich, M., Puka, K., & Schneider, B. A. (2018). Do age and linguistic background alter the audiovisual advantage when listening to speech in the presence of energetic and informational masking? *Attention, Perception, & Psychophysics, 80*(1), 242–261. https://doi.org/10.3758/s13414-017-1423-5

Baltes, P. B., & Lindenberger, U. (1997). Emergence of a powerful connection between sensory and cognitive functions across the adult life span: a new window to the study of cognitive aging?. *Psychology and aging*, *12*(1), 12.

Barenholtz, E., Mavica, L., & Lewkowicz, D. J. (2016). Language familiarity modulates relative attention to the eyes and mouth of a talker. *Cognition*, *147*, 100-105.

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Bear, H. L., & Harvey, R. (2017). Phoneme-to-viseme mappings: The good, the bad, and the ugly. *Speech Communication, 95*, 40–67. https://doi.org/10.1016/j.specom.2017.07.001

Benichov, J., Cox, L. C., Tun, P. A., & Wingfield, A. (2012). Word recognition within a linguistic context: Effects of age, hearing acuity, verbal ability and cognitive function. *Ear and Hearing*, *32*(2), 250.

Bernarding, C., Strauss, D. J., Hannemann, R., Seidler, H., & Corona-Strauss, F. I. (2013). Neural correlates of listening effort related factors: *Influence of age and hearing impairment. Brain Research Bulletin, 91*, 21–30. https://doi.org/10.1016/j.brainresbull.2012.11.005

Bernstein, L. E., Auer, E. T., & Takayanagi, S. (2004). Auditory speech detection in noise enhanced by lipreading. *Speech Communication*, *44*(1), 5–18. https://doi.org/10.1016/j.specom.2004.10.011

Bernstein, J. G. W., & Grant, K. W. (2009). Auditory and auditory-visual intelligibility of speech in fluctuating maskers for normal-hearing and hearing-impaired listeners. *The Journal of the Acoustical Society of America, 125*(5), 3358. https://doi.org/10.1121/1.3110132

Besle, J., Fischer, C., Bidet-Caulet, A., Lecaignard, F., Bertrand, O., & Giard, M. H. (2008). Visual activation and audiovisual interactions in the auditory cortex during speech perception: intracranial recordings in humans. *Journal of Neuroscience, 28*(52), 14301-14310.

Bidelman, G. M., & Heath, S. T. (2019). Enhanced temporal binding of audiovisual information in the bilingual brain. *Bilingualism: Language and Cognition*, *22*(4), 752-762.

Bilger, R. (1984). Manual for the clinical use of the revised SPIN Test.

Birulés, J., Bosch, L., Pons, F., & Lewkowicz, D. J. (2020). Highly proficient L2 speakers still need to attend to a talker's mouth when processing L2 speech. *Language, Cognition and Neuroscience*, *35*(10), 1314-1325.

Bloom, D.E., Canning, D., & Fink, G. (2010). Implications of population ageing for economic growth. *Oxford Review of Economic Policy*, *26*(4), 583–612.

Borghini, G., & Hazan, V. (2018). Listening effort during sentence processing is increased for non-native listeners: A pupillometry study. *Frontiers in neuroscience*, *12*, 152.

Borghini, G., & Hazan, V. (2020). Effects of acoustic and semantic cues on listening effort during native and non-native speech perception. *The Journal of the Acoustical Society of America*, *147*(6), 3783-3794.

Bosch, L., Costa, A., & Sebastián-Gallés, N. (2000). First and second language vowel perception in early bilinguals. *European Journal of Cognitive Psychology*, *12*(2), 189–221. https://doi.org/10.1080/09541446.2000.10590222

Bradlow, A. R., & Alexander, J. A. (2007). Semantic and phonetic enhancements for speech-in-noise recognition by native and non-native listeners. *The Journal of the Acoustical Society of America*, *121*(4), 2339–2349. https://doi.org/10.1121/1.2642103

Broadbent, D. E. (1958). Effect of noise on an "intellectual" task. *The Journal of the Acoustical Society of America, 30*(9), 824–827. https://doi.org/10.1121/1.1909779

Brouwer, S., Van Engen, K. J., Calandruccio, L., & Bradlow, A. R. (2012). Linguistic contributions to speech-on-speech masking for native and non-native listeners: Language familiarity and semantic content. *The Journal of the Acoustical Society of America*, *131*(2), 1449–1464. https://doi.org/10.1121/1.3675943

Brungart, D. S. (2001). Informational and energetic masking effects in the perception of two simultaneous talkers. *The Journal of the Acoustical Society of America, 109*(3), 1101-1109. https://doig.org/ 10.1121/1.1345696

Brungart, D. S., Chang, P. S., Simpson, B. D., & Wang, D. (2006). Isolating the energetic component of speech-on-speech masking with ideal time-frequency segregation. *The Journal of the Acoustical Society of America, 120(*6), 4007–4018. https://doi.org/10.1121/1.2363929

Brysbaert, M., & New, B. (2009). Moving beyond Kučera and Francis: A critical evaluation of current word frequency norms and the introduction of a new and improved word frequency measure for American English. *Behavior Research Methods*, *41*(4), 977–990. https://doi.org/10.3758/BRM.41.4.977

Buchan, J. N., Paré, M., & Munhall, K. G. (2007). Spatial statistics of gaze fixations during dynamic face processing. *Social Neuroscience*, *2*(1), 1-13.

Buchan, J. N., Paré, M., & Munhall, K. G. (2008). The effect of varying talker identity and listening conditions on gaze behavior during audiovisual speech perception. *Brain research*, *1242*, 162-171.

Burfin, S., Pascalis, O., Ruiz Tada, E., Costa, A., Savariaux, C., & Kandel, S. (2014). Bilingualism affects audiovisual phoneme identification. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01179

Bushong, W., & Jaeger, T. F. (2019). Dynamic re-weighting of acoustic and contextual cues in spoken word recognition. *The Journal of the Acoustical Society of America*, *146*(2), EL135-EL140.

Buss, E., Hodge, S. E., Calandruccio, L., Leibold, L. J., & Grose, J. H. (2019). Masked sentence recognition in children, young adults, and older adults: Age-dependent effects of semantic context and masker type. *Ear and Hearing, 40*(5), 1117-1126. https://doi.org/10.1097/AUD.0000000000000692

Bialystok, E., Luk, G., Peets, K. F., & Sujin, Y. A. N. G. (2010). Receptive vocabulary differences in monolingual and bilingual children. *Bilingualism: Language and cognition*, *13*(4), 525-531.

Calvert, G. A., Bullmore, E. T., Brammer, M. J., Campbell, R., Williams, S. C., McGuire, P. K., Woodruff, P. W. R., Iversen, S. D., & David, A. S. (1997). Activation of auditory cortex during silent lipreading. science, 276(5312), 593-596.

Campbell, R. (2008). The processing of audio-visual speech: Empirical and neural bases. *Philosophical Transactions of the Royal Society B: Biological Sciences, 363*(1493), 1001–1010. https://doi.org/10.1098/rstb.2007.2155

Carlson, M. T., Goldrick, M., Blasingame, M., & Fink, A. (2016). Navigating conflicting phonotactic constraints in bilingual speech perception. *Bilingualism: Language and Cognition, 19*(5), 939-954.

Chauvin, A., Baum, S., & Phillips, N. A. (2021). Individuals with mild cognitive impairment and Alzheimer's disease benefit from audiovisual speech cues and supportive sentence context. *Journal of Speech, Language, and Hearing Research, 64*(5), 1550-1559.

Chauvin, A., Pellerin, S., Boatswain-Jacques, A.-F., René, J.-F., & Phillips, N. A. (2022). *Audiovisual speech perception in noise in younger and older bilinguals* [Manuscript submitted for publication]. Psychology Department, Concordia University.

Chauvin, A. & Phillips, N. A. (2021). *Bilinguals show proportionally greater benefit from visual speech cues and sentence context in their second compared to their first language* [Manuscript submitted for publication]. Psychology Department, Concordia University.

Cook, V. (1995). Multi-competence and the learning of many languages. *Language, Culture and Curriculum*, *8*(2), 93–98. https://doi.org/10.1080/07908319509525193

Cook, V. (2003). The changing L1 in the L2 user's mind. In V. Cook (Ed.), *Effects of the Second Language on the First* (pp. 1–18). Multilingual Matters. https://doi.org/10.21832/9781853596346-003

Cook, V., Iarossi, E., Tokumaru, Y., & Stellakis, N. (2003). Effects of the L2 on the syntactic processing of the L1. In V. Cook (Ed.), *Effects of the Second Language on the First* (pp. 193–213). Multilingual Matters. https://doi.org/10.21832/9781853596346-012

Cooke, M. (2006). A glimpsing model of speech perception in noise. *The Journal of the Acoustical Society of America, 119*(3), 1562–1573. https://doi.org/10.1121/1.2166600

Cooke, M., Garcia Lecumberri, M. L., & Barker, J. (2008). The foreign language cocktail party problem: Energetic and informational masking effects in non-native speech perception. *The Journal of the Acoustical Society of America, 123*(1), 414–427. https://doi.org/10.1121/1.2804952

Coulter, K., Gilbert, A. C., Kousaie, S., Baum, S., Gracco, V. L., Klein, D., Titone, D., & Phillips, N. A. (2020). Bilinguals benefit from semantic context while perceiving speech in noise in both of their languages: Electrophysiological evidence from the N400 ERP. *Bilingualism: Language and Cognition*, *24*(2), 344–357. https://doi.org/10.1017/S1366728920000516

Crosse, M. J., Di Liberto, G. M., & Lalor, E. C. (2016). Eye can hear clearly now: Inverse effectiveness in natural audiovisual speech processing relies on long-term crossmodal temporal integration. *Journal of Neuroscience*, *36*(38), 9888–9895. https://doi.org/10.1523/JNEUROSCI.1396-16.2016

Cutler, A., Garcia Lecumberri, M. L., & Cooke, M. (2008). Consonant identification in noise by native and non-native listeners: Effects of local context. *The Journal of the Acoustical Society of America*, *124*(2), 1264–1268. https://doi.org/10.1121/1.2946707

Cutler, A., Smits, R., & Cooper, N. (2005). Vowel perception: Effects of non-native language vs. non-native dialect. *Speech Communication*, *47*(1–2), 32–42. https://doi.org/10.1016/j.specom.2005.02.001

Darwin, C. J. (2008). Listening to speech in the presence of other sounds. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *363*(1493), 1011–1021. https://doi.org/10.1098/rstb.2007.2156

Davis, M. H., Ford, M. A., Kherif, F., & Johnsrude, I. S. (2011). Does semantic context benefit speech understanding through "top–down" processes? Evidence from time-resolved sparse fMRI. *Journal of cognitive neuroscience*, *23*(12), 3914-3932.

Davis, C., Kislyuk, D., Kim, J., & Sams, M. (2008). The effect of viewing speech on auditory speech processing is different in the left and right hemispheres. *Brain research*, *1242*, 151-161.

Desjardins, J. L. (2016). The effects of hearing aid directional microphone and noise reduction processing on listening effort in older adults with hearing loss. *Journal of the American Academy of Audiology, 27*(1), 29–41. PubMed. https://doi.org/10.3766/jaaa.15030

Desjardins, J. L., & Doherty, K. A. (2013). Age-related changes in listening effort for various types of masker noises. *Ear and Hearing*, *34*(3).

Delis, D., Kaplan, E., Kramer, J. (2001). *Delis Kaplan (D-KEFS) technical manual*. NCS Pearson, Inc.

Díaz, B., Baus, C., Escera, C., Costa, A., & Sebastian-Galles, N. (2008). Brain potentials to native phoneme discrimination reveal the origin of individual differences in learning the sounds of a second language. *Proceedings of the National Academy of Sciences*, *105*(42), 16083–16088. https://doi.org/10.1073/pnas.0805022105

Díaz, B., Mitterer, H., Broersma, M., & Sebastián-Gallés, N. (2012). Individual differences in late bilinguals' L2 phonological processes: From acoustic-phonetic analysis to lexical access. *Learning and Individual Differences*, *22*(6), 680–689. https://doi.org/10.1016/j.lindif.2012.05.005

Doesburg, S. M., Emberson, L. L., Rahi, A., Cameron, D., & Ward, L. M. (2008). Asynchrony from synchrony: long-range gamma-band neural synchrony accompanies perception of audiovisual speech asynchrony. *Experimental Brain Research, 185*(1), 11-20.

Dubno, J. R., Ahlstrom, J. B., & Horwitz, A. R. (2000). Use of context by young and aged adults with normal hearing. *The Journal of the Acoustical Society of America*, *107*(1), 538–546. https://doi.org/10.1121/1.428322

Dubno, J. R., Dirks, D. D., & Morgan, D. E. (1984). Effects of age and mild hearing loss on speech recognition in noise. *The Journal of the Acoustical Society of America, 76*(1), 87–96. https://doi.org/10.1121/1.391011

Durlach, N. (2006). Auditory masking: Need for improved conceptual structure. *The Journal of the Acoustical Society of America, 120(4)*, 1787–1790. https://doi.org/10.1121/1.2335426

Durlach, N. I., Mason, C. R., Kidd, G., Arbogast, T. L., Colburn, H. S., & Shinn-Cunningham, B. G. (2003). Note on informational masking (L). *The Journal of the Acoustical Society of America, 113*(6), 2984-2987. https://doi.org/10.1121/1.1570435

Emery, N. J. (2000). The eyes have it: the neuroethology, function and evolution of social gaze. *Neuroscience & biobehavioral reviews*, *24*(6), 581-604.

Eurostat (2015). Foreign language skills statistics. European Commission. http://ec.europa.eu/eurostat/statistics-explained/index.php/Foreign_language_skills_statistics#Further_Eurostat_information

Federmeier, K. D., & Kutas, M. (2005). Aging in context: Age-related changes in context use during language comprehension. *Psychophysiology, 42*(2), 133-141. https://doi.org/10.1111/j.1469-8986.2005.00274.x

Fraser, S., Gagné, J.-P., Alepins, M., & Dubois, P. (2010). Evaluating the effort expended to understand speech in noise using a dual-task paradigm: The effects of visual speech cues. *Journal of Speech, Language, and Hearing Research, 53*(1), 18–33. https://doi.org/10.1044/1092-4388(2009/08-0140)

Frischen, A., Bayliss, A. P., & Tipper, S. P. (2007). Gaze cueing of attention: visual attention, social cognition, and individual differences. *Psychological bulletin*, *133*(4), 694.

Frtusova, J. B., Winneke, A. H., & Phillips, N. A. (2013). ERP evidence that auditory–visual speech facilitates working memory in younger and older adults. *Psychology and aging*, *28*(2), 481.

Fuster, V. (2017). Changing Demographics. *Journal of the American College of Cardiology, 69*(24), 3002–3005. https://doi.org/10.1016/j.jacc.2017.05.013

Gagné, J.-P., Besser, J., & Lemke, U. (2017). Beahvioral assessment of listening effort using a dual-task paradigm: A review. *Trends in Hearing, 21*, 1-25. https://doi.org/10.1177/2331216516687287

Gao, X., Yan, T. T., Tang, D. L., Huang, T., Shu, H., Nan, Y., & Zhang, Y. X. (2019). What makes lexical tone special: A reverse accessing model for tonal speech perception. *Frontiers in psychology*, *10*, 2830.

Garcia Lecumberri, M., & Cooke, M. (2006). Effect of masker type on native and non-native consonant perception in noise. *The Journal of the Acoustical Society of America*, *119*(4), 2445-2454.

Garcia Lecumberri, M. L., Cooke, M., & Cutler, A. (2010). Non-native speech perception in adverse conditions: A review. *Speech Communication*, *52*(11–12), 864–886. https://doi.org/10.1016/j.specom.2010.08.014

Gaskell, M. G., & Marslen-Wilson, W. D. (1997). Integrating form and meaning: A distributed model of speech perception. *Language and cognitive Processes, 12*(5-6), 613-656.

Gor, K. (2014). Raspberry, not a car: Context predictability and a phonological advantage in early and late learners' processing of speech in noise. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01449

Grant, K. W., & Bernstein, J. G. W. (2019). Toward a model of auditory-visual speech intelligibility. In A. K. C. Lee, M. T. Wallace, A. B. Coffin, A. N. Popper, & R. R. Fay (Eds.), *Multisensory Processes: The Auditory Perspective* (pp. 33–57). Springer International Publishing. https://doi.org/10.1007/978-3-030-10461-0_3

Grant, K. W., Walden, B. E., & Seitz, P. F. (1998). Auditory-visual speech recognition by hearing-impaired subjects: Consonant recognition, sentence recognition, and auditory-visual integration. *The Journal of the Acoustical Society of America, 103*(5), 2677–2690. https://doi.org/10.1121/1.422788

Gullifer, J. W., & Titone, D. (2020). Characterizing the social diversity of bilingualism using language entropy. *Bilingualism: Language and Cognition*, *23*(2), 283-294.

Helfer, K. S., Chevalier, J., & Freyman, R. L. (2010). Aging, spatial cues, and single- versus dual-task performance in competing speech perception. *The Journal of the Acoustical Society of America, 128*(6), 3625–3633. https://doi.org/10.1121/1.3502462

Helfer, K. S., & Freyman, R. L. (2008). Aging and speech-on-speech masking. *Ear & Hearing, 29*(1), 87–98. https://doi.org/10.1097/AUD.0b013e31815d638b

Henderson, J. M., Malcolm, G. L., & Schandl, C. (2009). Searching in the dark: Cognitive relevance drives attention in real-world scenes. *Psychonomic bulletin & review*, *16*(5), 850-856.

Humes, L. E. (2008). Aging and speech communication: Peripheral, central-auditory, and cognitive factors affecting the speech-understanding problems of older adults. *The ASHA Leader, 13*(5), 10-33.

Hutchinson, K. M. (1989). Influence of sentence context on speech perception in young and older adults. *Journal of Gerontology*, *44*(2), P36–P44. https://doi.org/10.1093/geronj/44.2.P36

Jääskeläinen, I. P., Ojanen, V., Ahveninen, J., Auranen, T., Levänen, S., Möttönen, R., ... & Sams, M. (2004). Adaptation of neuromagnetic N1 responses to phonetic stimuli by visual speech in humans. *Neuroreport*, *15*(18), 2741-2744.

Jansen, S. D., Keebler, J. R., & Chaparro, A. (2018). Shifts in maximum audiovisual integration with age. *Multisensory Research, 31*(3–4), 191–212. https://doi.org/10.1163/22134808-00002599

Johnsrude, I. S., Mackey, A., Hakyemez, H., Alexander, E., Trang, H. P., & Carlyon, R. P. (2013). Swinging at a cocktail party: Voice familiarity aids speech perception in the presence of a competing voice. *Psychological science*, *24*(10), 1995-2004.

Jesse, A., & Janse, E. (2012). Audiovisual benefit for recognition of speech presented with single-talker noise in older listeners. *Language and cognitive processes*, *27*(7-8), 1167-1191.

Kahneman, D. (1973). Attention and effort (Vol. 1063, pp. 218-226). Englewood Cliffs, NJ: Prentice-Hall.

Kalikow, D. N., Stevens, K. N., & Elliott, L. L. (1977). Development of a test of speech intelligibility in noise using sentence materials with controlled word predictability. *The Journal of the Acoustical Society of America, 61*(5), 1337–1351. https://doi.org/10.1121/1.381436

Kanwisher, N., & Yovel, G. (2006). The fusiform face area: a cortical region specialized for the perception of faces. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *361*(1476), 2109-2128.

Kawagoe, T., Sueyoshi, R., Kuroda, N., & Teramoto, W. (2021). Automatic gaze to the nose region cannot be inhibited during observation of facial expression in Eastern observers. *Consciousness and Cognition*, *94,* 103179.

Kim, S., Frisina, R. D., Mapes, F. M., Hickman, E. D., & Frisina, D. R. (2006). Effect of age on binaural speech intelligibility in normal hearing adults. *Speech Communication, 48*(6), 591–597. https://doi.org/10.1016/j.specom.2005.09.004

Koelewijn, T., Zekveld, A. A., Festen, J. M., Rönnberg, J., & Kramer, S. E. (2012). Processing load induced by informational masking is related to linguistic abilities. *International Journal of Otolaryngology, 2012*, 1–11. https://doi.org/10.1155/2012/865731

Kousaie, S., Baum, S., Phillips, N. A., Gracco, V., Titone, D., Chen, J.-K., Chai, X. J., & Klein, D. (2019). Language learning experience and mastering the challenges of perceiving speech in noise. *Brain and Language*, *196*, 104645. https://doi.org/10.1016/j.bandl.2019.104645

Krueger, M., Schulte, M., Zokoll, M. A., Wagener, K. C., Meis, M., Brand, T., & Holube, I. (2017). Relation between listening effort and speech intelligibility in noise. *American Journal of Audiology, 26*(3S), 378–392. https://doi.org/10.1044/2017_AJA-16-0136

Lansing, C. R., & McConkie, G. W. (2003). Word identification and eye fixation locations in visual and visual-plus-auditory presentations of spoken sentences. *Perception & psychophysics*, *65*(4), 536-552.

Lewkowicz, D. J., & Hansen-Tift, A. M. (2012). Infants deploy selective attention to the mouth of a talking face when learning speech. *Proceedings of the National Academy of Sciences*, *109*(5), 1431-1436.

Luce, P. A., & Pisoni, D. B. (1998). Recognizing spoken words: The neighborhood activation model. *Ear and hearing*, *19*(1), 1.

Lucks Mendel, L., & Widner, H. (2016). Speech perception in noise for bilingual listeners with normal hearing. *International Journal of Audiology*, *55*(2), 126–134. https://doi.org/10.3109/14992027.2015.1061710

Lundervold, A. J., Wollschläger, D., & Wehling, E. (2014). Age and sex related changes in episodic memory function in middle aged and older adults. *Scandinavian Journal of Psychology*, *55*(3), 225–232. https://doi.org/10.1111/sjop.12114

Ma, W. J., Zhou, X., Ross, L. A., Foxe, J. J., & Parra, L. C. (2009). Lip-reading aids word recognition most in moderate noise: a Bayesian explanation using high-dimensional feature space. *PloS one*, *4*(3), e4638.

Macleod, A., & Summerfield, Q. (1987). Quantifying the contribution of vision to speech
    perception in noise. *British Journal of Audiology, 21*(2), 131–141.
    https://doi.org/10.3109/03005368709077786

Mackersie, C. L., & Cones, H. (2011). Subjective and psychophysiological indexes of listening
    effort in a competing-talker task. *Journal of the American Academy of Audiology*, *22*(2),
    113–122. https://doi.org/10.3766/jaaa.22.2.6

Maguinness, C., Setti, A., Burke, K. E., Kenny, R. A., & Newell, F. N. (2011). The effect of
    combined sensory and semantic components on audio–visual speech perception in older
    adults. *Frontiers in Aging Neuroscience*, *3*. https://doi.org/10.3389/fnagi.2011.00019

Marian, V. (2009). Audio-visual integration during bilingual language processing. *The Bilingual
    Mental Lexicon: Interdisciplinary Approaches*, 52–78.

Marslen-Wilson, W. D. (1975). Sentence perception as an interactive parallel
    process. *Science*, *189*(4198), 226-228.

Marslen-Wilson, W. D., & Welsh, A. (1978). Processing interactions and lexical access during
    word recognition in continuous speech. *Cognitive psychology*, *10*(1), 29-63.

Massaro, D. W (1987). *Speech perception by ear and eye: A paradigm for psychological inquiry*.
    Psychology Press.

Massaro, D. W., & Cohen, M. M. (1983). Evaluation and integration of visual and auditory
    information in speech perception. *Journal of Experimental Psychology: human
    perception and performance*, *9*(5), 753.

Mattys, S. L., Brooks, J., & Cooke, M. (2009). Recognizing speech under a processing load:
    Dissociating energetic from informational factors. *Cognitive Psychology*, *59*(3), 203–243.
    https://doi.org/10.1016/j.cogpsych.2009.04.001

Mattys, S. L., Davis, M. H., Bradlow, A. R., & Scott, S. K. (2012). Speech recognition in
    adverse conditions: A review. *Language and Cognitive Processes*, *27*(7–8), 953–978.
    https://doi.org/10.1080/01690965.2012.705006

Mayo, L. H., Florentine, M., & Buus, S. (1997). Age of second-language acquisition and
    perception of speech in noise. *Journal of Speech, Language, and Hearing Research*,
    40(3), 686–693. https://doi.org/10.1044/jslhr.4003.686

McClelland, J. L., & Elman, J. L. (1986). The TRACE model of speech perception. Cognitive
    psychology, 18(1), 1-86.

McGarrigle, R., Munro, K. J., Dawes, P., Stewart, A. J., Moore, D. R., Barry, J. G., & Amitay, S. (2014). Listening effort and fatigue: What exactly are we measuring? A British Society of Audiology Cognition in Hearing Special Interest Group 'white paper'. *International journal of audiology*, *53*(7), 433-445.

McQueen, J. M., & Huettig, F. (2012). Changing only the probability that spoken words will be distorted changes how they are recognized. *The Journal of the Acoustical Society of America*, *131*(1), 509-517.

Meredith, M. A., & Stein, B. E. (1986). Visual, auditory, and somatosensory convergence on cells in superior colliculus results in multisensory integration. Journal of neurophysiology, 56(3), 640–662.

Mick, P. T., Hämäläinen, A., Kolisang, L., Pichora-Fuller, M. K., Phillips, N., Guthrie, D., & Wittich, W. (2021). The prevalence of hearing, vision, and dual sensory loss in older Canadians: an analysis of data from the Canadian longitudinal study on aging. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *40*(1), 1-22.

Miller, G. A., Heise, G. A., & Lichten, W. (1951). The intelligibility of speech as a function of the context of the test materials. *Journal of experimental psychology*, *41*(5), 329.

Miller, G. A., & Isard, S. (1963). Some perceptual consequences of linguistic rules. *Journal of Verbal Learning and Verbal Behavior*, *2*(3), 217-228.

Mora, J. C., & Nadeu, M. (2012). L2 effects on the perception and production of a native vowel contrast in early bilinguals. *International Journal of Bilingualism*, *16*(4), 484–500. https://doi.org/10.1177/1367006911429518

Morin-Lessard, E., Poulin-Dubois, D., Segalowitz, N., & Byers-Heinlein, K. (2019). Selective attention to the mouth of talking faces in monolinguals and bilinguals aged 5 months to 5 years. *Developmental psychology*, *55*(8), 1640.

Murphy, V. A., & Pine, K. J. (2003). L2 influence on L1 linguistic representations. In V. Cook (Ed.), *Effects of the Second Language on the First* (pp. 142–167). Multilingual Matters. https://doi.org/10.21832/9781853596346-010

Navarra, J., Alsius, A., Velasco, I., Soto-Faraco, S., & Spence, C. (2010). Perception of audiovisual speech synchrony for native and non-native language. *Brain research*, *1323*, 84-93.

Navarra, J., Sebastián-Gallés, N., & Soto-Faraco, S. (2005). The perception of second language sounds in early bilinguals: new evidence from an implicit measure. *Journal of Experimental Psychology: Human Perception and Performance*, *31*(5), 912.

Navarra, J., & Soto-Faraco, S. (2007). Hearing lips in a second language: Visual articulatory information enables the perception of second language sounds. *Psychological Research*, *71*(1), 4–12. https://doi.org/10.1007/s00426-005-0031-5

New, B., Pallier, C., Brysbaert, M., & Ferrand, L. (2004). Lexique 2: A new French lexical database. *Behavior Research Methods, Instruments, & Computers*, *36*(3), 516–524. https://doi.org/10.3758/BF03195598

Ng, H. N., Elaine, Rudner, M., Lunner, T., & Rönnberg, J. (2015). Noise reduction improves memory for target language speech in competing native but not foreign language speech. *Ear and Hearing, 36*(1), 82–91. https://doi.org/10.1097/AUD.0000000000000080

Nittrouer, S., & Boothroyd, A. (1990). Context effects in phoneme and word recognition by young children and older adults. The Journal of the Acoustical Society of America, 87(6), 2705-2715. https://doi.org/ 10.1121/1.399061

Norris, D. (1994). Shortlist: A connectionist model of continuous speech recognition. *Cognition, 52*(3), 189-234.

Norris, D., & McQueen, J. M. (2008). Shortlist B: a Bayesian model of continuous speech recognition. *Psychological review, 115*(2), 357.

Norris, D., McQueen, J. M., & Cutler, A. (2000). Merging information in speech recognition: Feedback is never necessary. *Behavioral and Brain Sciences*, *23*(3), 299-325.

Obleser, J., & Kotz, S. A. (2011). Multiple brain signatures of integration in the comprehension of degraded speech. *NeuroImage, 55*(2), 713–723. https://doi.org/10.1016/j.neuroimage.2010.12.020

Paré, M., Richler, R. C., ten Hove, M., & Munhall, K. G. (2003). Gaze behavior in audiovisual speech perception: The influence of ocular fixations on the McGurk effect. *Perception & psychophysics*, *65*(4), 553-567.

Payne, B. R., & Federmeier, K. D. (2018). Contextual constraints on lexico-semantic processing in aging: Evidence from single-word event-related brain potentials. *Brain Research, 1687*, 117-228. https://doi.org/ 10.1016/j.brainres.2018.02.021

Payton, K. L., Uchanski, R. M., & Braida, L. D. (1994). Intelligibility of conversational and clear speech in noise and reverberation for listeners with normal and impaired hearing. *The Journal of the Acoustical Society of America*, *95*(3), 1581-1592.

Peelle, J. E., & Sommers, M. S. (2015). Prediction and constraint in audiovisual speech perception. *Cortex, 68,* 169–181. https://doi.org/10.1016/j.cortex.2015.03.006

Peters, R. W., Moore, B. C. J., & Baer, T. (1998). Speech reception thresholds in noise with and without spectral and temporal dips for hearing-impaired and normally hearing people. *The Journal of the Acoustical Society of America, 101*(5), 3201–3201. https://doi.org/10.1121/1.419363

Pichora-Fuller, M. K., Kramer, S. E., Eckert, M. A., Edwards, B., Hornsby, B. W. Y., Humes, L. E., Lemke, U., Lunner, T., Matthen, M., Mackersie, C. L., Naylor, G., Phillips, N. A., Richter, M., Rudner, M., Sommers, M. S., Tremblay, K. L., & Wingfield, A. (2016). Hearing impairment and cognitive energy: The framework for understanding effortful listening (FUEL). *Ear and hearing*, *37*, 5S-27S.

Pichora-Fuller, M. K., Schneider, B. A., & Daneman, M. (1995). How young and old adults listen to and remember speech in noise. *The Journal of the Acoustical Society of America, 97*(1), 593–608. https://doi.org/10.1121/1.412282

Picou, E. M., Gordon, J., & Ricketts, T. A. (2016). The effects of noise and reverberation on listening effort in adults with normal hearing. *Ear and Hearing*, *37*(1), 1–13. https://doi.org/10.1097/AUD.0000000000000222

Picou, E. M., Moore, T. M., & Ricketts, T. A. (2017). The effects of directional processing on objective and subjective listening effort. *Journal of Speech, Language, and Hearing Research, 60*(1), 199–211. https://doi.org/10.1044/2016_JSLHR-H-15-0416

Picou, E. M., Ricketts, T. A., & Hornsby, B. W. Y. (2011). Visual cues and listening effort: Individual Variability. *Journal of Speech, Language, and Hearing Research, 54*(5), 1416–1430. https://doi.org/10.1044/1092-4388(2011/10-0154)

Pons, F., Bosch, L., & Lewkowicz, D. J. (2015). Bilingualism modulates infants' selective attention to the mouth of a talking face. *Psychological science*, *26*(4), 490-498.

R Core Team (2020). R: A language and environment for statistical computing (4.0). R Foundation for Statistical Computing. http://www.R-project.org/

Ramírez, M., & Simonet, M. (2018). Language dominance and the perception of the Majorcan Catalan /ʎ/−/ʒ/ contrast: Asymmetrical phonological representations. *International Journal of Bilingualism*, *22*(6), 638–652. https://doi.org/10.1177/1367006916688334

Reetzke, R., Lam, B. P. W., Xie, Z., Sheng, L., & Chandrasekaran, B. (2016). Effect of simultaneous bilingualism on speech intelligibility across different masker types, modalities, and signal-to-noise ratios in school-age children. *PloS one*, *11*(12), e0168048.

Rennies, J., Schepker, H., Holube, I., & Kollmeier, B. (2014). Listening effort and speech intelligibility in listening situations affected by noise and reverberation. *The Journal of the Acoustical Society of America, 136*(5), 2642–2653. https://doi.org/10.1121/1.4897398

Rennig, J., Wegner-Clemens, K., & Beauchamp, M. S. (2020). Face viewing behavior predicts multisensory gain during speech perception. *Psychonomic bulletin & review*, *27*(1), 70-77.

Rogers, C. L., Lister, J. J., Febo, D. M., Besing, J. M., & Abrams, H. B. (2006). Effects of bilingualism, noise, and reverberation on speech perception by listeners with normal hearing. *Applied Psycholinguistics*, *27*(3), 465–485. https://doi.org/10.1017/S014271640606036X

Ross, L. A., Saint-Amour, D., Leavitt, V. M., Javitt, D. C., & Foxe, J. J. (2007). Do you see what I am saying? Exploring visual enhancement of speech comprehension in noisy environments. *Cerebral Cortex*, *17*(5), 1147–1153. https://doi.org/10.1093/cercor/bhl024

Rudner, M., Lunner, T., Behrens, T., Thorén, E. S., & Rönnberg, J. (2012). Working memory capacity may influence perceived effort during aided speech recognition in noise. *Journal of the American Academy of Audiology, 23*(8), 577–589. https://doi.org/10.3766/jaaa.23.7.7

Ryan, C. (2013). Language use in the United States: 2011. United States Census Bureau, American Community Survey Reports. www2.census.gov/library/publications/2013/acs/acs-22/acs-22.pdf

Šabić, E., Henning, D., Myüz, H., Morrow, A., Hout, M. C., & MacDonald, J. A. (2020). Examining the role of eye movements during conversational listening in noise. *Frontiers in psychology*, *11*, 200.

Salthouse, T. A. (1994). The aging of working memory. *Neuropsychology*, *8*(4), 535.

Salthouse, T. A. (1996). The processing-speed theory of adult age differences in cognition. *Psychological review*, *103*(3), 403.

Samuel, A. G. (2011). Speech perception. *Annual Review of Psychology*, *62*(1), 49–72. https://doi.org/10.1146/annurev.psych.121208.131643

Sander, M., Oxlund, B., Jespersen, A., Krasnik, A., Mortensen, E. L., Westendorp, R. G. J., & Rasmussen, L. J. (2015). The challenges of human population ageing. *Age and Ageing, 44*(2), 185–187. https://doi.org/10.1093/ageing/afu189

Sarampalis, A., Kalluri, S., Edwards, B., & Hafter, E. (2009). Objective measures of listening effort: Effects of background noise and noise reduction. *Journal of Speech, Language, and Hearing Research, 52*(5), 1230–1240.

Schmidtke, J. (2016). The bilingual disadvantage in speech understanding in noise is likely a frequency effect related to reduced language exposure. *Frontiers in Psychology*, *7*. https://doi.org/10.3389/fpsyg.2016.00678

Schneider, B. A., & Pichora-Fuller, M. K. (2000). Implications of perceptual deterioration for cognitive aging research. In F. I. M. Craik & T. A. Salthouse (Eds.), *The handbook of aging and cognition* (pp. 155–219). Lawrence Erlbaum Associates Publishers.

Sebastián-Gallés, N., & Baus, C. (2005). On the relationship between perception and production in L2 categories. In *Twenty-first century psycholinguistics: Four cornerstones* (pp. 279–282). Lawrence Erlbaum Associates Publishers.

Sebastián-Gallés, N., Echeverría, S., & Bosch, L. (2005). The influence of initial exposure on lexical representation: Comparing early and simultaneous bilinguals. *Journal of Memory and Language*, *52*(2), 240–255. https://doi.org/10.1016/j.jml.2004.11.001

Shi, L.-F. (2010). Perception of acoustically degraded sentences in bilingual listeners who differ in age of English acquisition. *Journal of Speech, Language, and Hearing Research*, *53*(4), 821–835. https://doi.org/10.1044/1092-4388(2010/09-0081)

Shi, L.-F. (2012). Contribution of linguistic variables to bilingual listeners' perception of degraded nglish Sentences. *Journal of Speech, Language, and Hearing Research*, *55*(1), 219–234. https://doi.org/10.1044/1092-4388(2011/10-0240)

Shi, L.-F. (2014). Measuring effectiveness of semantic cues in degraded English sentences in non-native listeners. *International Journal of Audiology*, *53*(1), 30–39. https://doi.org/10.3109/14992027.2013.825052

Sjerps, M. J., Fox, N. P., Johnson, K., & Chang, E. F. (2019). Speaker-normalized sound representations in the human auditory cortex. *Nature Communications*, *10*(1), 2465. https://doi.org/10.1038/s41467-019-10365-z

Skoe, E., & Karayanidi, K. (2019). Bilingualism and speech understanding in noise: Auditory and linguistic factors. *Journal of the American Academy of Audiology*, *30*(02), 115-130.

Smayda, K. E., Van Engen, K. J., Maddox, W. T., & Chandrasekaran, B. (2016). Audio-visual and meaningful semantic context enhancements in older and younger adults. *PLOS ONE*, *11*(3), e0152773. https://doi.org/10.1371/journal.pone.0152773

Sommers, M. S., & Danielson, S. M. (1999). Inhibitory processes and spoken word recognition in young and older adults: the interaction of lexical competition and semantic context. *Psychology and aging*, *14*(3), 458.

Sommers, M. S., Tye-Murray, N., & Spehar, B. (2005). Auditory-visual speech perception and auditory-visual enhancement in normal-hearing younger and older adults: *Ear and Hearing*, *26*(3), 263–275. https://doi.org/10.1097/00003446-200506000-00003

Statistics Canada (2017). English–French bilingualism reaches new heights. Statistics Canada. www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016009/98-200-x2016009-eng.cfm

Stein, B. E., & Stanford, T. R. (2008). Multisensory integration: Current issues from the perspective of the single neuron. *Nature Reviews Neuroscience*, *9*(4), 255–266. https://doi.org/10.1038/nrn2331

Stevenson, R. A., Nelms, C. E., Baum, S. H., Zurkovsky, L., Barense, M. D., Newhouse, P. A., & Wallace, M. T. (2015). Deficits in audiovisual speech perception in normal aging emerge at the level of whole-word recognition. *Neurobiology of Aging*, *36*(1), 283–291. https://doi.org/10.1016/j.neurobiolaging.2014.08.003

Stone, M. A., & Moore, B. C. J. (2014). On the near non-existence of "pure" energetic masking release for speech. *The Journal of the Acoustical Society of America*, *135*(4), 1967–1977. https://doi.org/10.1121/1.4868392

Sumby, W. H., & Pollack, I. (1954). Visual contribution to speech intelligibility in noise. *Journal of the Acoustical Society of America*, *26*, 212–215. https://doi.org/10.1121/1.1907309

Summerfield, Q. (1992). Lipreading and audio-visual speech perception. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 335*(1273), 71-78.

Tabri, D., Chacra, K. M. S. A., & Pring, T. (2010). Speech perception in noise by monolingual, bilingual and trilingual listeners. *International Journal of Language & Communication Disorders*, 101005020050084. https://doi.org/10.3109/13682822.2010.519372

Thompson, S. J., Foulsham, T., Leekam, S. R., & Jones, C. R. (2019). Attention to the face is characterised by a difficult to inhibit first fixation to the eyes. *Acta psychologica*, *193*, 229-238.

Tun, P. A., O'Kane, G., & Wingfield, A. (2002). Distraction by competing speech in young and older adult listeners. *Psychology and aging, 17*(3), 453.

Tun, P. A., & Wingfield, A. (1999). On voice too many: Adult age differences in language processing with different types of distracting sounds. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 54B*(5), P317–P327. https://doi.org/10.1093/geronb/54B.5.P317

Tye-Murray, N., Sommers, M., Spehar, B., Myerson, J., & Hale, S. (2010). Aging, audiovisual integration, and the principle of inverse effectiveness. *Ear and hearing*, *31*(5), 636.

Tye-Murray, N., Sommers, M., Spehar, B., Myerson, J., Hale, S., & Rose, N. S. (2008). Auditory-visual discourse comprehension by older and young adults in favorable and unfavorable conditions. *International Journal of Audiology*, *47*(sup2), S31–S37. https://doi.org/10.1080/14992020802301662

Tye-Murray, N., Spehar, B., Myerson, J., Hale, S., & Sommers, M. (2016). Lipreading and audiovisual speech recognition across the adult lifespan: Implications for audiovisual integration. *Psychology and Aging*, *31*(4), 380–389. https://doi.org/10.1037/pag0000094

Van Engen, K. J. V., & Bradlow, A. R. (2007). Sentence recognition in native -and foreign-language multi-talker background noise. *The Journal of the Acoustical Society of America, 121*(1). 519-526. https://doig.org/ 10.1121/1.2400666

Van Engen K. J., Phelps J. E. B., Smiljanic R., & Chandrasekaran, B. (2014). Enhancing speech intelligibility: Interactions among context, modality, speech style, and masker. *Journal of Speech, Language, and Hearing Research*, *57*(5), 1908–1918. https://doi.org/10.1044/JSLHR-H-13-0076

van Wijngaarden, S. J., Steeneken, H. J. M., & Houtgast, T. (2002). Quantifying the intelligibility of speech in noise for non-native listeners. *The Journal of the Acoustical Society of America*, *111*(4), 1906–1916. https://doi.org/10.1121/1.1456928

Vatikiotis-Bateson, E., Eigsti, I. M., Yano, S., & Munhall, K. G. (1998). Eye movement of perceivers during audiovisual speech perception. *Perception & psychophysics*, *60*(6), 926-940.

von Hapsburg, D., & Bahng, J. (2006). Acceptance of background noise levels in bilingual (Korean-English) listeners. *Journal of the American Academy of Audiology*, *17*(09), 649-658.

von Hapsburg, D., Champlin, C. A., & Shetty, S. R. (2004). Reception thresholds for sentences in bilingual (Spanish/English) and monolingual (English) listeners. *Journal of the American Academy of Audiology*, *15*(1), 88–98. https://doi.org/10.3766/jaaa.15.1.9

Wechsler, D. (1997). *WAIS-III Administration and scoring manual*. San Antonio, TX: The Psychological Association.

Wechsler, D., Psychological Corporation., & PsychCorp (Firm). (2008). *WAIS-IV Technical and interpretive manual*. San Antonio, Tex: Pearson.

Wendt, D., Dau, T., & Hjortkjær, J. (2016). Impact of background noise and sentence complexity on processing demands during sentence comprehension. *Frontiers in Psychology, 7*. https://doi.org/10.3389/fpsyg.2016.00345

Wong, P. C. M., Jin, J. X., Gunasekera, G. M., Abel, R., Lee, E. R., & Dhar, S. (2009). Aging and cortical mechanisms of speech perception in noise. *Neuropsychologia, 47*(3), 693–703. https://doi.org/10.1016/j.neuropsychologia.2008.11.032

Wingfield, A., & Tun, P. A. (2007). Cognitive supports and cognitive constraints on comprehension of spoken language. *Journal of the American Academy of Audiology*, *18*(7), 548–558. https://doi.org/10.3766/jaaa.18.7.3

Winn, M. B. (2016). Rapid release from listening effort resulting from semantic context, and effects of spectral degradation and cochlear implants. *Trends in Hearing*, *20*, 2331216516669723.

Winneke, A. H., & Phillips, N. A. (2011). Does audiovisual speech offer a fountain of youth for old ears? An event-related brain potential study of age differences in audiovisual speech perception. *Psychology and Aging*, *26*(2), 427–438. https://doi.org/10.1037/a0021683

Wlotko, E. W., & Federmeier, K. D. (2012). Age-related changes in the impact of contextual strength on multiple aspects of sentence comprehension: Context use in young and older adults. *Psychophysiology, 49*(6), 770-785. https:// 10.1111/j.1469-8986.2012.01366.x

Wlotko, E. W., Federmeier, K. D., & Kutas, M. (2012). To predict or not to predict: Age-related differences in the use of sentential context. *Psychology and Aging, 27*(4), 975-988. https:// 10.1037/a0029206

Xie, Z., Yi, H.-G., & Chandrasekaran, B. (2014). Nonnative audiovisual speech perception in noise: Dissociable effects of the speaker and listener. *PLoS ONE, 9*(12), e114439. https://doi.org/10.1371/journal.pone.0114439

Yehia, H., Rubin, P., & Vatikiotis-Bateson, E. (1998). Quantitative association of vocal-tract and facial behavior. *Speech Communication*, *26*(1-2), 23-43.

Yi, A., Wong, W., & Eizenman, M. (2013). Gaze patterns and audiovisual speech enhancement.

Yueh, B., Shapiro, N., MacLean, C. H., & Shekelle, P. G. (2003). Screening and management of adult hearing loss in primary care: scientific review. *JAMA: The Journal of The American Medical Association*, *289*(15), 1976-1985.

Zadeh, L.A. (1965). Fuzzy sets. *Information and Control, 8*, 338-253.

Zekveld, A. A., Kramer, S. E., & Festen, J. M. (2010). Pupil response as an indication of effortful listening: The influence of sentence intelligibility. *Ear & Hearing, 31*(4), 480–490. https://doi.org/10.1097/AUD.0b013e3181d4f251

Zekveld, A. A., Rudner, M., Johnsrude, I. S., Festen, J. M., van Beek, J. H. M., & Rönnberg, J. (2011). The influence of semantically related and unrelated text cues on the intelligibility of sentences in noise. *Ear & Hearing, 32*(6), e16–e25. https://doi.org/10.1097/AUD.0b013e318228036a

Zwitserlood, P. (1989). The locus of the effects of sentential-semantic context in spoken-word processing. *Cognition*, *32*(1), 25-64.

Appendix A

Supplementary Materials Manuscript 1 & 2

A.1. Creation and Norming of the Sentence Stimuli

Careful consideration was given to the stimuli used in the context of this dissertation. In particular, we debated the respective benefits of using well-established stimuli (e.g., Revised Speech Perception in Noise; Bilger et al., 1984) compared to creating our own set of sentences. In the end, however, given the requirements of our experimental design, we opted for the second option. While not without limitations, this approach had the notable advantage of allowing for a more subtle manipulation of sentence context, one that is less drastic than the often seen low context vs. high-context.

Creating the Sentence Stimuli

Regardless of language or level of context, each sentence consisted of a stem and a terminal word. Across all sentences, the stems were between four to nine words (M = 6.13; SD = 1.27). Sentences providing moderate levels of semantic context were created first, by combining stems with probable terminal words. Crucially, three moderate context (MC) sentences were created for each stem, using three relatively equiprobable words. From there, a set of three low context (LC) sentences using the same three terminal words was created by switching the carrier stem to one which, while grammatically correct, provided no useful semantic context (e.g., "He had not thought about the _". In total, 300 LC and 300 MC sentence triplets were created this way in both English and French, for a total of 1,200 triplets or 3,600 sentences.

All sentence terminal words began with a consonant and consisted of one or two syllables. While the original goal was to use only monosyllabic words, a compromise had to be made for French terminal words because monosyllabic French words tend to have a lower word frequency compared to English monosyllabic words (as described in the main body of the paper).

Validating the Sentence Stimuli

Both English and French stimuli were normed prior to recording. For each language, native speakers were presented with a subset of the candidate sentences and asked to rate the predictability of each terminal word given the carrier sentence stem, using a scale from 1 to 10 (the full instructions can be found at the end of the present document). In addition to the sentences of interest for this study, a set of high context sentences (i.e., sentences that drive the

reader/listener towards a single plausible terminal word) were added to the validation list. Importantly, each rater was only presented with one of the sentences from a given triplet (i.e., one of the three possible terminal words).

Based on the ratings provided in the validation study, 1,800 sentences were selected from the original 3,600, yielding 150 MC triplets and 150 LC triplets in both English and French. For each moderate context triplet, all three sentences had to be rated as providing moderate levels of context in order to be selected for videorecording. The final sentences were subsequently recorded by a bilingual woman as described in the manuscript.

Table A.2. Example of a stimulus list

List	Language	Block	Modality	Context	Stem	Terminal word
1	English	1	Visual	Low	According to Hank, she had been	killed
				Low	Scott was planning to work on his	thighs
				Moderate	The book is resting on top of the	pile
				Low	They had to clean up the	juice
				Moderate	These old shoes have a broken	sole
				Moderate	The cake on the counter is very	moist
				Low	He asked me to repair the	trunk
				Moderate	The main course consisted of	lamb
				Low	The two of them disagreed on the	fine
				Moderate	Before leaving, he put on a pair of	shoes
				Moderate	I looked at the sky and saw the	clouds
				Low	The room had many things to	hang
				Low	We need to replace this	couch
				Moderate	She styled her hair with a	clip
				Low	She looked at the girl who was	last
				Moderate	At the clinic, the doctor checked my	pulse
				Low	The young man mostly loved her	mind
				Moderate	She had commented on the	claws
				Low	I was confused about the	date
				Moderate	It was cold, so he put on his	hat
				Moderate	The plants in my office are	fake
				Low	I pressed Doris about the	quiz
				Moderate	She broiled the ham until it was	crisp
				Moderate	A sentence must have a least one	noun
				Low	Donald looked everywhere for his	mate
		2	Auditory	Low	My sister went to the store to buy a	knife
				Moderate	My boyfriend gave me a	kiss
				Low	I suspect that he needed to	hear
				Moderate	Behind the counter, the butcher was slicing the	meat
				Low	I told you about that	safe
				Moderate	I saw the animals at the	store

		Low	Andrew had trouble locating his	mom
		Moderate	In the yard, she trims the	grass
		Low	Trudy's brother was examining the	lump
		Moderate	She was learning how to bake	tarts
		Low	Carol tried her best to hide her	mark
		Moderate	The colour of her eyes is	brown
		Low	He was secretive about the	rink
		Moderate	The horse was let into the	field
		Moderate	In the mail, I received a	card
		Low	I asked Martin for his	rake
		Moderate	I spent all morning scrubbing the bathroom	tiles
		Low	The group provided all of the	rice
		Moderate	I want to paint the table	red
		Moderate	He unlocked the door of the	house
		Low	She did not want them	grilled
		Moderate	Every morning, we jog along the	shore
		Low	Myriam did not expect the	things
		Low	She was told to take the	tray
		Moderate	She asked the tailor to fix her	pants
3	Audiovisual	Moderate	He cooked the vegetables in a	pot
		Low	I have been told to	rinse
		Moderate	Jessie and her friend walked up the	stairs
		Low	They could not see the	lake
		Low	Please do not touch my	heel
		Moderate	The weather forecast predicted there would be	hail
		Low	I had a dream about a	storm
		Moderate	The young fisherman forgot his	line
		Low	Julian wanted to finish the	room
		Moderate	This restaurant has great	food
		Low	Theresa thanked me for the	drinks
		Moderate	During the fight, I was punched in the	head
		Moderate	She put on a clean	top
		Low	She checked to make sure it was	mine
		Moderate	That bakery makes very good	cake
		Moderate	The skier lost one of his	poles

		Low	I am not sure why it is so	mild
		Moderate	In his spare time, Owen wrote a	note
		Low	She was not sure if he really	laughed
		Moderate	Yesterday, my dog ran after a	child
		Low	He bent over to pick up the	coin
		Moderate	This year, the farmer's main crop is	hay
		Low	Barry complimented us on our	find
		Low	I could not tell that they were	Dutch
		Moderate	The jester dances for the	king
4	Visual	Low	She reminded me to check the	gears
		Low	Please stay away from the	ledge
		Moderate	This plate of pasta needs more	salt
		Moderate	I just threw the dog a	bone
		Low	Margaret gave away all of the	sprouts
		Moderate	Jill cleaned up the dirt with a	mop
		Low	I wish I had known about the	deer
		Moderate	The injury left a very large	scab
		Low	She was thinking of adding	tea
		Moderate	The baseball player bought a new	cap
		Low	He decided to give away his tie	tie
		Low	He tried to put away the	keys
		Moderate	Mrs. Smith has a fear of	clowns
		Low	Anna was talking about that awful	growl
		Moderate	When I am at the beach, I like to	swim
		Low	Last weekend, there was no	sun
		Moderate	My hat is made of	straw
		Low	Johnny and his friends laughed at the	ring
		Moderate	Joan waited for the rain to	come
		Moderate	She is very creative and loves to	paint
		Low	The city council purchased the	slide
		Moderate	He dug a large hole in the	soil
		Low	She was not responsible for the	noise
		Low	She had just seen the other	seeds
		Moderate	Michael told me his favourite seafood is	fish

5	Auditory	Low	Be careful that you do not let it	shut
		Moderate	The friends played a game of	darts
		Low	Violet gave me back the	dish
		Low	She advised us on his	heart
		Moderate	Over the past year, Stan has gotten really	fit
		Low	Gregory dropped the brand new	drums
		Moderate	The team's best played is very	quick
		Low	He stated that it was	straight
		Moderate	Last night's part was really	fun
		Low	The young lady needed a	box
		Low	She tried her best to control the	rules
		Moderate	The exterminator took care of the	pests
		Low	Chelsea looked away from her	purse
		Moderate	He poured his beverage into a	glass
		Low	I was ready to see the	coast
		Low	He was not well prepared for the	mist
		Moderate	The necklace is made of	gold
		Low	They had to repair the	mast
		Moderate	The family is planning a trip to	Greece
		Moderate	These are the stocks I want to	sell
		Low	Dale built the cabin around	march
		Moderate	Kids can start school at age	four
		Moderate	The young child is just learning to	talk
		Low	You should not touch the	weeds
		Moderate	We walk our dogs each day at	dusk
6	Audiovisual	Moderate	I called a plumber to repair the	pipe
		Low	Vince insisted that we buy this	chair
		Moderate	My care has a new	plate
		Low	She expected it to be	long
		Moderate	The fruit I just bough smells really	sweet
		Moderate	Every day, I begin work at	ten
		Low	Roxane had to deal with the	mud
		Low	He was not aware of the	pears
		Moderate	She went to prison for a	month
		Low	Yesterday, Betty took a look at my	throat

153

			Moderate	Every day, he grooms his	dog
			Low	She was complimented on her	bun
			Low	In reality she did not feel	sick
			Moderate	I love to look up at the	sky
			Low	Milton was about to pick up the	snake
			Low	I told him it has been	leased
			Moderate	Yesterday, I lost the tennis	match
			Low	I made sure it was	cool
			Moderate	The dentist carefully examined my	mouth
			Moderate	He has an excellent sense of	taste
			Low	He looked at the one that is	deep
			Moderate	Shirley bought pants that are too	small
			Low	The curious boy explored the	lane
			Low	Kirk wanted to show us his new	pigs
			Moderate	Most days, I take the bus to	school
French	1	Visual	Low	Je crois qu'il reste encore plusieurs	verges
			Low	On me demande souvent si elles sont	vraies
			Moderate	Claire portait sa plus belle robe pour le	mariage
			Low	J'ai vu qu'elle est pleine de	cire
			Low	Nous avons reçu un chargement de	soie
			Moderate	Les billets pour l'opéra étaient	gratuits
			Moderate	Ma danse préférée est la	valse
			Low	Nous avons plusieurs projets pour notre	chambre
			Low	Il y a quelques, toutes mes amies étaient	blondes
			Moderate	En creusant, j'ai trouvé un	coffre
			Moderate	Les manifestants brandissaient des	pancartes
			Low	J'essaie de les rendre un peu moins	ternes
			Moderate	Ce restaurant est reconnu pour son	menu
			Low	Il préférait de loin le	premier
			Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	sandales
			Moderate	En temps de crise, il est difficile d'être	tranquille
			Low	Elle n'avait pas remarqué la présence des	chiens
			Moderate	Pour Noël, il a reçu plusieurs	jouets
			Low	Il n'avait pas prédit croiser un	tigre

154

		Moderate	Dans les bois, Jacques a aperçu un	loup
		Moderate	Ma voiture vient de se faire	frapper
		Low	D'après ta description, il semble être un	bélier
		Moderate	Au supermarché, il y avait peu de	produits
		Moderate	Elle suit une diète sans	gras
		Low	Je suis en train de me préparer pour le	concert
2	Auditory	Low	Elle était contente de sa	posture
		Moderate	L'artiste n'arrive pas à vendre ses	photos
		Moderate	La vedette se plaint lorsqu'on ignore ses	demandes
		Low	Tiens-toi à l'écart des	leviers
		Moderate	Le magasin de musique vend des	flûtes
		Low	Elle n'avait pas anticipé la présence du	captif
		Moderate	Les membres de la congrégation sont très	dévoués
		Low	On m'a demandé de créer une illustration contenant des	fées
		Moderate	Je me suis blessé au	genou
		Low	On m'a invité à essayer la	boxe
		Moderate	Il y a des canards dans ce	lac
		Low	On lui avait suggéré de les	donner
		Low	Elles se dirigent vers la	reine
		Moderate	J'ai une douleur à la	tête
		Low	On lui a demandé de s'occuper du	linge
		Moderate	Le nouveau condo était déjà	vendu
		Low	Il ne savait pas quoi faire avec le	cheval
		Moderate	Lisa préfère les légumes	crus
		Moderate	La chambre d'Henri est en	chaos
		Low	On ne lui avait pas donné de	journaux
		Moderate	Nous avons traversé le lac en	canot
		Low	J'ai plusieurs souvenirs à propos de la	poupée
		Moderate	Son anneau est orné d'un	saphir
		Low	On l'a mis en charge du	site
		Moderate	Met tes vêtements dans la	laveuse
3	Audiovisual	Low	Tu dois faire attention au	cône
		Moderate	Pendant le procès, le juge me semblait	juste

155

		Moderate	Ses fleurs préférées sont les	tulipes
		Low	Ils sont à la recherche d'un nouveau	caissier
		Moderate	Le parc est couvert de	déchets
		Low	Les enfants n'ont pas envie de	rôties
		Moderate	Le magasin de chaussures ne vend pas de	pantoufles
		Low	On lui a demandé d'être moins	sage
		Moderate	L'animal laissa échapper un cri	puissant
		Low	Elle n'avait jamais eu a s'occuper de	scorpions
		Low	On lui avait dit de se méfier des	fantômes
		Moderate	Dans le bus ce matin, les gens étaient	polis
		Low	Finalement, je me suis retrouvé au	vacances
		Moderate	Je trouve son écriture très	soignée
		Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	soccer
		Low	La banderole est en forme de	sorcière
		Moderate	En mathématiques, les élèves utilisent des	règles
		Moderate	Mon ami a préparé une tarte aux	citrons
		Low	Il est en train de se préparer pour la	famille
		Moderate	L'école a engagé une nouvelle professeure de	science
		Low	Elle croit qu'elle a perdu son	temps
		Moderate	Au brunch, Catherine a commandé des	saucisses
		Low	Je suis enfin débarrassé de cette	fièvre
		Low	Ce matin, je suis plutôt	souple
		Moderate	Veuillez-vous tourner vers la	gauche
4	Visual	Low	Il n'avait aucun doute qu'elle était	rayée
		Moderate	Après ses études, elle est devenue chirurgienne	cardiaque
		Low	Tout le monde observe attentivement le	cou
		Moderate	Après cet exercice, mes jambes sont	rigides
		Moderate	Elle utilise le robinet pour remplir sa	bouteille
		Low	J'espère bien pouvoir profiter des	bains
		Low	Lundi prochain, on me donnera un	plâtre
		Moderate	Les pantalons de Kim sont trop	petits
		Moderate	Elle a fait perce son	nombril
		Low	Elle m'a offert celui qui est	noir
		Low	On m'assure que c'est bien	rouge

		Moderate	Les dents de Marie sont	croches
		Moderate	La maison est faite en	béton
		Low	Il nous parlait de ses nouveaux	moutons
		Low	Nous avons décidé d'ignorer les	castors
		Moderate	Le millionnaire a acheté un condo	spacieux
		Low	Je n'avais jamais entendu ces	fables
		Low	Ils s'assurent de bien suivre le	duc
		Moderate	Ce fruit me semble très	mûr
		Low	Le paquet contenait beaucoup de	suisse
		Low	Ils s'apprêtent à apprendre les	chiffres
		Moderate	Je me rends au travail en	bus
		Moderate	L'été, j'aime profiter de la	chaleur
		Low	Elle devait prépare une présentation sur les	requins
		Moderate	Le poissonnier avait de bons filets de	sole
5	Auditory	Low	Il m'a montré comment dessiner un	chapeau
		Moderate	À chaque mois, on organise une collecte de	sang
		Low	Notre objectif est de le distribuer au	public
		Low	Nous avons eu la chance de voir plusieurs	mosquées
		Moderate	D'après leur expression faciale, les hommes étaient	contents
		Moderate	Parmi les fruits secs, je préfère les	dattes
		Low	Il y en a tout plein à	couper
		Moderate	Les instructions sont dans le	pamphlet
		Moderate	Elle fait bouillir de l'eau pour cuire des	nouilles
		Low	Elle m'a passé un morceau de	sapin
		Moderate	La fille trouvait le garçon très	gentil
		Low	Sur sa trajectoire se trouvait un	poteau
		Moderate	Son nouvel emploi est très	stressant
		Low	Ils ont décidé de visiter la	baie
		Moderate	Ce nid d'oiseau appartient à un	pigeon
		Low	Je tente de m'habituer à cette	région
		Low	On m'a dit de bonnes choses à propos du	discours
		Moderate	Parmi les fruits de mer, j'adore les	moules
		Low	On m'a demandé d'aller vers la	voie
		Low	J'ai tenté de les échanger pour des	prunes
		Moderate	À la quincaillerie, j'ai acheté une nouvelle	clé

		Low	Je crois avoir besoin de plus de	fer
		Moderate	Michelle a surpris Jean en lui donnant un	cadeau
		Low	Mon frère a décidé d'abandonner le	golf
		Moderate	Les changements climatiques ont provoqué des	tempêtes
6	Audiovisual	Moderate	L'homme d'affaires voulait amasser plus de	pouvoir
		Low	Mathilde a développé un intérêt pour la	recherche
		Moderate	La récolte fut détruite par une infestation de	chenilles
		Low	Elles se préparent à nous aider avec la	clôture
		Moderate	Éric pense que l'hiver prochain sera	doux
		Low	J'ai oublié de ranger la	souffleuse
		Low	Cette fois, elle se promenait sans	bavoir
		Moderate	Je me demande s'il y aura du	tambour
		Low	Je me concentre sur mes	cuisses
		Moderate	Avant de sortir, elle a enfilé une	robe
		Low	On ne sait jamais où trouver des	fourchettes
		Moderate	Elle sera en prison pour un	mois
		Low	Elle a décidé de se payer une	teinture
		Moderate	Depuis ce matin, j'ai mal au	dos
		Low	Elle n'arrivait pas à retrouver les	dés
		Moderate	Le garçon avait des yeux	bleus
		Low	Richard est nouvellement responsable du	gaz
		Moderate	Il est généralement difficile de transplanter un	poumon
		Low	Mon amie Maryse ne manque jamais de	thym
		Low	Daniel se méfie toujours des	serpents
		Moderate	Dans mon couscous, je mets des	fèves
		Low	Nous partageons un intérêt pour le	polo
		Low	Finalement, je me suis retrouvé au	camp
		Moderate	Pendant le vol, il y a eu plusieurs	films
		Moderate	La compagnie de téléphone offre de bons	rabais

Table A.3. ANOVA investigating differences in (log) word frequency across stimulus lists

	Sum of Squares	df	Mean Square	F
List	72,9314.23	17	42,900.84	0.69
Language ***	1.92e +6	1	1.92e +6	30.65
Modality	62.87	2	31.437	5.02e -4
Context	0.03	1	0.03	5.41e -7
List X Language	3739.72	17	219.98	0.00
List X Modality	2.30e +6	34	67,691.53	1.08
List X Context	22,4842.91	17	13,226.05	0.21
Modality X Language	63.98	2	31.98	5.11e -4
Modality X Context	25.55	2	12.78	2.04e -4
Context X Language	4.71	1	4.71	7.52e -5
Modality X Language X List	1.99e +6	34	58,448.59	0.93
Modality X Context X List	1.53e +6	34	44,993.30	0.72
Modality X Context X Language	15.92	2	7.96	1.27e -4
Context X Language X List	31,342.49	17	1843.68	0.03
Modality X Context X Language X List	1.08e +6	34	31,710.54	0.51
Residuals	3.25e +8	5,184	62,624.16	

*** p < .001

Table A.4. Results from the model predicting participants' accuracy in identifying sentence terminal words, including participants' first language as a random effect

	Estimates	*SE*	95% CI	β	t
Fixed Effects					
Intercept[a]	50.53**	3.45	35.38 – 65.68	0.09	14.72
Language	-12.53***	2.73	-17.91 – -7.16	-0.40	-4.59
Modality (V vs. A)	-37.47***	2.73	-42.84 – -32.09	-1.20	-13.71
Modality (AV vs. A)	29.67***	2.76	24.24 – 35.09	0.95	10.76
Context	22.00***	2.73	16.62 – 27.38	0.70	8.05
Language X Modality (V vs. A)	9.33*	3.86	1.73 – 16.94	0.30	2.41
Language X Modality (AV vs. A)	-1.80	3.88	-9.44 – 5.84	-0.06	-0.46
Language X Context	-8.13*	3.86	-15.74 – -0.53	-0.26	-2/10
Modality (V vs. A) X Context	-19.20***	3.86	-26.80 – -11.60	-0.61	-4.97
Modality (AV vs. A) X Context	-10.73**	3.88	-18.37 – -3.09	-0.34	-2.76
Language X Modality (V vs. A) X Context	7.60	5.47	-3.15 – 18.35	0.24	1.39
Language X Modality (AV vs. A) X Context	10.87*	5.48	0.09 – 21.64	5.48	1.98

	Variance	
Random Effects	Intercept	Slope
Participant	30.28	N/A
Participant's L1	13.80	N/A
Residual	112.02	N/A

Note. Marginal R^2 = 0.84, Conditional R^2 = 0.89

[a] The intercept corresponds to the predicted accuracy for first language, auditory-only (A), low context sentences.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table A.5. Correlation among bilingualism variables

Bilingualism variable	Age of acquisition (years)	Age of fluency (years)	Self-rated L2 ability	Percentage of daily L2 use	Pooled L2 Fluency	Proportional Pooled L2 Fluency
Age of acquisition (years)	-	-	-	-	-	-
Age of fluency (years)	0.74***	-		-	-	-
Self-rated L2 ability	-0.32	-0.43*	-	-	-	-
Percentage of daily L2 use	-0.30	-0.28	0.46*	-	-	-
Pooled L2 Fluency	-0.17	-0.19	0.29	0.42*	-	-
Proportional Pooled L2 Fluency	-0.08	-0.17	0.55**	0.59***	0.67***	-

* p < .05 ** p < .01 *** p < .001

161

Figure A.6. Scatterplots of the correlations between percentage of words correctly identified and bilingualism variables
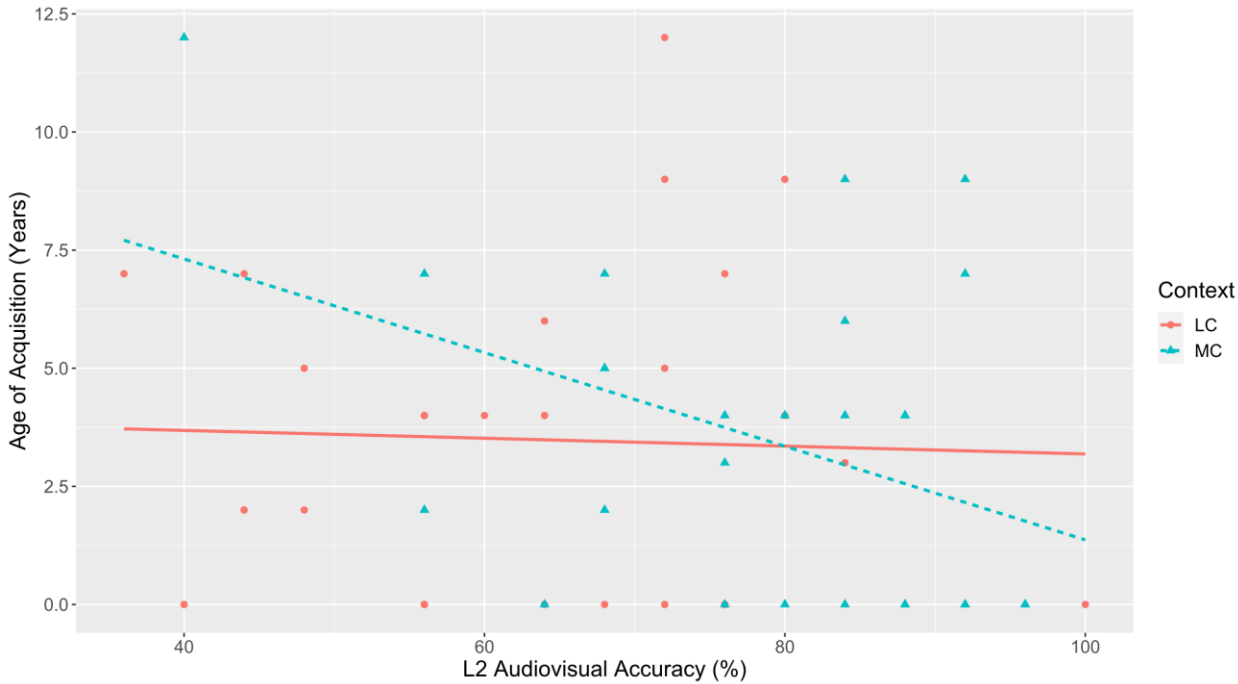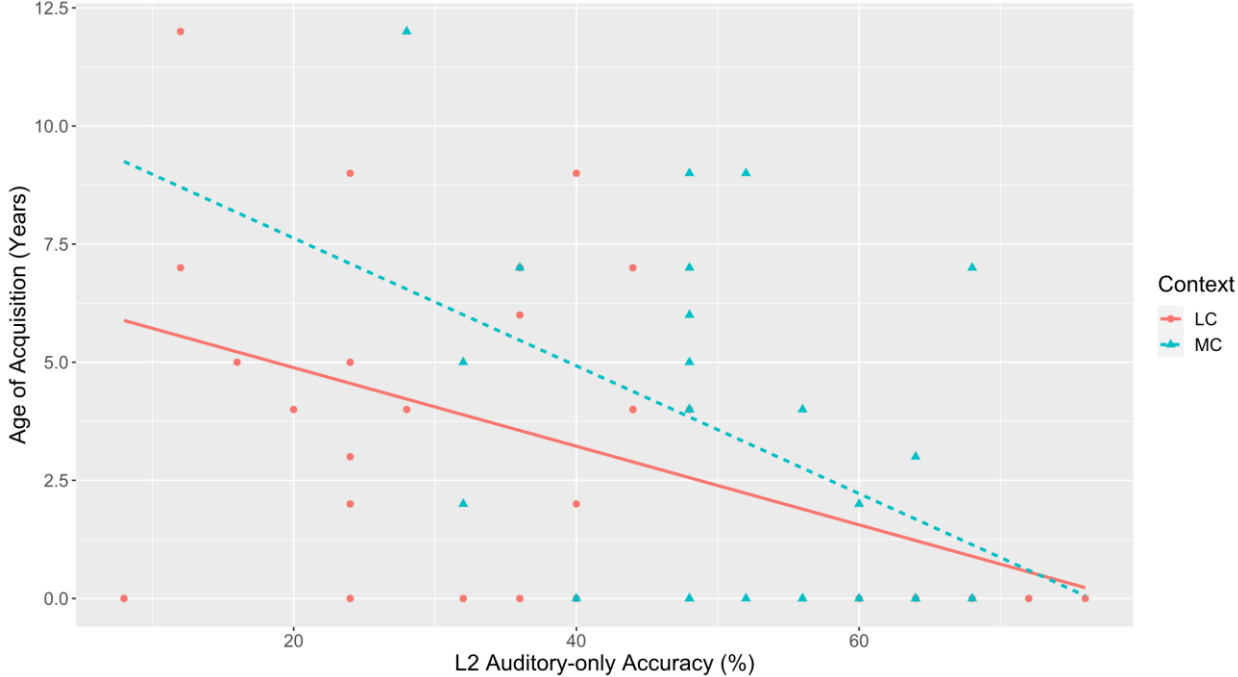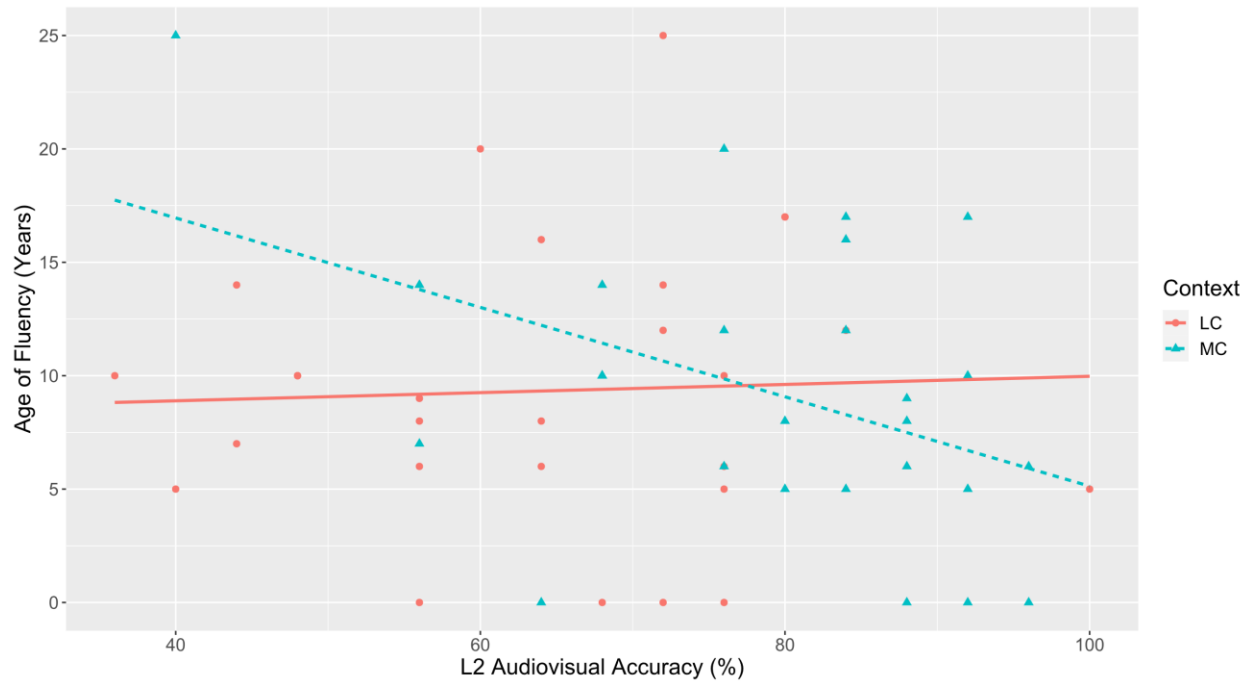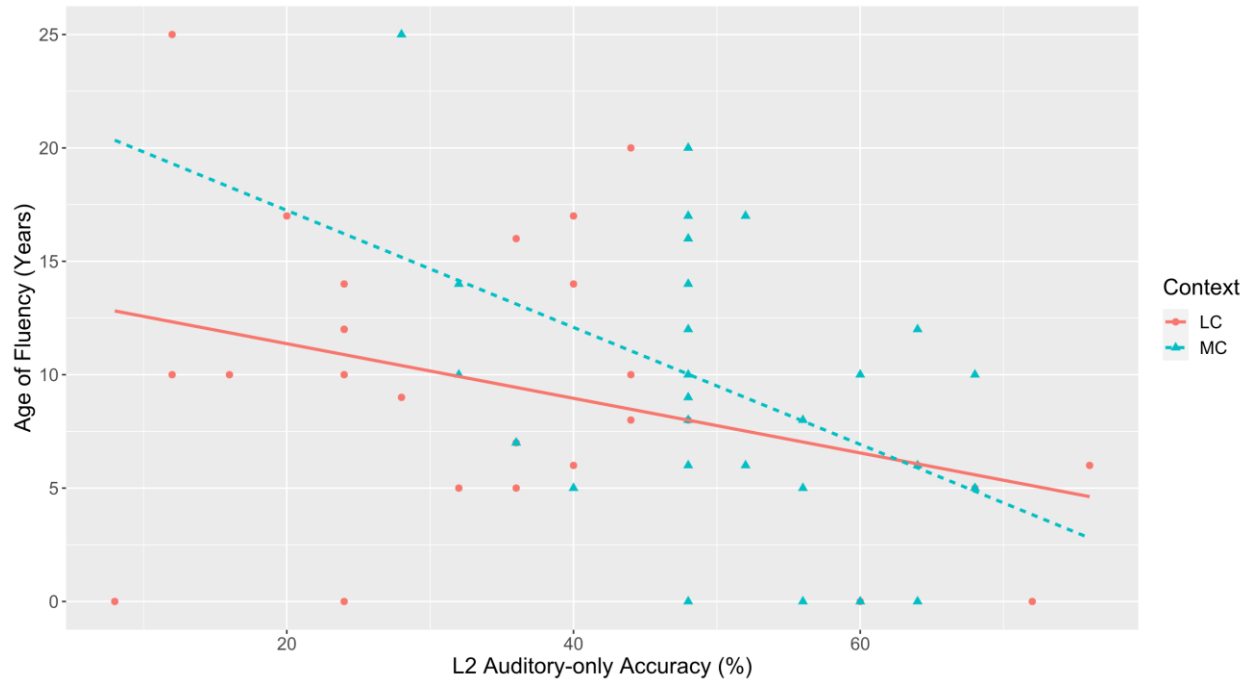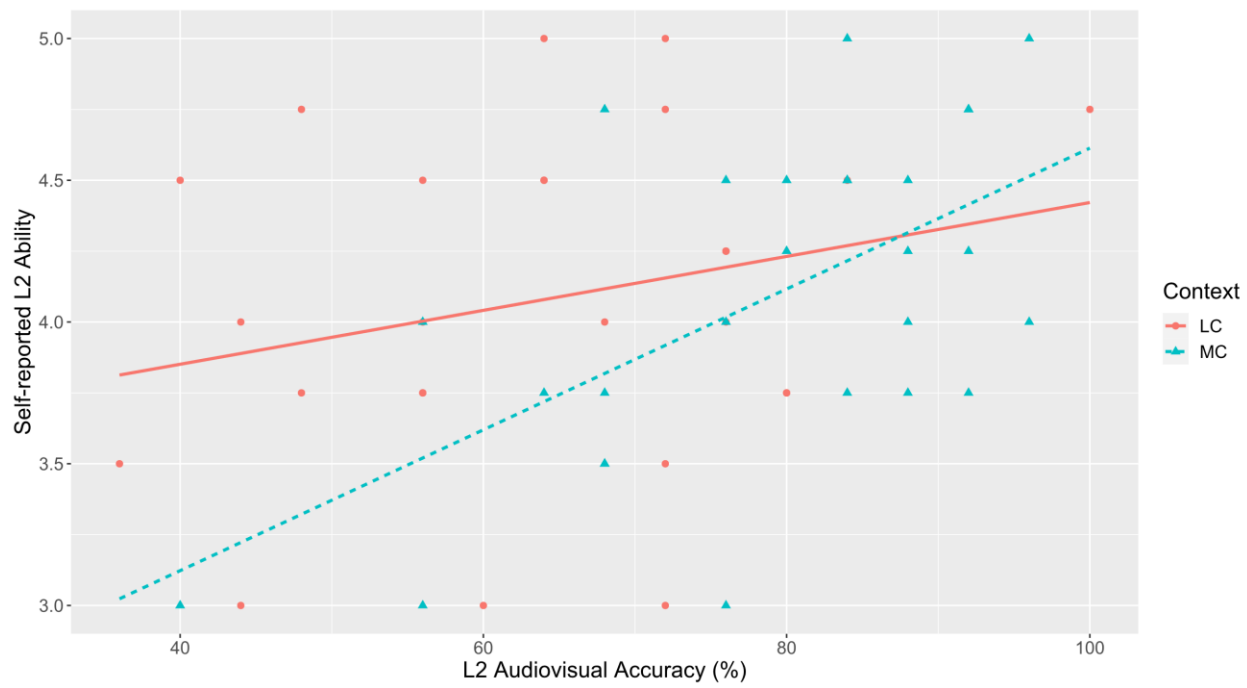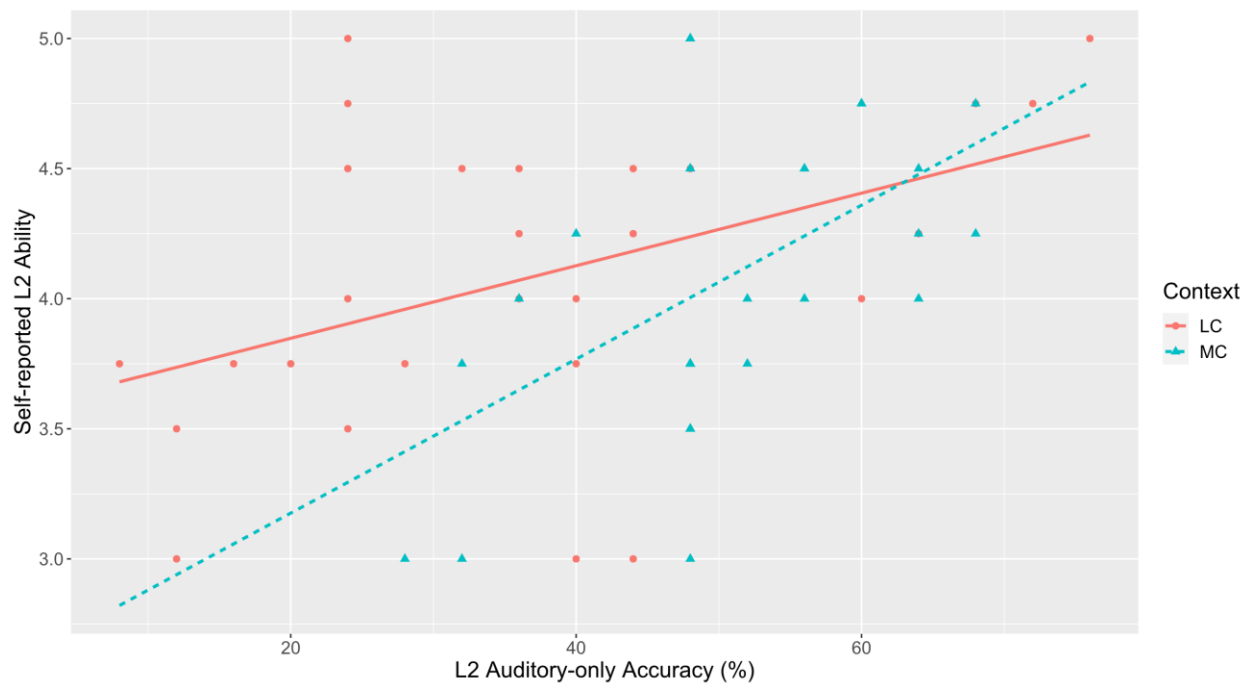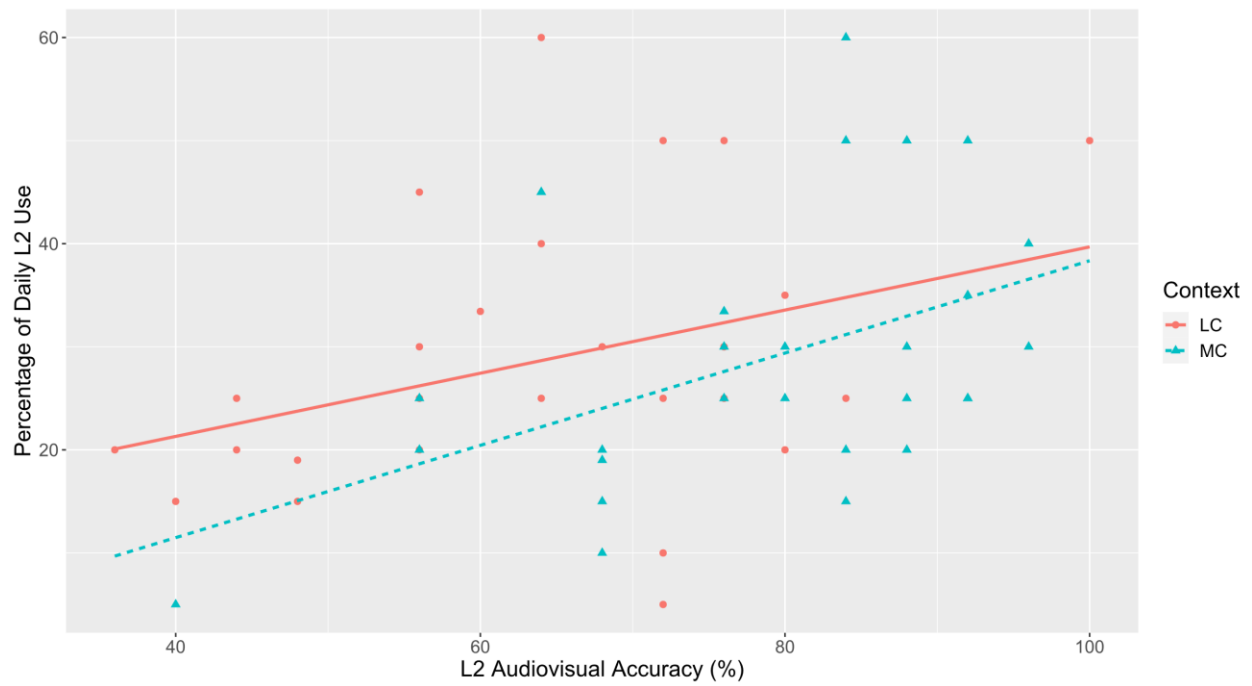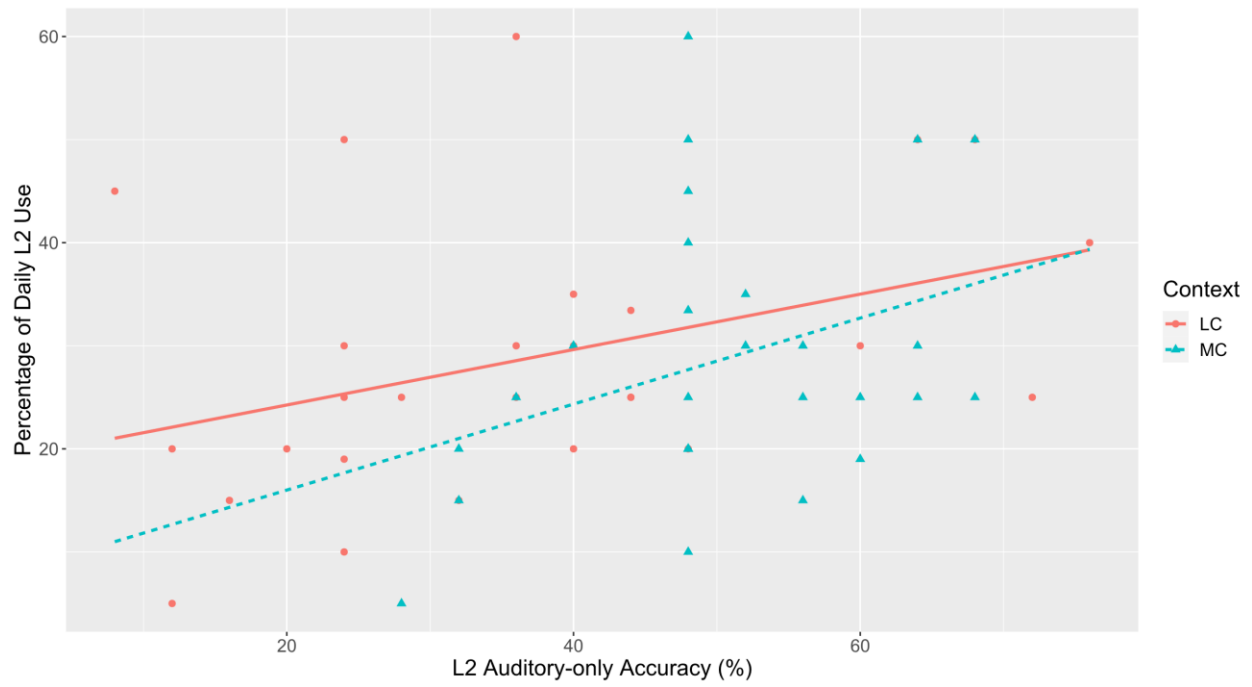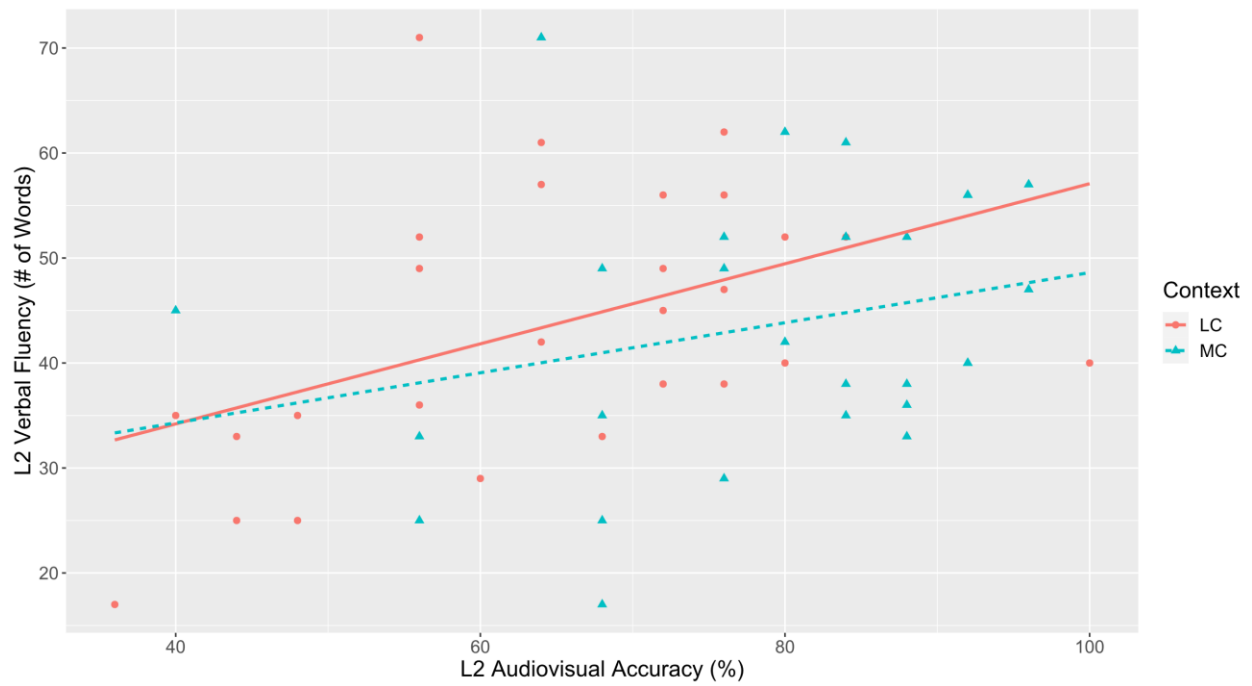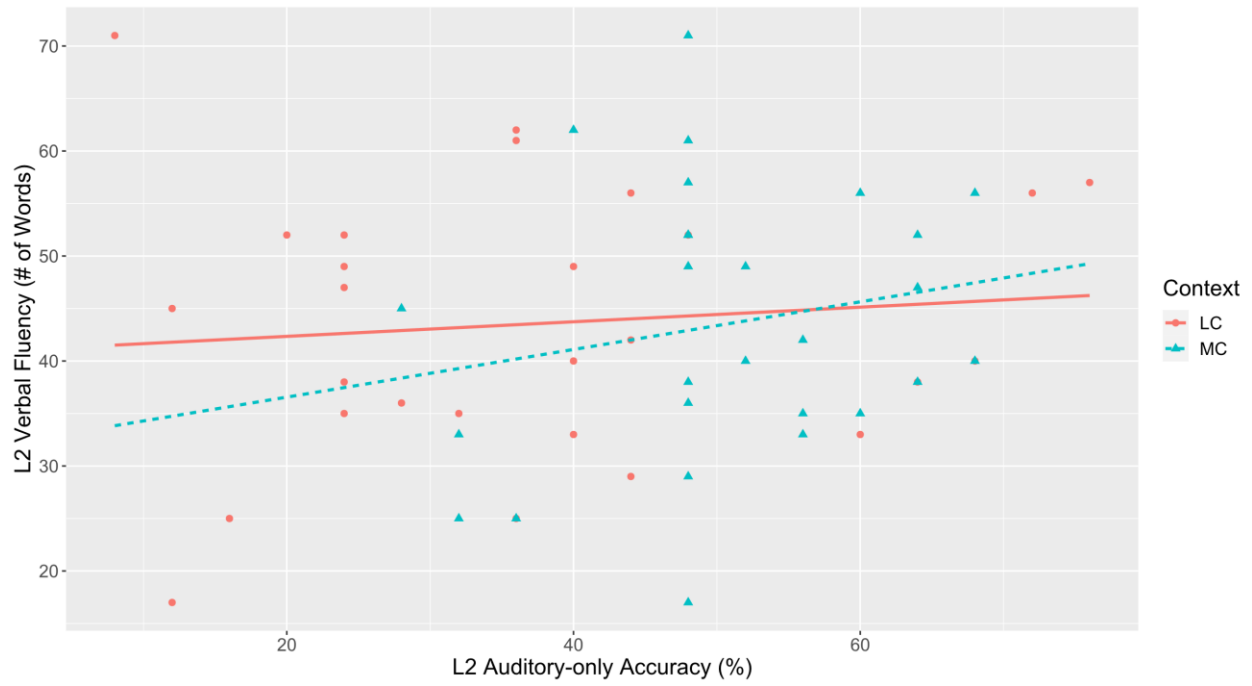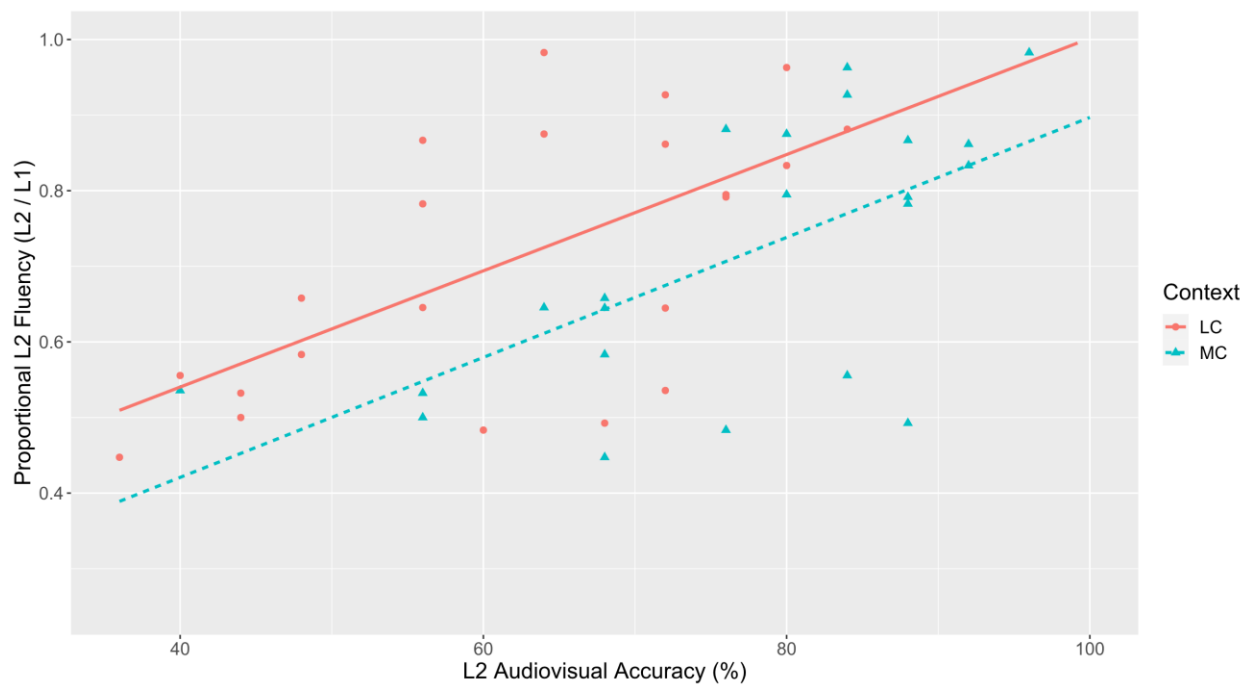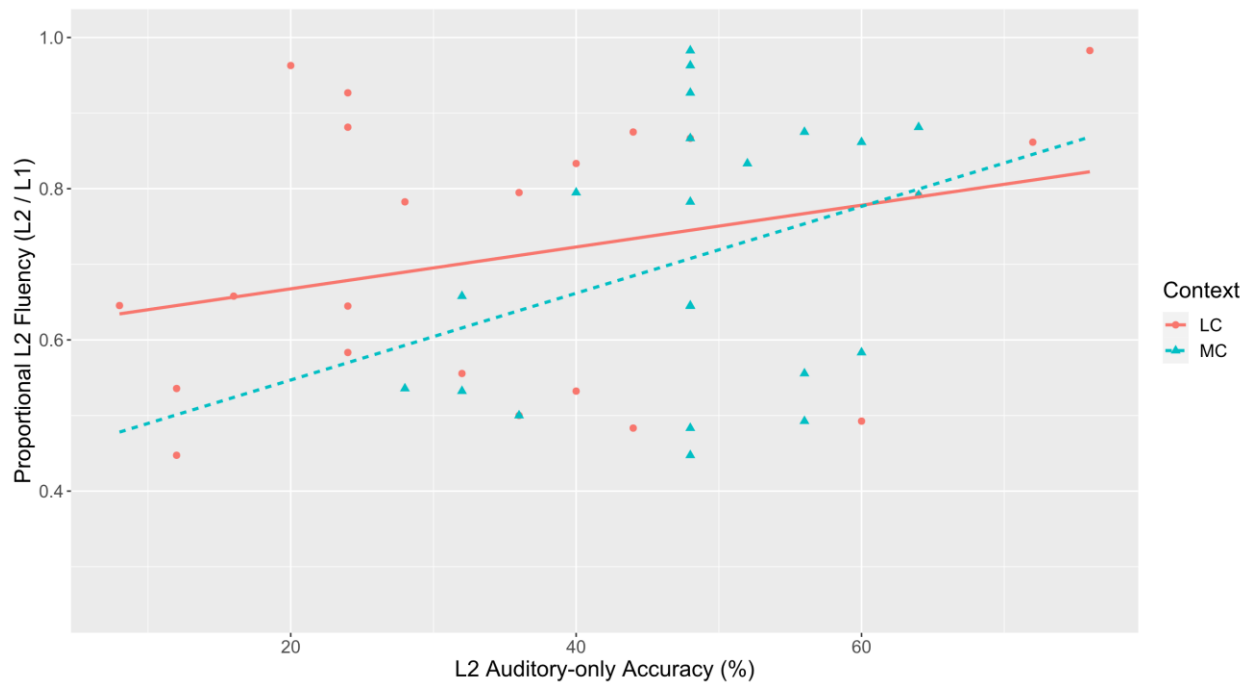
Appendix B

Complete List of Stimuli

List	Language	Block	Modality	Context	Stem	Terminal word
1	English	1	Visual	Low	According to Hank, she had been	killed
				Low	Scott was planning to work on his	thighs
				Moderate	The book is resting on top of the	pile
				Low	They had to clean up the	juice
				Moderate	These old shoes have a broken	sole
				Moderate	The cake on the counter is very	moist
				Low	He asked me to repair the	trunk
				Moderate	The main course consisted of	lamb
				Low	The two of them disagreed on the	fine
				Moderate	Before leaving, he put on a pair of	shoes
				Moderate	I looked at the sky and saw the	clouds
				Low	The room had many things to	hang
				Low	We need to replace this	couch
				Moderate	She styled her hair with a	clip
				Low	She looked at the girl who was	last
				Moderate	At the clinic, the doctor checked my	pulse
				Low	The young man mostly loved her	mind
				Moderate	She had commented on the	claws
				Low	I was confused about the	date
				Moderate	It was cold, so he put on his	hat
				Moderate	The plants in my office are	fake
				Low	I pressed Doris about the	quiz
				Moderate	She broiled the ham until it was	crisp
				Moderate	A sentence must have a least one	noun
				Low	Donald looked everywhere for his	mate
		2	Auditory	Low	My sister went to the store to buy a	knife
				Moderate	My boyfriend gave me a	kiss
				Low	I suspect that he needed to	hear

		Moderate	Behind the counter, the butcher was slicing the	meat
		Low	I told you about that	safe
		Moderate	I saw the animals at the	store
		Low	Andrew had trouble locating his	mom
		Moderate	In the yard, she trims the	grass
		Low	Trudy's brother was examining the	lump
		Moderate	She was learning how to bake	tarts
		Low	Carol tried her best to hide her	mark
		Moderate	The colour of her eyes is	brown
		Low	He was secretive about the	rink
		Moderate	The horse was let into the	field
		Moderate	In the mail, I received a	card
		Low	I asked Martin for his	rake
		Moderate	I spent all morning scrubbing the bathroom	tiles
		Low	The group provided all of the	rice
		Moderate	I want to paint the table	red
		Moderate	He unlocked the door of the	house
		Low	She did not want them	grilled
		Moderate	Every morning, we jog along the	shore
		Low	Myriam did not expect the	things
		Low	She was told to take the	tray
		Moderate	She asked the tailor to fix her	pants
3	Audiovisual	Moderate	He cooked the vegetables in a	pot
		Low	I have been told to	rinse
		Moderate	Jessie and her friend walked up the	stairs
		Low	They could not see the	lake
		Low	Please do not touch my	heel
		Moderate	The weather forecast predicted there would be	hail
		Low	I had a dream about a	storm
		Moderate	The young fisherman forgot his	line
		Low	Julian wanted to finish the	room
		Moderate	This restaurant has great	food
		Low	Theresa thanked me for the	drinks

169

		Moderate	During the fight, I was punched in the	head
		Moderate	She put on a clean	top
		Low	She checked to make sure it was	mine
		Moderate	That bakery makes very good	cake
		Moderate	The skier lost one of his	poles
		Low	I am not sure why it is so	mild
		Moderate	In his spare time, Owen wrote a	note
		Low	She was not sure if he really	laughed
		Moderate	Yesterday, my dog ran after a	child
		Low	He bent over to pick up the	coin
		Moderate	This year, the farmer's main crop is	hay
		Low	Barry complimented us on our	find
		Low	I could not tell that they were	Dutch
		Moderate	The jester dances for the	king
4	Visual	Low	She reminded me to check the	gears
		Low	Please stay away from the	ledge
		Moderate	This plate of pasta needs more	salt
		Moderate	I just threw the dog a	bone
		Low	Margaret gave away all of the	sprouts
		Moderate	Jill cleaned up the dirt with a	mop
		Low	I wish I had known about the	deer
		Moderate	The injury left a very large	scab
		Low	She was thinking of adding	tea
		Moderate	The baseball player bought a new	cap
		Low	He decided to give away his tie	tie
		Low	He tried to put away the	keys
		Moderate	Mrs. Smith has a fear of	clowns
		Low	Anna was talking about that awful	growl
		Moderate	When I am at the beach, I like to	swim
		Low	Last weekend, there was no	sun
		Moderate	My hat is made of	straw
		Low	Johnny and his friends laughed at the	ring
		Moderate	Joan waited for the rain to	come

		Moderate	She is very creative and loves to	paint
		Low	The city council purchased the	slide
		Moderate	He dug a large hole in the	soil
		Low	She was not responsible for the	noise
		Low	She had just seen the other	seeds
		Moderate	Michael told me his favourite seafood is	fish
5	Auditory	Low	Be careful that you do not let it	shut
		Moderate	The friends played a game of	darts
		Low	Violet gave me back the	dish
		Low	She advised us on his	heart
		Moderate	Over the past year, Stan has gotten really	fit
		Low	Gregory dropped the brand-new	drums
		Moderate	The team's best played is very	quick
		Low	He stated that it was	straight
		Moderate	Last night's part was really	fun
		Low	The young lady needed a	box
		Low	She tried her best to control the	rules
		Moderate	The exterminator took care of the	pests
		Low	Chelsea looked away from her	purse
		Moderate	He poured his beverage into a	glass
		Low	I was ready to see the	coast
		Low	He was not well prepared for the	mist
		Moderate	The necklace is made of	gold
		Low	They had to repair the	mast
		Moderate	The family is planning a trip to	Greece
		Moderate	These are the stocks I want to	sell
		Low	Dale built the cabin around	march
		Moderate	Kids can start school at age	four
		Moderate	The young child is just learning to	talk
		Low	You should not touch the	weeds
		Moderate	We walk our dogs each day at	dusk
6	Audiovisual	Moderate	I called a plumber to repair the	pipe

			Low	Vince insisted that we buy this	chair
			Moderate	My care has a new	plate
			Low	She expected it to be	long
			Moderate	The fruit I just bough smells really	sweet
			Moderate	Every day, I begin work at	ten
			Low	Roxane had to deal with the	mud
			Low	He was not aware of the	pears
			Moderate	She went to prison for a	month
			Low	Yesterday, Betty took a look at my	throat
			Moderate	Every day, he grooms his	dog
			Low	She was complimented on her	bun
			Low	In reality she did not feel	sick
			Moderate	I love to look up at the	sky
			Low	Milton was about to pick up the	snake
			Low	I told him it has been	leased
			Moderate	Yesterday, I lost the tennis	match
			Low	I made sure it was	cool
			Moderate	The dentist carefully examined my	mouth
			Moderate	He has an excellent sense of	taste
			Low	He looked at the one that is	deep
			Moderate	Shirley bought pants that are too	small
			Low	The curious boy explored the	lane
			Low	Kirk wanted to show us his new	pigs
			Moderate	Most days, I take the bus to	school
French	1	Visual	Low	Je crois qu'il reste encore plusieurs	verges
			Low	On me demande souvent si elles sont	vraies
			Moderate	Claire portait sa plus belle robe pour le	mariage
			Low	J'ai vu qu'elle est pleine de	cire
			Low	Nous avons reçu un chargement de	soie
			Moderate	Les billets pour l'opéra étaient	gratuits
			Moderate	Ma danse préférée est la	valse
			Low	Nous avons plusieurs projets pour notre	chambre

		Low	Il y a quelques, toutes mes amies étaient	blondes
		Moderate	En creusant, j'ai trouvé un	coffre
		Moderate	Les manifestants brandissaient des	pancartes
		Low	J'essaie de les rendre un peu moins	ternes
		Moderate	Ce restaurant est reconnu pour son	menu
		Low	Il préférait de loin le	premier
		Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	sandales
		Moderate	En temps de crise, il est difficile d'être	tranquille
		Low	Elle n'avait pas remarqué la présence des	chiens
		Moderate	Pour Noël, il a reçu plusieurs	jouets
		Low	Il n'avait pas prédit croiser un	tigre
		Moderate	Dans les bois, Jacques a aperçu un	loup
		Moderate	Ma voiture vient de se faire	frapper
		Low	D'après ta description, il semble être un	bélier
		Moderate	Au supermarché, il y avait peu de	produits
		Moderate	Elle suit une diète sans	gras
		Low	Je suis en train de me préparer pour le	concert
2	Auditory	Low	Elle était contente de sa	posture
		Moderate	L'artiste n'arrive pas à vendre ses	photos
		Moderate	La vedette se plaint lorsqu'on ignore ses	demandes
		Low	Tiens-toi à l'écart des	leviers
		Moderate	Le magasin de musique vend des	flûtes
		Low	Elle n'avait pas anticipé la présence du	captif
		Moderate	Les membres de la congrégation sont très	dévoués
		Low	On m'a demandé de créer une illustration contenant des	fées
		Moderate	Je me suis blessé au	genou
		Low	On m'a invité à essayer la	boxe
		Moderate	Il y a des canards dans ce	lac
		Low	On lui avait suggéré de les	donner
		Low	Elles se dirigent vers la	reine
		Moderate	J'ai une douleur à la	tête
		Low	On lui a demandé de s'occuper du	linge

		Moderate	Le nouveau condo était déjà	vendu
		Low	Il ne savait pas quoi faire avec le	cheval
		Moderate	Lisa préfère les légumes	crus
		Moderate	La chambre d'Henri est en	chaos
		Low	On ne lui avait pas donné de	journaux
		Moderate	Nous avons traversé le lac en	canot
		Low	J'ai plusieurs souvenirs à propos de la	poupée
		Moderate	Son anneau est orné d'un	saphir
		Low	On l'a mis en charge du	site
		Moderate	Met tes vêtements dans la	laveuse
3	Audiovisual	Low	Tu dois faire attention au	cône
		Moderate	Pendant le procès, le juge me semblait	juste
		Moderate	Ses fleurs préférées sont les	tulipes
		Low	Ils sont à la recherche d'un nouveau	caissier
		Moderate	Le parc est couvert de	déchets
		Low	Les enfants n'ont pas envie de	rôties
		Moderate	Le magasin de chaussures ne vend pas de	pantoufles
		Low	On lui a demandé d'être moins	sage
		Moderate	L'animal laissa échapper un cri	puissant
		Low	Elle n'avait jamais eu a s'occuper de	scorpions
		Low	On lui avait dit de se méfier des	fantômes
		Moderate	Dans le bus ce matin, les gens étaient	polis
		Low	Ces gens n'ont toujours pas eu de	vacances
		Moderate	Je trouve son écriture très	soignée
		Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	soccer
		Low	La banderole est en forme de	sorcière
		Moderate	En mathématiques, les élèves utilisent des	règles
		Moderate	Mon ami a préparé une tarte aux	citrons
		Low	Il est en train de se préparer pour la	famille
		Moderate	L'école a engagé une nouvelle professeure de	science
		Low	Elle croit qu'elle a perdu son	temps
		Moderate	Au brunch, Catherine a commandé des	saucisses

		Low	Je suis enfin débarrassé de cette	fièvre
		Low	Mon ami souhaite être plus	souple
		Moderate	Veuillez-vous tourner vers la	gauche
4	Visual	Low	Il n'avait aucun doute qu'elle était	rayée
		Moderate	Après ses études, elle est devenue chirurgienne	cardiaque
		Low	Tout le monde observe attentivement le	cou
		Moderate	Après cet exercice, mes jambes sont	rigides
		Moderate	Elle utilise le robinet pour remplir sa	bouteille
		Low	J'espère bien pouvoir profiter des	bains
		Low	Lundi prochain, on me donnera un	plâtre
		Moderate	Les pantalons de Kim sont trop	petits
		Moderate	Elle a fait perce son	nombril
		Low	Elle m'a offert celui qui est	noir
		Low	On m'assure que c'est bien	rouge
		Moderate	Les dents de Marie sont	croches
		Moderate	La maison est faite en	béton
		Low	Il nous parlait de ses nouveaux	moutons
		Low	Nous avons décidé d'ignorer les	castors
		Moderate	Le millionnaire a acheté un condo	spacieux
		Low	Je n'avais jamais entendu ces	fables
		Low	Ils s'assurent de bien suivre le	duc
		Moderate	Ce fruit me semble très	mûr
		Low	Le paquet contenait beaucoup de	suisse
		Low	Ils s'apprêtent à apprendre les	chiffres
		Moderate	Je me rends au travail en	bus
		Moderate	L'été, j'aime profiter de la	chaleur
		Low	Elle devait prépare une présentation sur les	requins
		Moderate	Le poissonnier avait de bons filets de	sole
5	Auditory	Low	Il m'a montré comment dessiner un	chapeau
		Moderate	À chaque mois, on organise une collecte de	sang
		Low	Notre objectif est de le distribuer au	public
		Low	Nous avons eu la chance de voir plusieurs	mosquées

		Moderate	D'après leur expression faciale, les hommes étaient	contents
		Moderate	Parmi les fruits secs, je préfère les	dattes
		Low	Il y en a tout plein à	couper
		Moderate	Les instructions sont dans le	pamphlet
		Moderate	Elle fait bouillir de l'eau pour cuire des	nouilles
		Low	Elle m'a passé un morceau de	sapin
		Moderate	La fille trouvait le garçon très	gentil
		Low	Sur sa trajectoire se trouvait un	poteau
		Moderate	Son nouvel emploi est très	stressant
		Low	Ils ont décidé de visiter la	baie
		Moderate	Ce nid d'oiseau appartient à un	pigeon
		Low	Je tente de m'habituer à cette	région
		Low	On m'a dit de bonnes choses à propos du	discours
		Moderate	Parmi les fruits de mer, j'adore les	moules
		Low	On m'a demandé d'aller vers la	voie
		Low	J'ai tenté de les échanger pour des	prunes
		Moderate	À la quincaillerie, j'ai acheté une nouvelle	clé
		Low	Je crois avoir besoin de plus de	fer
		Moderate	Michelle a surpris Jean en lui donnant un	cadeau
		Low	Mon frère a décidé d'abandonner le	golf
		Moderate	Les changements climatiques ont provoqué des	tempêtes
6	Audiovisual	Moderate	L'homme d'affaires voulait amasser plus de	pouvoir
		Low	Mathilde a développé un intérêt pour la	recherche
		Moderate	La récolte fut détruite par une infestation de	chenilles
		Low	Elles se préparent à nous aider avec la	clôture
		Moderate	Éric pense que l'hiver prochain sera	doux
		Low	J'ai oublié de ranger la	souffleuse
		Low	Cette fois, elle se promenait sans	bavoir
		Moderate	Je me demande s'il y aura du	tambour
		Low	Je me concentre sur mes	cuisses
		Moderate	Avant de sortir, elle a enfilé une	robe
		Low	On ne sait jamais où trouver des	fourchettes
		Moderate	Elle sera en prison pour un	mois

				Low	Elle a décidé de se payer une	teinture
				Moderate	Depuis ce matin, j'ai mal au	dos
				Low	Elle n'arrivait pas à retrouver les	dés
				Moderate	Le garçon avait des yeux	bleus
				Low	Richard est nouvellement responsable du	gaz
				Moderate	Il est généralement difficile de transplanter un	poumon
				Low	Mon amie Maryse ne manque jamais de	thym
				Low	Daniel se méfie toujours des	serpents
				Moderate	Dans mon couscous, je mets des	fèves
				Low	Nous partageons un intérêt pour le	polo
				Low	Finalement, je me suis retrouvé au	camp
				Moderate	Pendant le vol, il y a eu plusieurs	films
				Moderate	La compagnie de téléphone offre de bons	rabais
2	English	1	Auditory	Low	According to Hank, she had been	killed
				Low	Scott was planning to work on his	thighs
				Moderate	The book is resting on top of the	pile
				Low	They had to clean up the	juice
				Moderate	These old shoes have a broken	sole
				Moderate	The cake on the counter is very	moist
				Low	He asked me to repair the	trunk
				Moderate	The main course consisted of	lamb
				Low	The two of them disagreed on the	fine
				Moderate	Before leaving, he put on a pair of	shoes
				Moderate	I looked at the sky and saw the	clouds
				Low	The room had many things to	hang
				Low	We need to replace this	couch
				Moderate	She styled her hair with a	clip
				Low	She looked at the girl who was	last
				Moderate	At the clinic, the doctor checked my	pulse
				Low	The young man mostly loved her	mind
				Moderate	She had commented on the	claws
				Low	I was confused about the	date
				Moderate	It was cold, so he put on his	hat

		Moderate	The plants in my office are	fake
		Low	I pressed Doris about the	quiz
		Moderate	She broiled the ham until it was	crisp
		Moderate	A sentence must have a least one	noun
		Low	Donald looked everywhere for his	mate
2	Audiovisual	Low	My sister went to the store to buy a	knife
		Moderate	My boyfriend gave me a	kiss
		Low	I suspect that he needed to	hear
		Moderate	Behind the counter, the butcher was slicing the	meat
		Low	I told you about that	safe
		Moderate	I saw the animals at the	store
		Low	Andrew had trouble locating his	mom
		Moderate	In the yard, she trims the	grass
		Low	Trudy's brother was examining the	lump
		Moderate	She was learning how to bake	tarts
		Low	Carol tried her best to hide her	mark
		Moderate	The colour of her eyes is	brown
		Low	He was secretive about the	rink
		Moderate	The horse was let into the	field
		Moderate	In the mail, I received a	card
		Low	I asked Martin for his	rake
		Moderate	I spent all morning scrubbing the bathroom	tiles
		Low	The group provided all of the	rice
		Moderate	I want to paint the table	red
		Moderate	He unlocked the door of the	house
		Low	She did not want them	grilled
		Moderate	Every morning, we jog along the	shore
		Low	Myriam did not expect the	things
		Low	She was told to take the	tray
		Moderate	She asked the tailor to fix her	pants
3	Visual	Moderate	He cooked the vegetables in a	pot
		Low	I have been told to	rinse

		Moderate	Jessie and her friend walked up the	stairs
		Low	They could not see the	lake
		Low	Please do not touch my	heel
		Moderate	The weather forecast predicted there would be	hail
		Low	I had a dream about a	storm
		Moderate	The young fisherman forgot his	line
		Low	Julian wanted to finish the	room
		Moderate	This restaurant has great	food
		Low	Theresa thanked me for the	drinks
		Moderate	During the fight, I was punched in the	head
		Moderate	She put on a clean	top
		Low	She checked to make sure it was	mine
		Moderate	That bakery makes very good	cake
		Moderate	The skier lost one of his	poles
		Low	I am not sure why it is so	mild
		Moderate	In his spare time, Owen wrote a	note
		Low	She was not sure if he really	laughed
		Moderate	Yesterday, my dog ran after a	child
		Low	He bent over to pick up the	coin
		Moderate	This year, the farmer's main crop is	hay
		Low	Barry complimented us on our	find
		Low	I could not tell that they were	Dutch
		Moderate	The jester dances for the	king
4	Auditory	Low	She reminded me to check the	gears
		Low	Please stay away from the	ledge
		Moderate	This plate of pasta needs more	salt
		Moderate	I just threw the dog a	bone
		Low	Margaret gave away all of the	sprouts
		Moderate	Jill cleaned up the dirt with a	mop
		Low	I wish I had known about the	deer
		Moderate	The injury left a very large	scab
		Low	She was thinking of adding	tea
		Moderate	The baseball player bought a new	cap
		Low	He decided to give away his tie	tie

		Low	He tried to put away the	keys
		Moderate	Mrs. Smith has a fear of	clowns
		Low	Anna was talking about that awful	growl
		Moderate	When I am at the beach, I like to	swim
		Low	Last weekend, there was no	sun
		Moderate	My hat is made of	straw
		Low	Johnny and his friends laughed at the	ring
		Moderate	Joan waited for the rain to	come
		Moderate	She is very creative and loves to	paint
		Low	The city council purchased the	slide
		Moderate	He dug a large hole in the	soil
		Low	She was not responsible for the	noise
		Low	She had just seen the other	seeds
		Moderate	Michael told me his favourite seafood is	fish
5	Audiovisual	Low	Be careful that you do not let it	shut
		Moderate	The friends played a game of	darts
		Low	Violet gave me back the	dish
		Low	She advised us on his	heart
		Moderate	Over the past year, Stan has gotten really	fit
		Low	Gregory dropped the brand-new	drums
		Moderate	The team's best played is very	quick
		Low	He stated that it was	straight
		Moderate	Last night's part was really	fun
		Low	The young lady needed a	box
		Low	She tried her best to control the	rules
		Moderate	The exterminator took care of the	pests
		Low	Chelsea looked away from her	purse
		Moderate	He poured his beverage into a	glass
		Low	I was ready to see the	coast
		Low	He was not well prepared for the	mist
		Moderate	The necklace is made of	gold
		Low	They had to repair the	mast
		Moderate	The family is planning a trip to	Greece

		Moderate	These are the stocks I want to	sell
		Low	Dale built the cabin around	march
		Moderate	Kids can start school at age	four
		Moderate	The young child is just learning to	talk
		Low	You should not touch the	weeds
		Moderate	We walk our dogs each day at	dusk
6	Visual	Moderate	I called a plumber to repair the	pipe
		Low	Vince insisted that we buy this	chair
		Moderate	My care has a new	plate
		Low	She expected it to be	long
		Moderate	The fruit I just bough smells really	sweet
		Moderate	Every day, I begin work at	ten
		Low	Roxane had to deal with the	mud
		Low	He was not aware of the	pears
		Moderate	She went to prison for a	month
		Low	Yesterday, Betty took a look at my	throat
		Moderate	Every day, he grooms his	dog
		Low	She was complimented on her	bun
		Low	In reality she did not feel	sick
		Moderate	I love to look up at the	sky
		Low	Milton was about to pick up the	snake
		Low	I told him it has been	leased
		Moderate	Yesterday, I lost the tennis	match
		Low	I made sure it was	cool
		Moderate	The dentist carefully examined my	mouth
		Moderate	He has an excellent sense of	taste
		Low	He looked at the one that is	deep
		Moderate	Shirley bought pants that are too	small
		Low	The curious boy explored the	lane
		Low	Kirk wanted to show us his new	pigs
		Moderate	Most days, I take the bus to	school

French	1	Auditory	Low	Je crois qu'il reste encore plusieurs	verges
			Low	On me demande souvent si elles sont	vraies
			Moderate	Claire portait sa plus belle robe pour le	mariage
			Low	J'ai vu qu'elle est pleine de	cire
			Low	Nous avons reçu un chargement de	soie
			Moderate	Les billets pour l'opéra étaient	gratuits
			Moderate	Ma danse préférée est la	valse
			Low	Nous avons plusieurs projets pour notre	chambre
			Low	Il y a quelques, toutes mes amies étaient	blondes
			Moderate	En creusant, j'ai trouvé un	coffre
			Moderate	Les manifestants brandissaient des	pancartes
			Low	J'essaie de les rendre un peu moins	ternes
			Moderate	Ce restaurant est reconnu pour son	menu
			Low	Il préférait de loin le	premier
			Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	sandales
			Moderate	En temps de crise, il est difficile d'être	tranquille
			Low	Elle n'avait pas remarqué la présence des	chiens
			Moderate	Pour Noël, il a reçu plusieurs	jouets
			Low	Il n'avait pas prédit croiser un	tigre
			Moderate	Dans les bois, Jacques a aperçu un	loup
			Moderate	Ma voiture vient de se faire	frapper
			Low	D'après ta description, il semble être un	bélier
			Moderate	Au supermarché, il y avait peu de	produits
			Moderate	Elle suit une diète sans	gras
			Low	Je suis en train de me préparer pour le	concert
	2	Audiovisual	Low	Elle était contente de sa	posture
			Moderate	L'artiste n'arrive pas à vendre ses	photos
			Moderate	La vedette se plaint lorsqu'on ignore ses	demandes
			Low	Tiens-toi à l'écart des	leviers
			Moderate	Le magasin de musique vend des	flûtes
			Low	Elle n'avait pas anticipé la présence du	captif
			Moderate	Les membres de la congrégation sont très	dévoués

		Low	On m'a demandé de créer une illustration contenant des	fées
		Moderate	Je me suis blessé au	genou
		Low	On m'a invité à essayer la	boxe
		Moderate	Il y a des canards dans ce	lac
		Low	On lui avait suggéré de les	donner
		Low	Elles se dirigent vers la	reine
		Moderate	J'ai une douleur à la	tête
		Low	On lui a demandé de s'occuper du	linge
		Moderate	Le nouveau condo était déjà	vendu
		Low	Il ne savait pas quoi faire avec le	cheval
		Moderate	Lisa préfère les légumes	crus
		Moderate	La chambre d'Henri est en	chaos
		Low	On ne lui avait pas donné de	journaux
		Moderate	Nous avons traversé le lac en	canot
		Low	J'ai plusieurs souvenirs à propos de la	poupée
		Moderate	Son anneau est orné d'un	saphir
		Low	On l'a mis en charge du	site
		Moderate	Met tes vêtements dans la	laveuse
3	Visual	Low	Tu dois faire attention au	cône
		Moderate	Pendant le procès, le juge me semblait	juste
		Moderate	Ses fleurs préférées sont les	tulipes
		Low	Ils sont à la recherche d'un nouveau	caissier
		Moderate	Le parc est couvert de	déchets
		Low	Les enfants n'ont pas envie de	rôties
		Moderate	Le magasin de chaussures ne vend pas de	pantoufles
		Low	On lui a demandé d'être moins	sage
		Moderate	L'animal laissa échapper un cri	puissant
		Low	Elle n'avait jamais eu a s'occuper de	scorpions
		Low	On lui avait dit de se méfier des	fantômes
		Moderate	Dans le bus ce matin, les gens étaient	polis
		Low	Ces gens n'ont toujours pas eu de	vacances
		Moderate	Je trouve son écriture très	soignée

	Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	soccer
	Low	La banderole est en forme de	sorcière
	Moderate	En mathématiques, les élèves utilisent des	règles
	Moderate	Mon ami a préparé une tarte aux	citrons
	Low	Il est en train de se préparer pour la	famille
	Moderate	L'école a engagé une nouvelle professeure de	science
	Low	Elle croit qu'elle a perdu son	temps
	Moderate	Au brunch, Catherine a commandé des	saucisses
	Low	Je suis enfin débarrassé de cette	fièvre
	Low	Mon ami souhaite être plus	souple
	Moderate	Veuillez-vous tourner vers la	gauche
4	Auditory	Low	Il n'avait aucun doute qu'elle était	rayée
	Moderate	Après ses études, elle est devenue chirurgienne	cardiaque
	Low	Tout le monde observe attentivement le	cou
	Moderate	Après cet exercice, mes jambes sont	rigides
	Moderate	Elle utilise le robinet pour remplir sa	bouteille
	Low	J'espère bien pouvoir profiter des	bains
	Low	Lundi prochain, on me donnera un	plâtre
	Moderate	Les pantalons de Kim sont trop	petits
	Moderate	Elle a fait perce son	nombril
	Low	Elle m'a offert celui qui est	noir
	Low	On m'assure que c'est bien	rouge
	Moderate	Les dents de Marie sont	croches
	Moderate	La maison est faite en	béton
	Low	Il nous parlait de ses nouveaux	moutons
	Low	Nous avons décidé d'ignorer les	castors
	Moderate	Le millionnaire a acheté un condo	spacieux
	Low	Je n'avais jamais entendu ces	fables
	Low	Ils s'assurent de bien suivre le	duc
	Moderate	Ce fruit me semble très	mûr
	Low	Le paquet contenait beaucoup de	suisse
	Low	Ils s'apprêtent à apprendre les	chiffres

		Moderate	Je me rends au travail en	bus
		Moderate	L'été, j'aime profiter de la	chaleur
		Low	Elle devait prépare une présentation sur les	requins
		Moderate	Le poissonnier avait de bons filets de	sole
5	Audiovisual	Low	Il m'a montré comment dessiner un	chapeau
		Moderate	À chaque mois, on organise une collecte de	sang
		Low	Notre objectif est de le distribuer au	public
		Low	Nous avons eu la chance de voir plusieurs	mosquées
		Moderate	D'après leur expression faciale, les hommes étaient	contents
		Moderate	Parmi les fruits secs, je préfère les	dattes
		Low	Il y en a tout plein à	couper
		Moderate	Les instructions sont dans le	pamphlet
		Moderate	Elle fait bouillir de l'eau pour cuire des	nouilles
		Low	Elle m'a passé un morceau de	sapin
		Moderate	La fille trouvait le garçon très	gentil
		Low	Sur sa trajectoire se trouvait un	poteau
		Moderate	Son nouvel emploi est très	stressant
		Low	Ils ont décidé de visiter la	baie
		Moderate	Ce nid d'oiseau appartient à un	pigeon
		Low	Je tente de m'habituer à cette	région
		Low	On m'a dit de bonnes choses à propos du	discours
		Moderate	Parmi les fruits de mer, j'adore les	moules
		Low	On m'a demandé d'aller vers la	voie
		Low	J'ai tenté de les échanger pour des	prunes
		Moderate	À la quincaillerie, j'ai acheté une nouvelle	clé
		Low	Je crois avoir besoin de plus de	fer
		Moderate	Michelle a surpris Jean en lui donnant un	cadeau
		Low	Mon frère a décidé d'abandonner le	golf
		Moderate	Les changements climatiques ont provoqué des	tempêtes
6	Visual	Moderate	L'homme d'affaires voulait amasser plus de	pouvoir
		Low	Mathilde a développé un intérêt pour la	recherche
		Moderate	La récolte fut détruite par une infestation de	chenilles

				Low	Elles se préparent à nous aider avec la	clôture
				Moderate	Éric pense que l'hiver prochain sera	doux
				Low	J'ai oublié de ranger la	souffleuse
				Low	Cette fois, elle se promenait sans	bavoir
				Moderate	Je me demande s'il y aura du	tambour
				Low	Je me concentre sur mes	cuisses
				Moderate	Avant de sortir, elle a enfilé une	robe
				Low	On ne sait jamais où trouver des	fourchettes
				Moderate	Elle sera en prison pour un	mois
				Low	Elle a décidé de se payer une	teinture
				Moderate	Depuis ce matin, j'ai mal au	dos
				Low	Elle n'arrivait pas à retrouver les	dés
				Moderate	Le garçon avait des yeux	bleus
				Low	Richard est nouvellement responsable du	gaz
				Moderate	Il est généralement difficile de transplanter un	poumon
				Low	Mon amie Maryse ne manque jamais de	thym
				Low	Daniel se méfie toujours des	serpents
				Moderate	Dans mon couscous, je mets des	fèves
				Low	Nous partageons un intérêt pour le	polo
				Low	Finalement, je me suis retrouvé au	camp
				Moderate	Pendant le vol, il y a eu plusieurs	films
				Moderate	La compagnie de téléphone offre de bons	rabais
3	English	1	Audiovisual	Low	According to Hank, she had been	killed
				Low	Scott was planning to work on his	thighs
				Moderate	The book is resting on top of the	pile
				Low	They had to clean up the	juice
				Moderate	These old shoes have a broken	sole
				Moderate	The cake on the counter is very	moist
				Low	He asked me to repair the	trunk
				Moderate	The main course consisted of	lamb
				Low	The two of them disagreed on the	fine
				Moderate	Before leaving, he put on a pair of	shoes

		Moderate	I looked at the sky and saw the	clouds
		Low	The room had many things to	hang
		Low	We need to replace this	couch
		Moderate	She styled her hair with a	clip
		Low	She looked at the girl who was	last
		Moderate	At the clinic, the doctor checked my	pulse
		Low	The young man mostly loved her	mind
		Moderate	She had commented on the	claws
		Low	I was confused about the	date
		Moderate	It was cold, so he put on his	hat
		Moderate	The plants in my office are	fake
		Low	I pressed Doris about the	quiz
		Moderate	She broiled the ham until it was	crisp
		Moderate	A sentence must have a least one	noun
		Low	Donald looked everywhere for his	mate
2	Visual	Low	My sister went to the store to buy a	knife
		Moderate	My boyfriend gave me a	kiss
		Low	I suspect that he needed to	hear
		Moderate	Behind the counter, the butcher was slicing the	meat
		Low	I told you about that	safe
		Moderate	I saw the animals at the	store
		Low	Andrew had trouble locating his	mom
		Moderate	In the yard, she trims the	grass
		Low	Trudy's brother was examining the	lump
		Moderate	She was learning how to bake	tarts
		Low	Carol tried her best to hide her	mark
		Moderate	The colour of her eyes is	brown
		Low	He was secretive about the	rink
		Moderate	The horse was let into the	field
		Moderate	In the mail, I received a	card
		Low	I asked Martin for his	rake
		Moderate	I spent all morning scrubbing the bathroom	tiles
		Low	The group provided all of the	rice

		Moderate	I want to paint the table		red
		Moderate	He unlocked the door of the		house
		Low	She did not want them		grilled
		Moderate	Every morning, we jog along the		shore
		Low	Myriam did not expect the		things
		Low	She was told to take the		tray
		Moderate	She asked the tailor to fix her		pants
3	Auditory	Moderate	He cooked the vegetables in a		pot
		Low	I have been told to		rinse
		Moderate	Jessie and her friend walked up the		stairs
		Low	They could not see the		lake
		Low	Please do not touch my		heel
		Moderate	The weather forecast predicted there would be		hail
		Low	I had a dream about a		storm
		Moderate	The young fisherman forgot his		line
		Low	Julian wanted to finish the		room
		Moderate	This restaurant has great		food
		Low	Theresa thanked me for the		drinks
		Moderate	During the fight, I was punched in the		head
		Moderate	She put on a clean		top
		Low	She checked to make sure it was		mine
		Moderate	That bakery makes very good		cake
		Moderate	The skier lost one of his		poles
		Low	I am not sure why it is so		mild
		Moderate	In his spare time, Owen wrote a		note
		Low	She was not sure if he really		laughed
		Moderate	Yesterday, my dog ran after a		child
		Low	He bent over to pick up the		coin
		Moderate	This year, the farmer's main crop is		hay
		Low	Barry complimented us on our		find
		Low	I could not tell that they were		Dutch
		Moderate	The jester dances for the		king

4	Audiovisual	Low	She reminded me to check the	gears
		Low	Please stay away from the	ledge
		Moderate	This plate of pasta needs more	salt
		Moderate	I just threw the dog a	bone
		Low	Margaret gave away all of the	sprouts
		Moderate	Jill cleaned up the dirt with a	mop
		Low	I wish I had known about the	deer
		Moderate	The injury left a very large	scab
		Low	She was thinking of adding	tea
		Moderate	The baseball player bought a new	cap
		Low	He decided to give away his tie	tie
		Low	He tried to put away the	keys
		Moderate	Mrs. Smith has a fear of	clowns
		Low	Anna was talking about that awful	growl
		Moderate	When I am at the beach, I like to	swim
		Low	Last weekend, there was no	sun
		Moderate	My hat is made of	straw
		Low	Johnny and his friends laughed at the	ring
		Moderate	Joan waited for the rain to	come
		Moderate	She is very creative and loves to	paint
		Low	The city council purchased the	slide
		Moderate	He dug a large hole in the	soil
		Low	She was not responsible for the	noise
		Low	She had just seen the other	seeds
		Moderate	Michael told me his favourite seafood is	fish
5	Visual	Low	Be careful that you do not let it	shut
		Moderate	The friends played a game of	darts
		Low	Violet gave me back the	dish
		Low	She advised us on his	heart
		Moderate	Over the past year, Stan has gotten really	fit
		Low	Gregory dropped the brand-new	drums
		Moderate	The team's best played is very	quick
		Low	He stated that it was	straight

		Moderate	Last night's part was really	fun
		Low	The young lady needed a	box
		Low	She tried her best to control the	rules
		Moderate	The exterminator took care of the	pests
		Low	Chelsea looked away from her	purse
		Moderate	He poured his beverage into a	glass
		Low	I was ready to see the	coast
		Low	He was not well prepared for the	mist
		Moderate	The necklace is made of	gold
		Low	They had to repair the	mast
		Moderate	The family is planning a trip to	Greece
		Moderate	These are the stocks I want to	sell
		Low	Dale built the cabin around	march
		Moderate	Kids can start school at age	four
		Moderate	The young child is just learning to	talk
		Low	You should not touch the	weeds
		Moderate	We walk our dogs each day at	dusk
6	Auditory	Moderate	I called a plumber to repair the	pipe
		Low	Vince insisted that we buy this	chair
		Moderate	My care has a new	plate
		Low	She expected it to be	long
		Moderate	The fruit I just bough smells really	sweet
		Moderate	Every day, I begin work at	ten
		Low	Roxane had to deal with the	mud
		Low	He was not aware of the	pears
		Moderate	She went to prison for a	month
		Low	Yesterday, Betty took a look at my	throat
		Moderate	Every day, he grooms his	dog
		Low	She was complimented on her	bun
		Low	In reality she did not feel	sick
		Moderate	I love to look up at the	sky
		Low	Milton was about to pick up the	snake
		Low	I told him it has been	leased

			Moderate	Yesterday, I lost the tennis	match
			Low	I made sure it was	cool
			Moderate	The dentist carefully examined my	mouth
			Moderate	He has an excellent sense of	taste
			Low	He looked at the one that is	deep
			Moderate	Shirley bought pants that are too	small
			Low	The curious boy explored the	lane
			Low	Kirk wanted to show us his new	pigs
			Moderate	Most days, I take the bus to	school
French	1	Audiovisual	Low	Je crois qu'il reste encore plusieurs	verges
			Low	On me demande souvent si elles sont	vraies
			Moderate	Claire portait sa plus belle robe pour le	mariage
			Low	J'ai vu qu'elle est pleine de	cire
			Low	Nous avons reçu un chargement de	soie
			Moderate	Les billets pour l'opéra étaient	gratuits
			Moderate	Ma danse préférée est la	valse
			Low	Nous avons plusieurs projets pour notre	chambre
			Low	Il y a quelques, toutes mes amies étaient	blondes
			Moderate	En creusant, j'ai trouvé un	coffre
			Moderate	Les manifestants brandissaient des	pancartes
			Low	J'essaie de les rendre un peu moins	ternes
			Moderate	Ce restaurant est reconnu pour son	menu
			Low	Il préférait de loin le	premier
			Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	sandales
			Moderate	En temps de crise, il est difficile d'être	tranquille
			Low	Elle n'avait pas remarqué la présence des	chiens
			Moderate	Pour Noël, il a reçu plusieurs	jouets
			Low	Il n'avait pas prédit croiser un	tigre
			Moderate	Dans les bois, Jacques a aperçu un	loup
			Moderate	Ma voiture vient de se faire	frapper
			Low	D'après ta description, il semble être un	bélier

191

		Moderate	Au supermarché, il y avait peu de	produits
		Moderate	Elle suit une diète sans	gras
		Low	Je suis en train de me préparer pour le	concert
2	Visual	Low	Elle était contente de sa	posture
		Moderate	L'artiste n'arrive pas à vendre ses	photos
		Moderate	La vedette se plaint lorsqu'on ignore ses	demandes
		Low	Tiens-toi à l'écart des	leviers
		Moderate	Le magasin de musique vend des	flûtes
		Low	Elle n'avait pas anticipé la présence du	captif
		Moderate	Les membres de la congrégation sont très	dévoués
		Low	On m'a demandé de créer une illustration contenant des	fées
		Moderate	Je me suis blessé au	genou
		Low	On m'a invité à essayer la	boxe
		Moderate	Il y a des canards dans ce	lac
		Low	On lui avait suggéré de les	donner
		Low	Elles se dirigent vers la	reine
		Moderate	J'ai une douleur à la	tête
		Low	On lui a demandé de s'occuper du	linge
		Moderate	Le nouveau condo était déjà	vendu
		Low	Il ne savait pas quoi faire avec le	cheval
		Moderate	Lisa préfère les légumes	crus
		Moderate	La chambre d'Henri est en	chaos
		Low	On ne lui avait pas donné de	journaux
		Moderate	Nous avons traversé le lac en	canot
		Low	J'ai plusieurs souvenirs à propos de la	poupée
		Moderate	Son anneau est orné d'un	saphir
		Low	On l'a mis en charge du	site
		Moderate	Met tes vêtements dans la	laveuse
3	Auditory	Low	Tu dois faire attention au	cône
		Moderate	Pendant le procès, le juge me semblait	juste
		Moderate	Ses fleurs préférées sont les	tulipes

		Low	Ils sont à la recherche d'un nouveau	caissier
		Moderate	Le parc est couvert de	déchets
		Low	Les enfants n'ont pas envie de	rôties
		Moderate	Le magasin de chaussures ne vend pas de	pantoufles
		Low	On lui a demandé d'être moins	sage
		Moderate	L'animal laissa échapper un cri	puissant
		Low	Elle n'avait jamais eu a s'occuper de	scorpions
		Low	On lui avait dit de se méfier des	fantômes
		Moderate	Dans le bus ce matin, les gens étaient	polis
		Low	Ces gens n'ont toujours pas eu de	vacances
		Moderate	Je trouve son écriture très	soignée
		Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	soccer
		Low	La banderole est en forme de	sorcière
		Moderate	En mathématiques, les élèves utilisent des	règles
		Moderate	Mon ami a préparé une tarte aux	citrons
		Low	Il est en train de se préparer pour la	famille
		Moderate	L'école a engagé une nouvelle professeure de	science
		Low	Elle croit qu'elle a perdu son	temps
		Moderate	Au brunch, Catherine a commandé des	saucisses
		Low	Je suis enfin débarrassé de cette	fièvre
		Low	Mon ami souhaite être plus	souple
		Moderate	Veuillez-vous tourner vers la	gauche
4	Audiovisual	Low	Il n'avait aucun doute qu'elle était	rayée
		Moderate	Après ses études, elle est devenue chirurgienne	cardiaque
		Low	Tout le monde observe attentivement le	cou
		Moderate	Après cet exercice, mes jambes sont	rigides
		Moderate	Elle utilise le robinet pour remplir sa	bouteille
		Low	J'espère bien pouvoir profiter des	bains
		Low	Lundi prochain, on me donnera un	plâtre
		Moderate	Les pantalons de Kim sont trop	petits
		Moderate	Elle a fait perce son	nombril
		Low	Elle m'a offert celui qui est	noir

		Low	On m'assure que c'est bien	rouge
		Moderate	Les dents de Marie sont	croches
		Moderate	La maison est faite en	béton
		Low	Il nous parlait de ses nouveaux	moutons
		Low	Nous avons décidé d'ignorer les	castors
		Moderate	Le millionnaire a acheté un condo	spacieux
		Low	Je n'avais jamais entendu ces	fables
		Low	Ils s'assurent de bien suivre le	duc
		Moderate	Ce fruit me semble très	mûr
		Low	Le paquet contenait beaucoup de	suisse
		Low	Ils s'apprêtent à apprendre les	chiffres
		Moderate	Je me rends au travail en	bus
		Moderate	L'été, j'aime profiter de la	chaleur
		Low	Elle devait prépare une présentation sur les	requins
		Moderate	Le poissonnier avait de bons filets de	sole
5	Visual	Low	Il m'a montré comment dessiner un	chapeau
		Moderate	À chaque mois, on organise une collecte de	sang
		Low	Notre objectif est de le distribuer au	public
		Low	Nous avons eu la chance de voir plusieurs	mosquées
		Moderate	D'après leur expression faciale, les hommes étaient	contents
		Moderate	Parmi les fruits secs, je préfère les	dattes
		Low	Il y en a tout plein à	couper
		Moderate	Les instructions sont dans le	pamphlet
		Moderate	Elle fait bouillir de l'eau pour cuire des	nouilles
		Low	Elle m'a passé un morceau de	sapin
		Moderate	La fille trouvait le garçon très	gentil
		Low	Sur sa trajectoire se trouvait un	poteau
		Moderate	Son nouvel emploi est très	stressant
		Low	Ils ont décidé de visiter la	baie
		Moderate	Ce nid d'oiseau appartient à un	pigeon
		Low	Je tente de m'habituer à cette	région
		Low	On m'a dit de bonnes choses à propos du	discours
		Moderate	Parmi les fruits de mer, j'adore les	moules

		Low	On m'a demandé d'aller vers la	voie
		Low	J'ai tenté de les échanger pour des	prunes
		Moderate	À la quincaillerie, j'ai acheté une nouvelle	clé
		Low	Je crois avoir besoin de plus de	fer
		Moderate	Michelle a surpris Jean en lui donnant un	cadeau
		Low	Mon frère a décidé d'abandonner le	golf
		Moderate	Les changements climatiques ont provoqué des	tempêtes
6	Auditory	Moderate	L'homme d'affaires voulait amasser plus de	pouvoir
		Low	Mathilde a développé un intérêt pour la	recherche
		Moderate	La récolte fut détruite par une infestation de	chenilles
		Low	Elles se préparent à nous aider avec la	clôture
		Moderate	Éric pense que l'hiver prochain sera	doux
		Low	J'ai oublié de ranger la	souffleuse
		Low	Cette fois, elle se promenait sans	bavoir
		Moderate	Je me demande s'il y aura du	tambour
		Low	Je me concentre sur mes	cuisses
		Moderate	Avant de sortir, elle a enfilé une	robe
		Low	On ne sait jamais où trouver des	fourchettes
		Moderate	Elle sera en prison pour un	mois
		Low	Elle a décidé de se payer une	teinture
		Moderate	Depuis ce matin, j'ai mal au	dos
		Low	Elle n'arrivait pas à retrouver les	dés
		Moderate	Le garçon avait des yeux	bleus
		Low	Richard est nouvellement responsable du	gaz
		Moderate	Il est généralement difficile de transplanter un	poumon
		Low	Mon amie Maryse ne manque jamais de	thym
		Low	Daniel se méfie toujours des	serpents
		Moderate	Dans mon couscous, je mets des	fèves
		Low	Nous partageons un intérêt pour le	polo
		Low	Finalement, je me suis retrouvé au	camp
		Moderate	Pendant le vol, il y a eu plusieurs	films
		Moderate	La compagnie de téléphone offre de bons	rabais

4	English	1	Visual	Moderate	Last Monday, the innocent bystander was	killed
				Moderate	While on vacation, she gained weight around her	thighs
				Low	Jean could not see the	pile
				Moderate	When she is thirsty, she likes to drink	juice
				Low	Harold has decided to fix the	sole
				Low	They imagined it would be quite	moist
				Moderate	Jack got into an accident and damaged his car's	trunk
				Low	The young boy did not like this	lamb
				Moderate	Ramona had no choice but to pay the	fine
				Low	He wanted me to pass him the	shoes
				Low	I do not like the look of the	clouds
				Moderate	There is a lot of laundry to	hang
				Moderate	I was tired and fell asleep on the	couch
				Low	James told a story about the	clip
				Moderate	The racing team came in	last
				Low	You should pay attention to the	pulse
				Moderate	Meditation is excellent for the	mind
				Low	She had commented on the	claws
				Moderate	We both agreed on a new meeting	date
				Low	Nora wanted to throw away the	hat
				Low	She checked to make sure it was	fake
				Moderate	The teacher made sure to review the	quiz
				Low	I do not know why she thinks it is	crisp
				Low	I am not sure how to use this	noun
				Moderate	He was distraught and confided in his	mate
		2	Auditory	Moderate	Set the table with another	knife
				Low	Patty was not expecting this	kiss
				Moderate	The noise made it very hard to	hear
				Low	Christi decided to throw out the	meat
				Moderate	The thieves broke into the	safe
				Low	Sarah had missed going to the	store
				Moderate	Jason had to talk to his	mom

196

		Low	I crouched down near the	grass
		Moderate	She touched her head and felt a	lump
		Low	Veronica was busy covering the	tarts
		Moderate	Despite his efforts, he received a failing	mark
		Low	Please pick out the ones that are	brown
		Moderate	Eric could not find the ice	rink
		Low	Talk to Lucy about the	field
		Low	I know where to put the	card
		Moderate	In the garden, I used a	rake
		Low	She received a discount on the	tiles
		Moderate	I filled my bowl with	rice
		Low	He looked at the one that is	red
		Low	I am not sure what to do about this	house
		Moderate	He preferred his fish to be	grilled
		Low	Beatrice had a great view of the	shore
		Moderate	Every Christmas, the children got many	things
		Moderate	The fruits were delivered in a	tray
		Low	Make sure to keep away from the	pants
3	Audiovisual	Low	He placed an order for another	pot
		Moderate	The dentist told me to	rinse
		Low	Yvette spent some time on the	stairs
		Moderate	The ducks can be seen in the	lake
		Moderate	She stepped on the glass and cut her	heel
		Low	They danced the polka in the	hail
		Moderate	The child is afraid of the	storm
		Low	Eric decided to select that	line
		Moderate	Tomorrow morning, Robert will be painting the	room
		Low	He was not a fan of the	food
		Moderate	My colleague took me out for	drinks
		Low	She saw Melissa touch her	head
		Low	I shone the light on my friend's	top
		Moderate	The clothes on the line are	mine
		Low	Lacey needed a lot of help with the	cake

		Low	Amy decided to put down the	poles
		Moderate	Max prefers his coffee to be	mild
		Low	They looked everywhere for the	note
		Moderate	When he heard the joke, he	laughed
		Low	I do not know what to think about that	child
		Moderate	The store clerk gave me an extra	coin
		Low	Lily led me through the	hay
		Moderate	The mouse was hard to	find
		Moderate	The exchange student's first language is	Dutch
		Low	They gave their full support to the	king
4	Visual	Moderate	The mechanic looked at the car's	gears
		Moderate	The man tripped and fell off the	ledge
		Low	Jordan said that it was	salt
		Low	Julie slowly peeked at the	bone
		Moderate	The salad I had for lunch contained	sprouts
		Low	Laura's daughter was caught stealing the	mop
		Moderate	In the woods, the hiker saw a	deer
		Low	You should go see Rachel about that	scab
		Moderate	At breakfast, Oliver ordered more	tea
		Low	They searched the box for a	cap
		Moderate	His brank new tuxedo came with a	tie
		Moderate	In her purse, she kept her	keys
		Low	He was ready for anything, even	clowns
		Moderate	The nervous dog began to	growl
		Low	When I am at the beach, I like to	swim
		Moderate	Open the drapes and let in the	sun
		Low	I did not realize this was	straw
		Moderate	The church bells began to	ring
		Low	Everyone hoped she would not	come
		Low	He selected the girl who could	paint
		Moderate	At the park, the children played on the	slide
		Low	They wondered if this was Susan's	soil
		Moderate	The child did not make a	noise

		Moderate	She had just seen the other	seeds
		Low	This man was busy selling	fish
5	Auditory	Moderate	Bob jumped when he heard the door	shut
		Low	The old woman looked at the	darts
		Moderate	By accident, I broke the	dish
		Moderate	Running is excellent for your	heart
		Low	The majority of them were	fit
		Moderate	I heard that musician play the	drums
		Low	He implied that I was very	quick
		Moderate	The girl liked to keep her hair	straight
		Low	In the end, it seemed	fun
		Moderate	She put her things in a	box
		Moderate	Before the game, he studied the basketball	rules
		Low	Last night, I had a dream about	pests
		Moderate	The cat fell asleep on my	purse
		Low	You must bring your own	glass
		Moderate	Last summer, we rented a house by the	coast
		Moderate	The ship disappeared into the	mist
		Low	She kept all of the	gold
		Moderate	The pirate ship had a large	mast
		Low	The family is planning a trip to	Greece
		Low	These are the things she wants to	sell
		Moderate	My best friend's birthday is in	march
		Low	I will be satisfied with	four
		Low	For the past few weeks, Reuben refused to	talk
		Moderate	Our garden is full of	weeds
		Low	Heidi thought that it was	dusk
6	Audiovisual	Low	They were taking care of the	pipe
		Moderate	I sat down on the	chair
		Low	I do not know where I got this	plate
		Moderate	She expected it to be	long
		Low	Rob insisted that it was	sweet

199

			Low	I was convinced that Katie was	ten
			Moderate	Kids love to play in the	mud
			Moderate	I went to the fruit store to buy	pears
			Low	Lucy thought a lot about that	month
			Moderate	He grabbed me by the	throat
			Low	He was looking for the one with the	dog
			Moderate	She was complimented on her	bun
			Moderate	The flu can leave you feeling	sick
			Low	We opted to look at the	sky
			Moderate	Tracy jumped when she saw the	snake
			Moderate	The condo that John wanted was already	leased
			Low	Every year, Ashley organizes the	match
			Moderate	The forecast for tomorrow is	cool
			Low	They were staring at my	mouth
			Low	She always remembered that special	taste
			Moderate	Rachel saw that the sea was really	deep
			Low	Todd realized it was too	small
			Moderate	Our good friends lived down the	lane
			Moderate	The farmed tended to his	pigs
			Low	The teenager was very fond of her	school
French	1	Visual	Moderate	Son terrain s'étendait sur plusieurs	verges
			Moderate	Durant l'entrevue, ses réponses étaient	vraies
			Low	Elle avait envie d'aller au	mariage
			Moderate	Ma voiture vient de se faire	cire
			Moderate	La robe de la jeune mariée état en	soie
			Low	Si j'ai bien compris, ils étaient	gratuits
			Low	Elle se renseigne à propos de la	valse
			Moderate	Nous allons enfin rénover notre	chambre
			Moderate	Éric aime bien les femmes	blondes
			Low	Martine a finalement retrouvé son	coffre
			Low	Ils s'affairaient à préparer des	pancartes
			Moderate	Les cheveux de Caroline sont	ternes

		Low	Il n'est pas un grand fan de ce	menu
		Moderate	Le coureur a terminé en	premier
		Low	Hélène a encore oublié ses	sandales
		Low	On lui dit souvent qu'il est très	tranquille
		Moderate	Son alarme réveille constamment ses	chiens
		Low	Paul a vu beaucoup de	jouets
		Moderate	Dans la jungle, j'ai aperçu un	tigre
		Low	Tiens-moi au courant à propos du	loup
		Low	Il n'y avait absolument rien à	frapper
		Moderate	Son signe du Zodiaque est le	bélier
		Low	Aujourd'hui, il y a peu de	produits
		Low	Il est possible que ce soit sans	gras
		Moderate	Vendredi soir, je vais voir un	concert
2	Auditory	Moderate	Marie s'entraîne pour améliorer sa	posture
		Low	Son anneau est orné d'un	photos
		Low	Il suffit simplement d'ignorer ses	demandes
		Moderate	Il active le mécanisme un utilisant une série de	leviers
		Low	Je n'ai jamais vu de	flûtes
		Moderate	Sur le bateau de pirates se trouvait un	captif
		Low	On m'a dit que ces gens sont particulièrement	dévoués
		Moderate	Il y avait des créatures fantastiques telles que des	fées
		Low	Elle a de la difficulté à dessiner le	genou
		Moderate	J'aime les sports individuels comme la	boxe
		Low	Au loin, elle aperçoit un	lac
		Moderate	Il y a beaucoup de linge à	donner
		Moderate	Elles se dirigent vers la	reine
		Low	Mon frère prend bien soin de sa	tête
		Moderate	En jouant dehors, elle a sali son	linge
		Low	Malgré tout, il est déjà	vendu
		Moderate	Le vétérinaire a examiné le	cheval
		Low	Je les préfère quand ils sont	crus
		Low	Gaston a décidé de ne pas supporter le	chaos
		Moderate	Alain est un livreur de	journaux

		Low	Ce n'est pas possible sans	canot
		Moderate	J'ai plusieurs souvenirs à propos de la	poupée
		Low	Nous venons de recevoir de nouveaux	saphirs
		Moderate	L'annonce est affichée sur le	site
		Low	Je viens tout juste de remplir la	laveuse
3	Audiovisual	Moderate	L'automobiliste a failli heurter un	cône
		Low	Il me semble assez difficile d'être	juste
		Low	Du coin de l'œil, il voit des	tulipes
		Moderate	L'épicerie veut engager un nouveau	caissier
		Low	Robert m'écoute parler à propos de	déchets
		Moderate	Pour déjeuner, je mange des	rôties
		Low	Elle ne savait pas comment confectionner des	pantoufles
		Moderate	Avec la vieillesse, les gens deviennent plus	sage
		Low	Je ne le pensais pas si	puissant
		Moderate	Les nomades du Sahara sont entourés de	scorpions
		Moderate	Le jeune enfant croit aux	fantômes
		Low	On m'a dit qu'ils sont habituellement	polis
		Moderate	Les employés de la compagnie de construction sont en	vacances
		Low	Il est difficile de dire qu'elle est	soignée
		Low	Antoine n'a aucun intérêt pour le	soccer
		Moderate	À l'Halloween, je me suis déguisé en	sorcière
		Low	On lui a dit de le faire sans	règles
		Low	Mon ami s'est informé au sujet des	citrons
		Moderate	Nous allons faire du camping en	famille
		Low	Depuis toujours, Simon s'intéresse aux	sciences
		Moderate	Elle désire voyager mais elle n'a pas de	temps
		Low	Christian veut se procurer des	saucisses
		Moderate	Madeleine s'est absentée à cause d'une	fièvre
		Moderate	La jeune gymnaste est très	souple
		Low	J'aimerais que tu me montre la	gauche
4	Visual	Moderate	La fourrure de mon chat est	rayée
		Low	Elle est experte dans le domaine	cardiaque

			Moderate	Il a couru dans l'escalier et s'est cassé le	cou
			Low	Ce matin, je suis plutôt	rigide
			Low	Mes parents m'ont offert un toute nouvelle	bouteille
			Moderate	Ils vont au spa pour profiter des	bains
			Moderate	Suite à ma blessure, l'infirmière m'a donné un	plâtre
			Low	De toute façon, il est	petits
			Low	Je n'avais pas pensé au	nombril
			Moderate	Elle m'a offert du chocolat	noir
			Moderate	Au karaté, il a obtenu sa ceinture	rouge
			Low	Il m'a expliqué pourquoi elles sont	croches
			Low	En fin de compte, je n'ai pas besoin de	béton
			Moderate	Le fermier a vendu les	moutons
			Moderate	Le cours d'eau sert d'habitat pour ces	castors
			Low	Rachel considérait qu'il était très	spacieux
			Moderate	Les troubadours ont récité des	fables
			Moderate	Le roi organisa une cérémonie en l'honneur du	duc
			Low	En fait, je le trouve très	mûr
			Moderate	La souris a rongé un morceau de fromage	suisse
			Moderate	À la prématernelle, les enfants apprennent les	chiffres
			Low	On donne la priorité au	bus
			Low	Toute ma famille apprécie la	chaleur
			Moderate	À la plage, je redoute surtout les	requins
			Low	Son ami lui a offert de la	sole
5		Auditory	Moderate	Tout bon cowboy se doit d'avoir un	chapeau
			Low	Il nous faut plus de	sang
			Moderate	Le pamphlet a été distribué au	public
			Moderate	À Jérusalem, Annie a visité plusieurs	mosquées
			Low	Il leur arrive parfois d'être	contents
			Low	Il ne s'attendait pas du tout aux	dattes
			Moderate	J'utilise un raccourci clavier pour	couper
			Low	Mon ami m'a passé un	pamphlet
			Low	N'oublie surtout pas d'ajouter des	nouilles
			Moderate	Louis a fabriqué une armoire en bois de	sapin

203

			Low	J'ai fini par choisir le plus	gentil
			Moderate	Le ballon de soccer a été botté sur le	poteau
			Low	Il le trouve plus ou moins	stressant
			Moderate	Le bateau a jeté l'ancre dans la	baie
			Low	Annabelle s'est acheté un nouveau	pigeon
			Moderate	Un énorme incendie ravage la	région
			Moderate	L'écrivain a rédigé un excellent	discours
			Low	Ella m'a aidé à choisir les	moules
			Moderate	Ma voiture est stationnée dans la	voie
			Moderate	Je vais à la fruiterie pour acheter des	prunes
			Low	Elle contacta George pour lui rappeler d'apporter sa	clé
			Moderate	Le coffre est fait de	fer
			Low	Notre conversation portait sur le	cadeau
			Moderate	Nous t'achèterons des balles de	golf
			Low	Ces derniers temps, il y a beaucoup de	tempêtes
6		Audiovisual	Low	Elle leur explique pour il faut plus de	pouvoir
			Moderate	Le ministre a révisé son budget pour la	recherche
			Low	La récolte fut détruite par une infestation de	chenilles
			Moderate	La marmotte a creusé un trou sous la	clôture
			Low	J'espère qu'il ne sera pas trop	doux
			Moderate	Dans le cabanon, nous avons rangé notre	souffleuse
			Moderate	Les bambins refusent de mettre leur	bavoir
			Low	Je me demande s'il y aura du	tambour
			Moderate	Au gym, je préfère travailler mes	cuisses
			Low	Elles ont décidé d'échanger leur	robe
			Moderate	Parmi les ustensiles, il y avait des	fourchettes
			Low	Elle pense beaucoup au dernier	mois
			Moderate	Elle va au salon pour une	teinture
			Low	Il y a un problème avec son	dos
			Moderate	Ma grand-mère aime jouer aux	dés
			Low	Je pense bien qu'ils sont	bleus
			Moderate	Martin s'est présenté à la station de	gaz
			Low	Il est en train d'étudier le fonctionnement du	poumon

				Moderate	Mon jardin d'herbes contient du	thym
				Moderate	Dans la forêt tropicale, on se méfie des	serpents
				Low	On m'a offert un sac rempli de	fèves
				Moderate	Mon sport nautique préféré est le	polo
				Moderate	Ils vont en vacances au	camp
				Low	Il fait de son mieux pour éviter les	films
				Low	Après mûre réflexion, elle était satisfaite de ce	rabais
5	English	1	Auditory	Moderate	Last Monday, the innocent bystander was	killed
				Moderate	While on vacation, she gained weight around her	thighs
				Low	Jean could not see the	pile
				Moderate	When she is thirsty, she likes to drink	juice
				Low	Harold has decided to fix the	sole
				Low	They imagined it would be quite	moist
				Moderate	Jack got into an accident and damaged his car's	trunk
				Low	The young boy did not like this	lamb
				Moderate	Ramona had no choice but to pay the	fine
				Low	He wanted me to pass him the	shoes
				Low	I do not like the look of the	clouds
				Moderate	There is a lot of laundry to	hang
				Moderate	I was tired and fell asleep on the	couch
				Low	James told a story about the	clip
				Moderate	The racing team came in	last
				Low	You should pay attention to the	pulse
				Moderate	Meditation is excellent for the	mind
				Low	She had commented on the	claws
				Moderate	We both agreed on a new meeting	date
				Low	Nora wanted to throw away the	hat
				Low	She checked to make sure it was	fake
				Moderate	The teacher made sure to review the	quiz
				Low	I do not know why she thinks it is	crisp
				Low	I am not sure how to use this	noun
				Moderate	He was distraught and confided in his	mate

2	Audiovisual	Moderate	Set the table with another	knife
		Low	Patty was not expecting this	kiss
		Moderate	The noise made it very hard to	hear
		Low	Christi decided to throw out the	meat
		Moderate	The thieves broke into the	safe
		Low	Sarah had missed going to the	store
		Moderate	Jason had to talk to his	mom
		Low	I crouched down near the	grass
		Moderate	She touched her head and felt a	lump
		Low	Veronica was busy covering the	tarts
		Moderate	Despite his efforts, he received a failing	mark
		Low	Please pick out the ones that are	brown
		Moderate	Eric could not find the ice	rink
		Low	Talk to Lucy about the	field
		Low	I know where to put the	card
		Moderate	In the garden, I used a	rake
		Low	She received a discount on the	tiles
		Moderate	I filled my bowl with	rice
		Low	He looked at the one that is	red
		Low	I am not sure what to do about this	house
		Moderate	He preferred his fish to be	grilled
		Low	Beatrice had a great view of the	shore
		Moderate	Every Christmas, the children got many	things
		Moderate	The fruits were delivered in a	tray
		Low	Make sure to keep away from the	pants
3	Visual	Low	He placed an order for another	pot
		Moderate	The dentist told me to	rinse
		Low	Yvette spent some time on the	stairs
		Moderate	The ducks can be seen in the	lake
		Moderate	She stepped on the glass and cut her	heel
		Low	They danced the polka in the	hail
		Moderate	The child is afraid of the	storm

		Low	Eric decided to select that	line
		Moderate	Tomorrow morning, Robert will be painting the	room
		Low	He was not a fan of the	food
		Moderate	My colleague took me out for	drinks
		Low	She saw Melissa touch her	head
		Low	I shone the light on my friend's	top
		Moderate	The clothes on the line are	mine
		Low	Lacey needed a lot of help with the	cake
		Low	Amy decided to put down the	poles
		Moderate	Max prefers his coffee to be	mild
		Low	They looked everywhere for the	note
		Moderate	When he heard the joke, he	laughed
		Low	I do not know what to think about that	child
		Moderate	The store clerk gave me an extra	coin
		Low	Lily led me through the	hay
		Moderate	The mouse was hard to	find
		Moderate	The exchange student's first language is	Dutch
		Low	They gave their full support to the	king
4	Auditory	Moderate	The mechanic looked at the car's	gears
		Moderate	The man tripped and fell off the	ledge
		Low	Jordan said that it was	salt
		Low	Julie slowly peeked at the	bone
		Moderate	The salad I had for lunch contained	sprouts
		Low	Laura's daughter was caught stealing the	mop
		Moderate	In the woods, the hiker saw a	deer
		Low	You should go see Rachel about that	scab
		Moderate	At breakfast, Oliver ordered more	tea
		Low	They searched the box for a	cap
		Moderate	His brank new tuxedo came with a	tie
		Moderate	In her purse, she kept her	keys
		Low	He was ready for anything, even	clowns
		Moderate	The nervous dog began to	growl
		Low	When I am at the beach, I like to	swim

		Moderate	Open the drapes and let in the	sun
		Low	I did not realize this was	straw
		Moderate	The church bells began to	ring
		Low	Everyone hoped she would not	come
		Low	He selected the girl who could	paint
		Moderate	At the park, the children played on the	slide
		Low	They wondered if this was Susan's	soil
		Moderate	The child did not make a	noise
		Moderate	She had just seen the other	seeds
		Low	This man was busy selling	fish
5	Audiovisual	Moderate	Bob jumped when he heard the door	shut
		Low	The old woman looked at the	darts
		Moderate	By accident, I broke the	dish
		Moderate	Running is excellent for your	heart
		Low	The majority of them were	fit
		Moderate	I heard that musician play the	drums
		Low	He implied that I was very	quick
		Moderate	The girl liked to keep her hair	straight
		Low	In the end, it seemed	fun
		Moderate	She put her things in a	box
		Moderate	Before the game, he studied the basketball	rules
		Low	Last night, I had a dream about	pests
		Moderate	The cat fell asleep on my	purse
		Low	You must bring your own	glass
		Moderate	Last summer, we rented a house by the	coast
		Moderate	The ship disappeared into the	mist
		Low	She kept all of the	gold
		Moderate	The pirate ship had a large	mast
		Low	The family is planning a trip to	Greece
		Low	These are the things she wants to	sell
		Moderate	My best friend's birthday is in	march
		Low	I will be satisfied with	four
		Low	For the past few weeks, Reuben refused to	talk

			Moderate	Our garden is full of	weeds
			Low	Heidi thought that it was	dusk
	6	Visual	Low	They were taking care of the	pipe
			Moderate	I sat down on the	chair
			Low	I do not know where I got this	plate
			Moderate	She expected it to be	long
			Low	Rob insisted that it was	sweet
			Low	I was convinced that Katie was	ten
			Moderate	Kids love to play in the	mud
			Moderate	I went to the fruit store to buy	pears
			Low	Lucy thought a lot about that	month
			Moderate	He grabbed me by the	throat
			Low	He was looking for the one with the	dog
			Moderate	She was complimented on her	bun
			Moderate	The flu can leave you feeling	sick
			Low	We opted to look at the	sky
			Moderate	Tracy jumped when she saw the	snake
			Moderate	The condo that John wanted was already	leased
			Low	Every year, Ashley organizes the	match
			Moderate	The forecast for tomorrow is	cool
			Low	They were staring at my	mouth
			Low	She always remembered that special	taste
			Moderate	Rachel saw that the sea was really	deep
			Low	Todd realized it was too	small
			Moderate	Our good friends lived down the	lane
			Moderate	The farmed tended to his	pigs
			Low	The teenager was very fond of her	school
French	1	Auditory	Moderate	Son terrain s'étendait sur plusieurs	verges
			Moderate	Durant l'entrevue, ses réponses étaient	vraies
			Low	Elle avait envie d'aller au	mariage
			Moderate	Ma voiture vient de se faire	cire

		Moderate	La robe de la jeune mariée état en	soie
		Low	Si j'ai bien compris, ils étaient	gratuits
		Low	Elle se renseigne à propos de la	valse
		Moderate	Nous allons enfin rénover notre	chambre
		Moderate	Éric aime bien les femmes	blondes
		Low	Martine a finalement retrouvé son	coffre
		Low	Ils s'affairaient à préparer des	pancartes
		Moderate	Les cheveux de Caroline sont	ternes
		Low	Il n'est pas un grand fan de ce	menu
		Moderate	Le coureur a terminé en	premier
		Low	Hélène a encore oublié ses	sandales
		Low	On lui dit souvent qu'il est très	tranquille
		Moderate	Son alarme réveille constamment ses	chiens
		Low	Paul a vu beaucoup de	jouets
		Moderate	Dans la jungle, j'ai aperçu un	tigre
		Low	Tiens-moi au courant à propos du	loup
		Low	Il n'y avait absolument rien à	frapper
		Moderate	Son signe du Zodiaque est le	bélier
		Low	Aujourd'hui, il y a peu de	produits
		Low	Il est possible que ce soit sans	gras
		Moderate	Vendredi soir, je vais voir un	concert
2	Audiovisual	Moderate	Marie s'entraîne pour améliorer sa	posture
		Low	Son anneau est orné d'un	photos
		Low	Il suffit simplement d'ignorer ses	demandes
		Moderate	Il active le mécanisme un utilisant une série de	leviers
		Low	Je n'ai jamais vu de	flûtes
		Moderate	Sur le bateau de pirates se trouvait un	captif
		Low	On m'a dit que ces gens sont particulièrement	dévoués
		Moderate	Il y avait des créatures fantastiques telles que des	fées
		Low	Elle a de la difficulté à dessiner le	genou
		Moderate	J'aime les sports individuels comme la	boxe
		Low	Au loin, elle aperçoit un	lac
		Moderate	Il y a beaucoup de linge à	donner

			Moderate	Elles se dirigent vers la	reine
			Low	Mon frère prend bien soin de sa	tête
			Moderate	En jouant dehors, elle a sali son	linge
			Low	Malgré tout, il est déjà	vendu
			Moderate	Le vétérinaire a examiné le	cheval
			Low	Je les préfère quand ils sont	crus
			Low	Gaston a décidé de ne pas supporter le	chaos
			Moderate	Alain est un livreur de	journaux
			Low	Ce n'est pas possible sans	canot
			Moderate	J'ai plusieurs souvenirs à propos de la	poupée
			Low	Nous venons de recevoir de nouveaux	saphirs
			Moderate	L'annonce est affichée sur le	site
			Low	Je viens tout juste de remplir la	laveuse
3	Visual		Moderate	L'automobiliste a failli heurter un	cône
			Low	Il me semble assez difficile d'être	juste
			Low	Du coin de l'œil, il voit des	tulipes
			Moderate	L'épicerie veut engager un nouveau	caissier
			Low	Robert m'écoute parler à propos de	déchets
			Moderate	Pour déjeuner, je mange des	rôties
			Low	Elle ne savait pas comment confectionner des	pantoufles
			Moderate	Avec la vieillesse, les gens deviennent plus	sage
			Low	Je ne le pensais pas si	puissant
			Moderate	Les nomades du Sahara sont entourés de	scorpions
			Moderate	Le jeune enfant croit aux	fantômes
			Low	On m'a dit qu'ils sont habituellement	polis
			Moderate	Les employés de la compagnie de construction sont en	vacances
			Low	Il est difficile de dire qu'elle est	soignée
			Low	Antoine n'a aucun intérêt pour le	soccer
			Moderate	À l'Halloween, je me suis déguisé en	sorcière
			Low	On lui a dit de le faire sans	règles
			Low	Mon ami s'est informé au sujet des	citrons
			Moderate	Nous allons faire du camping en	famille
			Low	Depuis toujours, Simon s'intéresse aux	sciences

		Moderate	Elle désire voyager mais elle n'a pas de	temps
		Low	Christian veut se procurer des	saucisses
		Moderate	Madeleine s'est absentée à cause d'une	fièvre
		Moderate	La jeune gymnaste est très	souple
		Low	J'aimerais que tu me montre la	gauche
4	Auditory	Moderate	La fourrure de mon chat est	rayée
		Low	Elle est experte dans le domaine	cardiaque
		Moderate	Il a couru dans l'escalier et s'est cassé le	cou
		Low	Ce matin, je suis plutôt	rigide
		Low	Mes parents m'ont offert un toute nouvelle	bouteille
		Moderate	Ils vont au spa pour profiter des	bains
		Moderate	Suite à ma blessure, l'infirmière m'a donné un	plâtre
		Low	De toute façon, il est	petits
		Low	Je n'avais pas pensé au	nombril
		Moderate	Elle m'a offert du chocolat	noir
		Moderate	Au karaté, il a obtenu sa ceinture	rouge
		Low	Il m'a expliqué pourquoi elles sont	croches
		Low	En fin de compte, je n'ai pas besoin de	béton
		Moderate	Le fermier a vendu les	moutons
		Moderate	Le cours d'eau sert d'habitat pour ces	castors
		Low	Rachel considérait qu'il était très	spacieux
		Moderate	Les troubadours ont récité des	fables
		Moderate	Le roi organisa une cérémonie en l'honneur du	duc
		Low	En fait, je le trouve très	mûr
		Moderate	La souris a rongé un morceau de fromage	suisse
		Moderate	À la prématernelle, les enfants apprennent les	chiffres
		Low	On donne la priorité au	bus
		Low	Toute ma famille apprécie la	chaleur
		Moderate	À la plage, je redoute surtout les	requins
		Low	Son ami lui a offert de la	sole
5	Audiovisual	Moderate	Tout bon cowboy se doit d'avoir un	chapeau
		Low	Il nous faut plus de	sang

		Moderate	Le pamphlet a été distribué au	public
		Moderate	À Jérusalem, Annie a visité plusieurs	mosquées
		Low	Il leur arrive parfois d'être	contents
		Low	Il ne s'attendait pas du tout aux	dattes
		Moderate	J'utilise un raccourci clavier pour	couper
		Low	Mon ami m'a passé un	pamphlet
		Low	N'oublie surtout pas d'ajouter des	nouilles
		Moderate	Louis a fabriqué une armoire en bois de	sapin
		Low	J'ai fini par choisir le plus	gentil
		Moderate	Le ballon de soccer a été botté sur le	poteau
		Low	Il le trouve plus ou moins	stressant
		Moderate	Le bateau a jeté l'ancre dans la	baie
		Low	Annabelle s'est acheté un nouveau	pigeon
		Moderate	Un énorme incendie ravage la	région
		Moderate	L'écrivain a rédigé un excellent	discours
		Low	Ella m'a aidé à choisir les	moules
		Moderate	Ma voiture est stationnée dans la	voie
		Moderate	Je vais à la fruiterie pour acheter des	prunes
		Low	Elle contacta George pour lui rappeler d'apporter sa	clé
		Moderate	Le coffre est fait de	fer
		Low	Notre conversation portait sur le	cadeau
		Moderate	Nous t'achèterons des balles de	golf
		Low	Ces derniers temps, il y a beaucoup de	tempêtes
6	Visual	Low	Elle leur explique pour il faut plus de	pouvoir
		Moderate	Le ministre a révisé son budget pour la	recherche
		Low	La récolte fut détruite par une infestation de	chenilles
		Moderate	La marmotte a creusé un trou sous la	clôture
		Low	J'espère qu'il ne sera pas trop	doux
		Moderate	Dans le cabanon, nous avons rangé notre	souffleuse
		Moderate	Les bambins refusent de mettre leur	bavoir
		Low	Je me demande s'il y aura du	tambour
		Moderate	Au gym, je préfère travailler mes	cuisses
		Low	Elles ont décidé d'échanger leur	robe

213

				Moderate	Parmi les ustensiles, il y avait des	fourchettes
				Low	Elle pense beaucoup au dernier	mois
				Moderate	Elle va au salon pour une	teinture
				Low	Il y a un problème avec son	dos
				Moderate	Ma grand-mère aime jouer aux	dés
				Low	Je pense bien qu'ils sont	bleus
				Moderate	Martin s'est présenté à la station de	gaz
				Low	Il est en train d'étudier le fonctionnement du	poumon
				Moderate	Mon jardin d'herbes contient du	thym
				Moderate	Dans la forêt tropicale, on se méfie des	serpents
				Low	On m'a offert un sac rempli de	fèves
				Moderate	Mon sport nautique préféré est le	polo
				Moderate	Ils vont en vacances au	camp
				Low	Il fait de son mieux pour éviter les	films
				Low	Après mûre réflexion, elle était satisfaite de ce	rabais
6	English	1	Audiovisual	Moderate	Last Monday, the innocent bystander was	killed
				Moderate	While on vacation, she gained weight around her	thighs
				Low	Jean could not see the	pile
				Moderate	When she is thirsty, she likes to drink	juice
				Low	Harold has decided to fix the	sole
				Low	They imagined it would be quite	moist
				Moderate	Jack got into an accident and damaged his car's	trunk
				Low	The young boy did not like this	lamb
				Moderate	Ramona had no choice but to pay the	fine
				Low	He wanted me to pass him the	shoes
				Low	I do not like the look of the	clouds
				Moderate	There is a lot of laundry to	hang
				Moderate	I was tired and fell asleep on the	couch
				Low	James told a story about the	clip
				Moderate	The racing team came in	last
				Low	You should pay attention to the	pulse
				Moderate	Meditation is excellent for the	mind

			Low	She had commented on the	claws
			Moderate	We both agreed on a new meeting	date
			Low	Nora wanted to throw away the	hat
			Low	She checked to make sure it was	fake
			Moderate	The teacher made sure to review the	quiz
			Low	I do not know why she thinks it is	crisp
			Low	I am not sure how to use this	noun
			Moderate	He was distraught and confided in his	mate
2	Visual		Moderate	Set the table with another	knife
			Low	Patty was not expecting this	kiss
			Moderate	The noise made it very hard to	hear
			Low	Christi decided to throw out the	meat
			Moderate	The thieves broke into the	safe
			Low	Sarah had missed going to the	store
			Moderate	Jason had to talk to his	mom
			Low	I crouched down near the	grass
			Moderate	She touched her head and felt a	lump
			Low	Veronica was busy covering the	tarts
			Moderate	Despite his efforts, he received a failing	mark
			Low	Please pick out the ones that are	brown
			Moderate	Eric could not find the ice	rink
			Low	Talk to Lucy about the	field
			Low	I know where to put the	card
			Moderate	In the garden, I used a	rake
			Low	She received a discount on the	tiles
			Moderate	I filled my bowl with	rice
			Low	He looked at the one that is	red
			Low	I am not sure what to do about this	house
			Moderate	He preferred his fish to be	grilled
			Low	Beatrice had a great view of the	shore
			Moderate	Every Christmas, the children got many	things
			Moderate	The fruits were delivered in a	tray
			Low	Make sure to keep away from the	pants

3	Auditory	Low	He placed an order for another	pot
		Moderate	The dentist told me to	rinse
		Low	Yvette spent some time on the	stairs
		Moderate	The ducks can be seen in the	lake
		Moderate	She stepped on the glass and cut her	heel
		Low	They danced the polka in the	hail
		Moderate	The child is afraid of the	storm
		Low	Eric decided to select that	line
		Moderate	Tomorrow morning, Robert will be painting the	room
		Low	He was not a fan of the	food
		Moderate	My colleague took me out for	drinks
		Low	She saw Melissa touch her	head
		Low	I shone the light on my friend's	top
		Moderate	The clothes on the line are	mine
		Low	Lacey needed a lot of help with the	cake
		Low	Amy decided to put down the	poles
		Moderate	Max prefers his coffee to be	mild
		Low	They looked everywhere for the	note
		Moderate	When he heard the joke, he	laughed
		Low	I do not know what to think about that	child
		Moderate	The store clerk gave me an extra	coin
		Low	Lily led me through the	hay
		Moderate	The mouse was hard to	find
		Moderate	The exchange student's first language is	Dutch
		Low	They gave their full support to the	king
4	Audiovisual	Moderate	The mechanic looked at the car's	gears
		Moderate	The man tripped and fell off the	ledge
		Low	Jordan said that it was	salt
		Low	Julie slowly peeked at the	bone
		Moderate	The salad I had for lunch contained	sprouts
		Low	Laura's daughter was caught stealing the	mop
		Moderate	In the woods, the hiker saw a	deer

		Low	You should go see Rachel about that	scab
		Moderate	At breakfast, Oliver ordered more	tea
		Low	They searched the box for a	cap
		Moderate	His brank new tuxedo came with a	tie
		Moderate	In her purse, she kept her	keys
		Low	He was ready for anything, even	clowns
		Moderate	The nervous dog began to	growl
		Low	When I am at the beach, I like to	swim
		Moderate	Open the drapes and let in the	sun
		Low	I did not realize this was	straw
		Moderate	The church bells began to	ring
		Low	Everyone hoped she would not	come
		Low	He selected the girl who could	paint
		Moderate	At the park, the children played on the	slide
		Low	They wondered if this was Susan's	soil
		Moderate	The child did not make a	noise
		Moderate	She had just seen the other	seeds
		Low	This man was busy selling	fish
5	Visual	Moderate	Bob jumped when he heard the door	shut
		Low	The old woman looked at the	darts
		Moderate	By accident, I broke the	dish
		Moderate	Running is excellent for your	heart
		Low	The majority of them were	fit
		Moderate	I heard that musician play the	drums
		Low	He implied that I was very	quick
		Moderate	The girl liked to keep her hair	straight
		Low	In the end, it seemed	fun
		Moderate	She put her things in a	box
		Moderate	Before the game, he studied the basketball	rules
		Low	Last night, I had a dream about	pests
		Moderate	The cat fell asleep on my	purse
		Low	You must bring your own	glass
		Moderate	Last summer, we rented a house by the	coast

	Moderate	The ship disappeared into the		mist
	Low	She kept all of the		gold
	Moderate	The pirate ship had a large		mast
	Low	The family is planning a trip to		Greece
	Low	These are the things she wants to		sell
	Moderate	My best friend's birthday is in		march
	Low	I will be satisfied with		four
	Low	For the past few weeks, Reuben refused to		talk
	Moderate	Our garden is full of		weeds
	Low	Heidi thought that it was		dusk
6	Auditory	Low	They were taking care of the	pipe
		Moderate	I sat down on the	chair
		Low	I do not know where I got this	plate
		Moderate	She expected it to be	long
		Low	Rob insisted that it was	sweet
		Low	I was convinced that Katie was	ten
		Moderate	Kids love to play in the	mud
		Moderate	I went to the fruit store to buy	pears
		Low	Lucy thought a lot about that	month
		Moderate	He grabbed me by the	throat
		Low	He was looking for the one with the	dog
		Moderate	She was complimented on her	bun
		Moderate	The flu can leave you feeling	sick
		Low	We opted to look at the	sky
		Moderate	Tracy jumped when she saw the	snake
		Moderate	The condo that John wanted was already	leased
		Low	Every year, Ashley organizes the	match
		Moderate	The forecast for tomorrow is	cool
		Low	They were staring at my	mouth
		Low	She always remembered that special	taste
		Moderate	Rachel saw that the sea was really	deep
		Low	Todd realized it was too	small
		Moderate	Our good friends lived down the	lane

218

			Moderate	The farmed tended to his	pigs
			Low	The teenager was very fond of her	school
French	1	Audiovisual	Moderate	Son terrain s'étendait sur plusieurs	verges
			Moderate	Durant l'entrevue, ses réponses étaient	vraies
			Low	Elle avait envie d'aller au	mariage
			Moderate	Ma voiture vient de se faire	cire
			Moderate	La robe de la jeune mariée état en	soie
			Low	Si j'ai bien compris, ils étaient	gratuits
			Low	Elle se renseigne à propos de la	valse
			Moderate	Nous allons enfin rénover notre	chambre
			Moderate	Éric aime bien les femmes	blondes
			Low	Martine a finalement retrouvé son	coffre
			Low	Ils s'affairaient à préparer des	pancartes
			Moderate	Les cheveux de Caroline sont	ternes
			Low	Il n'est pas un grand fan de ce	menu
			Moderate	Le coureur a terminé en	premier
			Low	Hélène a encore oublié ses	sandales
			Low	On lui dit souvent qu'il est très	tranquille
			Moderate	Son alarme réveille constamment ses	chiens
			Low	Paul a vu beaucoup de	jouets
			Moderate	Dans la jungle, j'ai aperçu un	tigre
			Low	Tiens-moi au courant à propos du	loup
			Low	Il n'y avait absolument rien à	frapper
			Moderate	Son signe du Zodiaque est le	bélier
			Low	Aujourd'hui, il y a peu de	produits
			Low	Il est possible que ce soit sans	gras
			Moderate	Vendredi soir, je vais voir un	concert
	2	Visual	Moderate	Marie s'entraîne pour améliorer sa	posture
			Low	Son anneau est orné d'un	photos
			Low	Il suffit simplement d'ignorer ses	demandes
			Moderate	Il active le mécanisme un utilisant une série de	leviers

			Low	Je n'ai jamais vu de	flûtes
			Moderate	Sur le bateau de pirates se trouvait un	captif
			Low	On m'a dit que ces gens sont particulièrement	dévoués
			Moderate	Il y avait des créatures fantastiques telles que des	fées
			Low	Elle a de la difficulté à dessiner le	genou
			Moderate	J'aime les sports individuels comme la	boxe
			Low	Au loin, elle aperçoit un	lac
			Moderate	Il y a beaucoup de linge à	donner
			Moderate	Elles se dirigent vers la	reine
			Low	Mon frère prend bien soin de sa	tête
			Moderate	En jouant dehors, elle a sali son	linge
			Low	Malgré tout, il est déjà	vendu
			Moderate	Le vétérinaire a examiné le	cheval
			Low	Je les préfère quand ils sont	crus
			Low	Gaston a décidé de ne pas supporter le	chaos
			Moderate	Alain est un livreur de	journaux
			Low	Ce n'est pas possible sans	canot
			Moderate	J'ai plusieurs souvenirs à propos de la	poupée
			Low	Nous venons de recevoir de nouveaux	saphirs
			Moderate	L'annonce est affichée sur le	site
			Low	Je viens tout juste de remplir la	laveuse
3	Auditory		Moderate	L'automobiliste a failli heurter un	cône
			Low	Il me semble assez difficile d'être	juste
			Low	Du coin de l'œil, il voit des	tulipes
			Moderate	L'épicerie veut engager un nouveau	caissier
			Low	Robert m'écoute parler à propos de	déchets
			Moderate	Pour déjeuner, je mange des	rôties
			Low	Elle ne savait pas comment confectionner des	pantoufles
			Moderate	Avec la vieillesse, les gens deviennent plus	sage
			Low	Je ne le pensais pas si	puissant
			Moderate	Les nomades du Sahara sont entourés de	scorpions
			Moderate	Le jeune enfant croit aux	fantômes
			Low	On m'a dit qu'ils sont habituellement	polis

		Moderate	Les employés de la compagnie de construction sont en	vacances
		Low	Il est difficile de dire qu'elle est	soignée
		Low	Antoine n'a aucun intérêt pour le	soccer
		Moderate	À l'Halloween, je me suis déguisé en	sorcière
		Low	On lui a dit de le faire sans	règles
		Low	Mon ami s'est informé au sujet des	citrons
		Moderate	Nous allons faire du camping en	famille
		Low	Depuis toujours, Simon s'intéresse aux	sciences
		Moderate	Elle désire voyager mais elle n'a pas de	temps
		Low	Christian veut se procurer des	saucisses
		Moderate	Madeleine s'est absentée à cause d'une	fièvre
		Moderate	La jeune gymnaste est très	souple
		Low	J'aimerais que tu me montre la	gauche
4	Audiovisual	Moderate	La fourrure de mon chat est	rayée
		Low	Elle est experte dans le domaine	cardiaque
		Moderate	Il a couru dans l'escalier et s'est cassé le	cou
		Low	Ce matin, je suis plutôt	rigide
		Low	Mes parents m'ont offert un toute nouvelle	bouteille
		Moderate	Ils vont au spa pour profiter des	bains
		Moderate	Suite à ma blessure, l'infirmière m'a donné un	plâtre
		Low	De toute façon, il est	petits
		Low	Je n'avais pas pensé au	nombril
		Moderate	Elle m'a offert du chocolat	noir
		Moderate	Au karaté, il a obtenu sa ceinture	rouge
		Low	Il m'a expliqué pourquoi elles sont	croches
		Low	En fin de compte, je n'ai pas besoin de	béton
		Moderate	Le fermier a vendu les	moutons
		Moderate	Le cours d'eau sert d'habitat pour ces	castors
		Low	Rachel considérait qu'il était très	spacieux
		Moderate	Les troubadours ont récité des	fables
		Moderate	Le roi organisa une cérémonie en l'honneur du	duc
		Low	En fait, je le trouve très	mûr
		Moderate	La souris a rongé un morceau de fromage	suisse

		Moderate	À la prématernelle, les enfants apprennent les	chiffres
		Low	On donne la priorité au	bus
		Low	Toute ma famille apprécie la	chaleur
		Moderate	À la plage, je redoute surtout les	requins
		Low	Son ami lui a offert de la	sole
5	Visual	Moderate	Tout bon cowboy se doit d'avoir un	chapeau
		Low	Il nous faut plus de	sang
		Moderate	Le pamphlet a été distribué au	public
		Moderate	À Jérusalem, Annie a visité plusieurs	mosquées
		Low	Il leur arrive parfois d'être	contents
		Low	Il ne s'attendait pas du tout aux	dattes
		Moderate	J'utilise un raccourci clavier pour	couper
		Low	Mon ami m'a passé un	pamphlet
		Low	N'oublie surtout pas d'ajouter des	nouilles
		Moderate	Louis a fabriqué une armoire en bois de	sapin
		Low	J'ai fini par choisir le plus	gentil
		Moderate	Le ballon de soccer a été botté sur le	poteau
		Low	Il le trouve plus ou moins	stressant
		Moderate	Le bateau a jeté l'ancre dans la	baie
		Low	Annabelle s'est acheté un nouveau	pigeon
		Moderate	Un énorme incendie ravage la	région
		Moderate	L'écrivain a rédigé un excellent	discours
		Low	Ella m'a aidé à choisir les	moules
		Moderate	Ma voiture est stationnée dans la	voie
		Moderate	Je vais à la fruiterie pour acheter des	prunes
		Low	Elle contacta George pour lui rappeler d'apporter sa	clé
		Moderate	Le coffre est fait de	fer
		Low	Notre conversation portait sur le	cadeau
		Moderate	Nous t'achèterons des balles de	golf
		Low	Ces derniers temps, il y a beaucoup de	tempêtes
6	Auditory	Low	Elle leur explique pour il faut plus de	pouvoir
		Moderate	Le ministre a révisé son budget pour la	recherche

				Low	La récolte fut détruite par une infestation de	chenilles
				Moderate	La marmotte a creusé un trou sous la	clôture
				Low	J'espère qu'il ne sera pas trop	doux
				Moderate	Dans le cabanon, nous avons rangé notre	souffleuse
				Moderate	Les bambins refusent de mettre leur	bavoir
				Low	Je me demande s'il y aura du	tambour
				Moderate	Au gym, je préfère travailler mes	cuisses
				Low	Elles ont décidé d'échanger leur	robe
				Moderate	Parmi les ustensiles, il y avait des	fourchettes
				Low	Elle pense beaucoup au dernier	mois
				Moderate	Elle va au salon pour une	teinture
				Low	Il y a un problème avec son	dos
				Moderate	Ma grand-mère aime jouer aux	dés
				Low	Je pense bien qu'ils sont	bleus
				Moderate	Martin s'est présenté à la station de	gaz
				Low	Il est en train d'étudier le fonctionnement du	poumon
				Moderate	Mon jardin d'herbes contient du	thym
				Moderate	Dans la forêt tropicale, on se méfie des	serpents
				Low	On m'a offert un sac rempli de	fèves
				Moderate	Mon sport nautique préféré est le	polo
				Moderate	Ils vont en vacances au	camp
				Low	Il fait de son mieux pour éviter les	films
				Low	Après mûre réflexion, elle était satisfaite de ce	rabais
7	English	1	Visual	Low	I told you about that	bank
				Low	He stated that it was	short
				Moderate	The old shoes have a broken	lace
				Moderate	Before leaving, he put on a pair of	jeans
				Low	She was not sure if he really	frowned
				Low	The two of them disagreed on the	fee
				Moderate	This restaurant has great	chefs
				Low	The city council purchased the bars	bars
				Moderate	The farmed tended to his	cows
				Low	You should not touch the	plants

		Moderate	In the yard, she trims the	bush
		Low	Scott was planning to work on his	hips
		Moderate	I heard that musician plan the	bass
		Low	According to Hank, she had been	hurt
		Moderate	The book is resting on top of the	desk
		Low	The young man mostly loved her	brain
		Moderate	He dug a large hole in the	ground
		Moderate	The weather forecast predicted there would be	rain
		Low	Carol tried her best to hide her	grade
		Moderate	The cake on the counter is very	fresh
		Moderate	The condo that John wanted was already	bought
		Low	I pressed Doris about the	point
		Moderate	The mechanic looked at the car's	brakes
		Moderate	That bakery makes very good	bread
		Low	I am not sure how to use this	word
2	Auditory	Low	Margaret gave away all of the	beans
		Moderate	I want to paint the table	black
		Low	Trudy's brother was examining the	bump
		Moderate	During the fight, I was punched in the	face
		Low	Milton was about to pick up the	frog
		Moderate	Set the table with	fork
		Low	My sister went to the store to buy a	hose
		Moderate	My hat is made of	fur
		Moderate	I looked at the sky and saw the	geese
		Low	She tried her best to control the	court
		Low	Myriam did not expect the	gifts
		Moderate	Every day, I begin work at	nine
		Low	I could not tell that they were	French
		Moderate	The friends played a game of	bridge
		Moderate	In the woods, the hiker saw a	bear
		Low	Donald looked everywhere for his	friend
		Moderate	The skier lost one of his	boots
		Low	She always remembered that special	smell

			Moderate	In his spare time, Owen wrote a	book
			Moderate	The exterminator took care of the	bugs
			Low	He was not aware of the	grapes
			Moderate	Rob insisted that it was	ripe
			Low	The majority of them were	fat
			Low	She was told to take the	crate
			Moderate	The colour of her eyes is	blue
3	Audiovisual		Moderate	I called a plumber to repair the	leak
			Low	I have been told to	bite
			Moderate	She went to prison for a	day
			Low	I was confused about the	time
			Low	The forecast for tomorrow is	clear
			Moderate	She broiled the ham until it was	burnt
			Low	Andrew had trouble locating his	dad
			Moderate	The dentist carefully examined my	gums
			Low	She checked to make sure it was	dry
			Moderate	The necklace is made of	beads
			Moderate	In the mail, I received a	bill
			Low	Roxane had to deal with the	dirt
			Moderate	The baseball player bought a new	bat
			Moderate	She asked the tailor to fix her	dress
			Low	Yesterday, Betty took a look at my	hand
			Moderate	Most days, I take the bus to	class
			Moderate	At the clinic, the doctor checked my	blood
			Low	Be careful that you do not let it	close
			Low	I had a vivid dream about a	ghost
			Moderate	This year, the farmer's main crop is	corn
			Low	The young lady needed a	bag
			Moderate	She styled her hair with a	brush
			Low	Vince insisted that we buy this	bench
			Low	The room had many things to	fold
			Moderate	The young fisherman forgot his	bait

4	Visual	Low	I am not sure what to do about this	car
		Low	Chelsea looked away from her	lap
		Moderate	He poured his beverage into a	cup
		Moderate	Shirley bought pants that are too	loose
		Low	Dale built the cabin around	June
		Low	He was secretive about the	cubes
		Moderate	My car has a new	dent
		Low	Johnny and his friends laughed at the	chime
		Moderate	It was cold, so he put on his	coat
		Low	He bent over to picky up the	cent
		Low	He was not well prepared for the	fog
		Moderate	The young child is just learning to	crawl
		Low	She was thinking of adding	jam
		Moderate	Mrs. Smith has a fear of	germs
		Moderate	We walk our dogs each day at	dawn
		Low	She was complimented on her	braid
		Moderate	The racing team came in	first
		Moderate	The main course consisted of	beef
		Low	In reality, she did not feel	faint
		Moderate	Behind the counter, the butcher was slicing	ham
		Moderate	The vet examined the bird's	beak
		Low	The curious boy explored the	block
		Moderate	Kids can start school at age	five
		Low	He decided to give away this	belt
		Low	We need to replace this	bed
5	Auditory	Moderate	Yesterday, my dog ran after a	cat
		Low	He implied that I was very	fast
		Low	Violet gave me back the	bowl
		Low	Every year, Ashley organizes the	game
		Moderate	The family is planning a trip to	France
		Low	Jordan said that it was	cheese
		Moderate	She was learning how to bake	scones
		Low	Barry complimented us on our	catch

		Moderate	I love to look up at the	moon
		Low	The group provided all of the	fruit
		Low	She had just seen the other	crop
		Moderate	These are the stocks I want to	buy
		Low	He asked me to repair the	hood
		Moderate	My boyfriend gave me a	gift
		Low	Anna was talking about hat awful	bark
		Low	She advised us on his	health
		Moderate	Every day, he grooms his	beard
		Low	The had to repair the	flag
		Moderate	I saw the animals at the	farm
		Low	Theresa thanked me for the	brunch
		Moderate	Every morning, we jog along the	path
		Moderate	Jessie and her friend walked up the	hill
		Moderate	Last night's party was really	dull
		Low	She was not responsible for the	mess
		Moderate	He cooked the vegetables in the	pan
6	Audiovisual	Moderate	Jill cleaned up the dirt with a	cloth
		Low	Last weekend, there was no	breeze
		Moderate	The horse was let into the	barn
		Low	Julian wanted to finish the	fence
		Moderate	She is very creative and loves to	draw
		Moderate	The jester dances for the	guests
		Low	They had to clean up the	beer
		Low	Please do not touch my	foot
		Moderate	Our last meeting was very	brief
		Low	I am not sure why it is so	dark
		Moderate	I just threw the dog a	ball
		Moderate	I spent all morning scrubbing the bathroom	sink
		Low	Please stay away from the	cliff
		Low	They could not see the	creek
		Moderate	When I am at the beach, I like to	surf
		Low	Everyone hoped she would not fall	fall

			Low	He tried to put away the	change
			Moderate	The noise made it very hard to	think
			Low	She tested to make sure it was	dead
			Moderate	She put on a clean	blouse
			Moderate	The injury left a very large	bruise
			Low	He looked at the one that is	calm
			Low	I was ready to see the	beach
			Low	She did not want them	fried
			Moderate	Michael told me his favourite seafood is	crab
French	1	Visual	Low	Je me demande s'il y aura du	jazz
			Moderate	Il y a beaucoup de linge à	sécher
			Low	On m'a demandé de créer une illustration contenant des	nains
			Moderate	Dans les bois, Jacques a aperçu un	renard
			Low	J'ai oublié de ranger la	brouette
			Low	Tout le monde observe attentivement le	bras
			Moderate	Son signe du Zodiaque est le	verseau
			Low	Je suis en train de me préparer pour un	spectacle
			Low	On ne lui avait pas donné de	meubles
			Moderate	Les billets pour l'opéra étaient	bons
			Low	Je crois qu'il reste encore plusieurs	pieds
			Moderate	Pendant le procès, le juge me semblait	neutre
			Moderate	Le parc est couvert de	plantes
			Low	On lui a demandé d'être moins	grincheux
			Moderate	Dans le bus ce matin, les gens étaient	courtois
			Moderate	L'animal laissa échapper un cri	perçant
			Low	Il n'avait pas prédit croiser un	babouin
			Moderate	Il y a des canards dans ce	bassin
			Low	Le magasin de chaussure ne vend pas de	bottes
			Moderate	Il est généralement difficile de transplanter un	coeur
			Moderate	J'ai une douleur à la	jambe
			Low	Nous avons eu la chance de voir plusieurs	temples
			Moderate	Ce restaurant est reconnu pour son	vin

		Moderate	La compagnie de téléphone offre de bons	plans
		Low	On lui a dit de se méfier des	lutins
2	Auditory	Low	Elle était contente de sa	vitesse
		Moderate	Le magasin de musique vend des	pianos
		Low	Ces gens n'ont toujours pas eu de	congé
		Moderate	Pendant le vol, il y a eu plusieurs	repas
		Low	Nous avons plusieurs projets pour notre	cuisine
		Low	Ils ont décidé de visiter la	crique
		Moderate	Elle fait bouillir de l'eau pour cuire des	patates
		Low	On m'a invité à essayer la	lutte
		Moderate	Le millionnaire a acheté un condo	luxueux
		Moderate	Les instructions sont dans le	livret
		Low	Il nous faut plus de	fonds
		Moderate	Michelle a surpris Jean en lui donnant un	baiser
		Low	Elle pense beaucoup au dernier	vol
		Low	Il y a quelques années, toutes mes amies étaient	brunes
		Moderate	Je me suis blessé au	coude
		Moderate	Les pantalons de Kim sont trop	serrés
		Low	Malgré tout, il est déjà	loué
		Moderate	Ce nid d'oiseau appartient à un	pinson
		Moderate	En mathématiques, les élèves utilisent des	formules
		Low	Le paquet contenait beaucoup de	cheddar
		Moderate	Les manifestants brandissaient des	bannières
		Low	Elle croit qu'elle a perdu son	passeport
		Moderate	La fille trouvait le garçon très	laid
		Low	Notre objectif est de le distribuer aux	piétons
		Moderate	La vedette se plaint lorsqu'on ignore ses	caprices
3	Audiovisual	Low	Je tente de m'habituer à cette	maison
		Low	Les enfants n'ont pas envie de	fruits
		Moderate	En temps de crise, il est difficile d'être	calme
		Low	Cette fois, elle se promenait sans	bavette
		Moderate	Je vais à la fruiterie pour acheter des	poires

			Moderate	Le poissonnier avait de bons filets de	thon
			Low	On m'a demandé d'aller vers la	cour
			Moderate	La récolte fut détruite par une infestation de	fourmis
			Moderate	Elles ont décidé d'échanger leurs	jupes
			Low	Je crois avoir besoin de plus de	pin
			Low	Je suis enfin débarrassé de cette	grippe
			Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	serviettes
			Moderate	La chambre d'Henri est en	désordre
			Low	Elle a décidé de se payer une	coiffure
			Moderate	La maison est faite en	bois
			Moderate	Ses fleurs préférées sont les	roses
			Low	Tiens-toi à l'écart de ces	touches
			Moderate	Lisa préfère les légumes	cuits
			Moderate	Les changements climatiques otn provoqué des	pluies
			Low	Mon frère a décidé d'abandonner le	tennis
			Low	Mathilde a développé un intérêt pour la	santé
			Moderate	Son anneau est orné d'un	rubis
			Low	Il y en a tout plein à	coller
			Low	Il nous parlait de ses nouvelles	vaches
			Moderate	Claire portait sa plus belle robe pour le	bal
4	Visual		Low	Mon amie Maryse ne manque jamais de	persil
			Low	J'ai plusieurs souvenirs à propos de la	marelle
			Moderate	Les membres de la congrégation sont très	croyants
			Moderate	Les dents de Marie sont	sensibles
			Low	Elle est experte dans le domaine	dentaire
			Low	En fait, je le trouve très	frais
			Moderate	À la plage, je redoute surtout les	mouettes
			Moderate	Les nomades du Sahara sont entourés de	chameaux
			Low	Mon ami souhaite être plus	svelte
			Low	Richard est nouvellement responsable du	train
			Moderate	Elle suit une diète sans	viande
			Low	Paul a vu beaucoup de	choses
			Moderate	L'homme d'affaire voulait amasser plus de	richesses

			Low	J'espère bien pouvoir profiter des	massages
			Low	On m'a dit de bonnes choses à propos du	poème
			Low	Je me concentre sur mes	biceps
			Moderate	Le vétérinaire a examiné le	chat
			Low	La banderole est en forme de	zombie
			Moderate	Son nouvel emploi est très	facile
			Moderate	Veuillez-vous tourner vers la	droite
			Low	Finalement, je me suis retrouvé au	chalet
			Moderate	Ma voiture vient de se faire	voler
			Moderate	Éric pense que l'hiver prochain sera	long
			Low	On m'assure que c'est bien	jaune
			Moderate	Parmi les fruits secs, je préfère les	pruneaux
5	Auditory		Low	On me demande souvent si elles sont	courtes
			Low	On l'a mis en charge du	camion
			Moderate	Je me rends au travail en	vélo
			Low	Nous partageons un intérêt pour le	plongeon
			Low	Elles se préparent à nous aider avec la	remise
			Moderate	Suite à ma blessure, l'infirmière m'a donné un	bandage
			Low	Il m'a montré comment dessiner un	fusil
			Moderate	Elle utilise le robinet pour remplir sa	carafe
			Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	ballon
			Low	On lui a demandé de s'occuper de son	visage
			Low	Elle n'avait pas anticipé la présence du	canon
			Moderate	Après cet exercice, mes jambes sont	raides
			Moderate	Parmi les fruits de mer, j'adore les	crevettes
			Low	Je n'avais jamais entendu ces	contes
			Low	Depuis toujours, Simon s'intéresse aux	maths
			Moderate	Je trouve son écriture très	lisible
			Moderate	Dans mon couscous, je mets des	pois
			Low	On ne sait jamais où trouver des	cuillères
			Low	Tu dois faire attention au	cycliste
			Moderate	Dans la forêt tropicale, on se méfie des	panthères

				Low	Elle m'a offert celui qui est	blanc
				Moderate	Ma danse préférée est la	polka
				Moderate	En creusant, j'ai trouvé un	trésor
				Low	Sur sa trajectoire se trouvait un	joueur
				Moderate	L'épicerie veut engager un nouveau	gérant
		6	Audiovisual	Moderate	Au brunch, Catherine a commandé des	crêpes
				Low	Nous avons reçu un chargement de	dentelle
				Moderate	Mets tes vêtements dans la	valise
				Low	Il n'avait aucun doute qu'elle était	marbrée
				Moderate	Mon ami a préparé une tarte aux	pommes
				Low	J'ai vu qu'elle est pleine de	pollen
				Low	Il préférait de loin le	deuxième
				Moderate	Au supermarché, il y avait peu de	monde
				Low	J'essaies de les rendre un peu moins	frisés
				Moderate	Le garçon avait des yeux	verts
				Moderate	Nous avons traversé le lac en	chaloupe
				Low	Elle m'a passé un morceau de	chêne
				Low	Ils s'apprêtent à apprendre les	lettres
				Moderate	L'été, j'aime profiter de la	mer
				Low	Nous avons décidé d'ignorer les	grenouilles
				Low	Il est en train de se préparer pour la	forêt
				Moderate	À la quincaillerie, j'ai acheté une	pince
				Low	Elles se dirigent vers la	fleur
				Moderate	L'artiste n'arrive pas à vendre ses	tableaux
				Low	Ils s'assurent de bien suivre le	baron
				Low	Elle n'arrivait pas à retrouver les	quilles
				Moderate	Depuis ce matin, j'ai mal au	foie
				Low	Elle n'avait pas remarqué la présence des	voisins
				Moderate	D'après leur expression faciale, les hommes étaient	sévères
				Moderate	Elle a fait percer son	nez
8	English	1	Auditory	Low	I told you about that	bank

		Low	He stated that it was	short
		Moderate	The old shoes have a broken	lace
		Moderate	Before leaving, he put on a pair of	jeans
		Low	She was not sure if he really	frowned
		Low	The two of them disagreed on the	fee
		Moderate	This restaurant has great	chefs
		Low	The city council purchased the	bars
		Moderate	The farmed tended to his	cows
		Low	You should not touch the	plants
		Moderate	In the yard, she trims the	bush
		Low	Scott was planning to work on his	hips
		Moderate	I heard that musician plan the	bass
		Low	According to Hank, she had been	hurt
		Moderate	The book is resting on top of the	desk
		Low	The young man mostly loved her	brain
		Moderate	He dug a large hole in the	ground
		Moderate	The weather forecast predicted there would be	rain
		Low	Carol tried her best to hide her	grade
		Moderate	The cake on the counter is very	fresh
		Moderate	The condo that John wanted was already	bought
		Low	I pressed Doris about the	point
		Moderate	The mechanic looked at the car's	brakes
		Moderate	That bakery makes very good	bread
		Low	I am not sure how to use this	word
2	Audiovisual	Low	Margaret gave away all of the	beans
		Moderate	I want to paint the table	black
		Low	Trudy's brother was examining the	bump
		Moderate	During the fight, I was punched in the	face
		Low	Milton was about to pick up the	frog
		Moderate	Set the table with	fork
		Low	My sister went to the store to buy a	hose
		Moderate	My hat is made of	fur

233

			Moderate	I looked at the sky and saw the	geese
			Low	She tried her best to control the	court
			Low	Myriam did not expect the	gifts
			Moderate	Every day, I begin work at	nine
			Low	I could not tell that they were	French
			Moderate	The friends played a game of	bridge
			Moderate	In the woods, the hiker saw a	bear
			Low	Donald looked everywhere for his	friend
			Moderate	The skier lost one of his	boots
			Low	She always remembered that special	smell
			Moderate	In his spare time, Owen wrote a	book
			Moderate	The exterminator took care of the	bugs
			Low	He was not aware of the	grapes
			Moderate	Rob insisted that it was	ripe
			Low	The majority of them were	fat
			Low	She was told to take the	crate
			Moderate	The colour of her eyes is	blue
3	Visual		Moderate	I called a plumber to repair the	leak
			Low	I have been told to	bite
			Moderate	She went to prison for a	day
			Low	I was confused about the	time
			Low	The forecast for tomorrow is	clear
			Moderate	She broiled the ham until it was	burnt
			Low	Andrew had trouble locating his	dad
			Moderate	The dentist carefully examined my	gums
			Low	She checked to make sure it was	dry
			Moderate	The necklace is made of	beads
			Moderate	In the mail, I received a	bill
			Low	Roxane had to deal with the	dirt
			Moderate	The baseball player bought a new	bat
			Moderate	She asked the tailor to fix her	dress
			Low	Yesterday, Betty took a look at my	hand
			Moderate	Most days, I take the bus to	class

		Moderate	At the clinic, the doctor checked my	blood
		Low	Be careful that you do not let it	close
		Low	I had a vivid dream about a	ghost
		Moderate	This year, the farmer's main crop is	corn
		Low	The young lady needed a	bag
		Moderate	She styled her hair with a	brush
		Low	Vince insisted that we buy this	bench
		Low	The room had many things to	fold
		Moderate	The young fisherman forgot his	bait
4	Auditory	Low	I am not sure what to do about this	car
		Low	Chelsea looked away from her	lap
		Moderate	He poured his beverage into a	cup
		Moderate	Shirley bought pants that are too	loose
		Low	Dale built the cabin around	June
		Low	He was secretive about the	cubes
		Moderate	My car has a new	dent
		Low	Johnny and his friends laughed at the	chime
		Moderate	It was cold, so he put on his	coat
		Low	He bent over to picky up the	cent
		Low	He was not well prepared for the	fog
		Moderate	The young child is just learning to	crawl
		Low	She was thinking of adding	jam
		Moderate	Mrs. Smith has a fear of	germs
		Moderate	We walk our dogs each day at	dawn
		Low	She was complimented on her	braid
		Moderate	The racing team came in	first
		Moderate	The main course consisted of	beef
		Low	In reality, she did not feel	faint
		Moderate	Behind the counter, the butcher was slicing	ham
		Moderate	The vet examined the bird's	beak
		Low	The curious boy explored the	block
		Moderate	Kids can start school at age	five
		Low	He decided to give away this	belt

		Low	We need to replace this	bed
5	Audiovisual	Moderate	Yesterday, my dog ran after a	cat
		Low	He implied that I was very	fast
		Low	Violet gave me back the	bowl
		Low	Every year, Ashley organizes the	game
		Moderate	The family is planning a trip to	France
		Low	Jordan said that it was	cheese
		Moderate	She was learning how to bake	scones
		Low	Barry complimented us on our	catch
		Moderate	I love to look up at the	moon
		Low	The group provided all of the	fruit
		Low	She had just seen the other	crop
		Moderate	These are the stocks I want to	buy
		Low	He asked me to repair the	hood
		Moderate	My boyfriend gave me a	gift
		Low	Anna was talking about hat awful	bark
		Low	She advised us on his	health
		Moderate	Every day, he grooms his	beard
		Low	The had to repair the	flag
		Moderate	I saw the animals at the	farm
		Low	Theresa thanked me for the	brunch
		Moderate	Every morning, we jog along the	path
		Moderate	Jessie and her friend walked up the	hill
		Moderate	Last night's party was really	dull
		Low	She was not responsible for the	mess
		Moderate	He cooked the vegetables in the	pan
6	Visual	Moderate	Jill cleaned up the dirt with a	cloth
		Low	Last weekend, there was no	breeze
		Moderate	The horse was let into the	barn
		Low	Julian wanted to finish the	fence
		Moderate	She is very creative and loves to	draw
		Moderate	The jester dances for the	guests

				Low	They had to clean up the	beer
				Low	Please do not touch my	foot
				Moderate	Our last meeting was very	brief
				Low	I am not sure why it is so	dark
				Moderate	I just threw the dog a	ball
				Moderate	I spent all morning scrubbing the bathroom	sink
				Low	Please stay away from the	cliff
				Low	They could not see the	creek
				Moderate	When I am at the beach, I like to	surf
				Low	Everyone hoped she would not fall	fall
				Low	He tried to put away the	change
				Moderate	The noise made it very hard to	think
				Low	She tested to make sure it was	dead
				Moderate	She put on a clean	blouse
				Moderate	The injury left a very large	bruise
				Low	He looked at the one that is	calm
				Low	I was ready to see the	beach
				Low	She did not want them	fried
				Moderate	Michael told me his favourite seafood is	crab
French	1	Auditory		Low	Je me demande s'il y aura du	jazz
				Moderate	Il y a beaucoup de linge à	sécher
				Low	On m'a demandé de créer une illustration contenant des	nains
				Moderate	Dans les bois, Jacques a aperçu un	renard
				Low	J'ai oublié de ranger la	brouette
				Low	Tout le monde observe attentivement le	bras
				Moderate	Son signe du Zodiaque est le	verseau
				Low	Je suis en train de me préparer pour un	spectacle
				Low	On ne lui avait pas donné de	meubles
				Moderate	Les billets pour l'opéra étaient	bons
				Low	Je crois qu'il reste encore plusieurs	pieds
				Moderate	Pendant le procès, le juge me semblait	neutre
				Moderate	Le parc est couvert de	plantes

			Low	On lui a demandé d'être moins	grincheux
			Moderate	Dans le bus ce matin, les gens étaient	courtois
			Moderate	L'animal laissa échapper un cri	perçant
			Low	Il n'avait pas prédit croiser un	babouin
			Moderate	Il y a des canards dans ce	bassin
			Low	Le magasin de chaussure ne vend pas de	bottes
			Moderate	Il est généralement difficile de transplanter un	coeur
			Moderate	J'ai une douleur à la	jambe
			Low	Nous avons eu la chance de voir plusieurs	temples
			Moderate	Ce restaurant est reconnu pour son	vin
			Moderate	La compagnie de téléphone offre de bons	plans
			Low	On lui a dit de se méfier des	lutins
2	Audiovisual		Low	Elle était contente de sa	vitesse
			Moderate	Le magasin de musique vend des	pianos
			Low	Ces gens n'ont toujours pas eu de	congé
			Moderate	Pendant le vol, il y a eu plusieurs	repas
			Low	Nous avons plusieurs projets pour notre	cuisine
			Low	Ils ont décidé de visiter la	crique
			Moderate	Elle fait bouillir de l'eau pour cuire des	patates
			Low	On m'a invité à essayer la	lutte
			Moderate	Le millionnaire a acheté un condo	luxueux
			Moderate	Les instructions sont dans le	livret
			Low	Il nous faut plus de	fonds
			Moderate	Michelle a surpris Jean en lui donnant un	baiser
			Low	Elle pense beaucoup au dernier	vol
			Low	Il y a quelques années, toutes mes amies étaient	brunes
			Moderate	Je me suis blessé au	coude
			Moderate	Les pantalons de Kim sont trop	serré
			Low	Malgré tout, il est déjà	loué
			Moderate	Ce nid d'oiseau appartient à un	pinson
			Moderate	En mathématiques, les élèves utilisent des	formules
			Low	Le paquet contenait beaucoup de	cheddar
			Moderate	Les manifestants brandissaient des	bannières

		Low	Elle croit qu'elle a perdu son	passeport
		Moderate	La fille trouvait le garçon très	laid
		Low	Notre objectif est de le distribuer aux	piétons
		Moderate	La vedette se plaint lorsqu'on ignore ses	caprices
3	Visual	Low	Je tente de m'habituer à cette	maison
		Low	Les enfants n'ont pas envie de	fruits
		Moderate	En temps de crise, il est difficile d'être	calme
		Low	Cette fois, elle se promenait sans	bavette
		Moderate	Je vais à la fruiterie pour acheter des	poires
		Moderate	Le poissonnier avait de bons filets de	thon
		Low	On m'a demandé d'aller vers la	cour
		Moderate	La récolte fut détruite par une infestation de	fourmis
		Moderate	Elles ont décidé d'échanger leurs	jupes
		Low	Je crois avoir besoin de plus de	pin
		Low	Je suis enfin débarrassé de cette	grippe
		Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	serviettes
		Moderate	La chambre d'Henri est en	désordre
		Low	Elle a décidé de se payer une	coiffure
		Moderate	La maison est faite en	bois
		Moderate	Ses fleurs préférées sont les	roses
		Low	Tiens-toi à l'écart de ces	touches
		Moderate	Lisa préfère les légumes	cuits
		Moderate	Les changements climatiques otn provoqué des	pluies
		Low	Mon frère a décidé d'abandonner le	tennis
		Low	Mathilde a développé un intérêt pour la	santé
		Moderate	Son anneau est orné d'un	rubis
		Low	Il y en a tout plein à	coller
		Low	Il nous parlait de ses nouvelles	vaches
		Moderate	Claire portait sa plus belle robe pour le	bal
4	Auditory	Low	Mon amie Maryse ne manque jamais de	persil
		Low	J'ai plusieurs souvenirs à propos de la	marelle
		Moderate	Les membres de la congrégation sont très	croyants

		Moderate	Les dents de Marie sont	sensibles
		Low	Elle est experte dans le domaine	dentaire
		Low	En fait, je le trouve très	frais
		Moderate	À la plage, je redoute surtout les	mouettes
		Moderate	Les nomades du Sahara sont entourés de	chameaux
		Low	Mon ami souhaite être plus	svelte
		Low	Richard est nouvellement responsable du	train
		Moderate	Elle suit une diète sans	viande
		Low	Paul a vu beaucoup de	choses
		Moderate	L'homme d'affaire voulait amasser plus de	richesses
		Low	J'espère bien pouvoir profiter des	massages
		Low	On m'a dit de bonnes choses à propos du	poème
		Low	Je me concentre sur mes	biceps
		Moderate	Le vétérinaire a examiné le	chat
		Low	La banderole est en forme de	zombie
		Moderate	Son nouvel emploi est très	facile
		Moderate	Veuillez-vous tourner vers la	droite
		Low	Finalement, je me suis retrouvé au	chalet
		Moderate	Ma voiture vient de se faire	voler
		Moderate	Éric pense que l'hiver prochain sera	long
		Low	On m'assure que c'est bien	jaune
		Moderate	Parmi les fruits secs, je préfère les	pruneaux
5	Audiovisual	Low	On me demande souvent si elles sont	courtes
		Low	On l'a mis en charge du	camion
		Moderate	Je me rends au travail en	vélo
		Low	Nous partageons un intérêt pour le	plongeon
		Low	Elles se préparent à nous aider avec la	remise
		Moderate	Suite à ma blessure, l'infirmière m'a donné un	bandage
		Low	Il m'a montré comment dessiner un	fusil
		Moderate	Elle utilise le robinet pour remplir sa	carafe
		Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	ballon
		Low	On lui a demandé de s'occuper de son	visage

			Low	Elle n'avait pas anticipé la présence du	canon
			Moderate	Après cet exercice, mes jambes sont	raide
			Moderate	Parmi les fruits de mer, j'adore les	crevettes
			Low	Je n'avais jamais entendu ces	contes
			Low	Depuis toujours, Simon s'intéresse aux	maths
			Moderate	Je trouve son écriture très	lisible
			Moderate	Dans mon couscous, je mets des	pois
			Low	On ne sait jamais où trouver des	cuillères
			Low	Tu dois faire attention au	cycliste
			Moderate	Dans la forêt tropicale, on se méfie des	panthères
			Low	Elle m'a offert celui qui est	blanc
			Moderate	Ma danse préférée est la	polka
			Moderate	En creusant, j'ai trouvé un	trésor
			Low	Sur sa trajectoire se trouvait un	joueur
			Moderate	L'épicerie veut engager un nouveau	gérant
6	Visual		Moderate	Au brunch, Catherine a commandé des	crêpes
			Low	Nous avons reçu un chargement de	dentelle
			Moderate	Mets tes vêtements dans la	valise
			Low	Il n'avait aucun doute qu'elle était	marbrée
			Moderate	Mon ami a préparé une tarte aux	pommes
			Low	J'ai vu qu'elle est pleine de	pollen
			Low	Il préférait de loin le	deuxième
			Moderate	Au supermarché, il y avait peu de	monde
			Low	J'essaies de les rendre un peu moins	frisés
			Moderate	Le garçon avait des yeux	verts
			Moderate	Nous avons traversé le lac en	chaloupe
			Low	Elle m'a passé un morceau de	chêne
			Low	Ils s'apprêtent à apprendre les	lettres
			Moderate	L'été, j'aime profiter de la	mer
			Low	Nous avons décidé d'ignorer les	grenouilles
			Low	Il est en train de se préparer pour la	forêt
			Moderate	À la quincaillerie, j'ai acheté une	pince
			Low	Elles se dirigent vers la	fleur

				Moderate	L'artiste n'arrive pas à vendre ses	tableaux
				Low	Ils s'assurent de bien suivre le	baron
				Low	Elle n'arrivait pas à retrouver les	quilles
				Moderate	Depuis ce matin, j'ai mal au	foie
				Low	Elle n'avait pas remarqué la présence des	voisins
				Moderate	D'après leur expression faciale, les hommes étaient	sévères
				Moderate	Elle a fait percer son	nez
9	English	1	Audiovisual	Low	I told you about that	bank
				Low	He stated that it was	short
				Moderate	The old shoes have a broken	lace
				Moderate	Before leaving, he put on a pair of	jeans
				Low	She was not sure if he really	frowned
				Low	The two of them disagreed on the	fee
				Moderate	This restaurant has great	chefs
				Low	The city council purchased the	bars
				Moderate	The farmed tended to his	cows
				Low	You should not touch the	plants
				Moderate	In the yard, she trims the	bush
				Low	Scott was planning to work on his	hips
				Moderate	I heard that musician plan the	bass
				Low	According to Hank, she had been	hurt
				Moderate	The book is resting on top of the	desk
				Low	The young man mostly loved her	brain
				Moderate	He dug a large hole in the	ground
				Moderate	The weather forecast predicted there would be	rain
				Low	Carol tried her best to hide her	grade
				Moderate	The cake on the counter is very	fresh
				Moderate	The condo that John wanted was already	bought
				Low	I pressed Doris about the	point
				Moderate	The mechanic looked at the car's	brakes
				Moderate	That bakery makes very good	bread
				Low	I am not sure how to use this	word

2	Visual	Low	Margaret gave away all of the	beans
		Moderate	I want to paint the table	black
		Low	Trudy's brother was examining the	bump
		Moderate	During the fight, I was punched in the	face
		Low	Milton was about to pick up the	frog
		Moderate	Set the table with	fork
		Low	My sister went to the store to buy a	hose
		Moderate	My hat is made of	fur
		Moderate	I looked at the sky and saw the	geese
		Low	She tried her best to control the	court
		Low	Myriam did not expect the	gifts
		Moderate	Every day, I begin work at	nine
		Low	I could not tell that they were	French
		Moderate	The friends played a game of	bridge
		Moderate	In the woods, the hiker saw a	bear
		Low	Donald looked everywhere for his	friend
		Moderate	The skier lost one of his	boots
		Low	She always remembered that special	smell
		Moderate	In his spare time, Owen wrote a	book
		Moderate	The exterminator took care of the	bugs
		Low	He was not aware of the	grapes
		Moderate	Rob insisted that it was	ripe
		Low	The majority of them were	fat
		Low	She was told to take the	crate
		Moderate	The colour of her eyes is	blue
3	Auditory	Moderate	I called a plumber to repair the	leak
		Low	I have been told to	bite
		Moderate	She went to prison for a	day
		Low	I was confused about the	time
		Low	The forecast for tomorrow is	clear
		Moderate	She broiled the ham until it was	burnt
		Low	Andrew had trouble locating his	dad

		Moderate	The dentist carefully examined my	gums
		Low	She checked to make sure it was	dry
		Moderate	The necklace is made of	beads
		Moderate	In the mail, I received a	bill
		Low	Roxane had to deal with the	dirt
		Moderate	The baseball player bought a new	bat
		Moderate	She asked the tailor to fix her	dress
		Low	Yesterday, Betty took a look at my	hand
		Moderate	Most days, I take the bus to	class
		Moderate	At the clinic, the doctor checked my	blood
		Low	Be careful that you do not let it	close
		Low	I had a vivid dream about a	ghost
		Moderate	This year, the farmer's main crop is	corn
		Low	The young lady needed a	bag
		Moderate	She styled her hair with a	brush
		Low	Vince insisted that we buy this	bench
		Low	The room had many things to	fold
		Moderate	The young fisherman forgot his	bait
4	Audiovisual	Low	I am not sure what to do about this	car
		Low	Chelsea looked away from her	lap
		Moderate	He poured his beverage into a	cup
		Moderate	Shirley bought pants that are too	loose
		Low	Dale built the cabin around	June
		Low	He was secretive about the	cubes
		Moderate	My car has a new	dent
		Low	Johnny and his friends laughed at the	chime
		Moderate	It was cold, so he put on his	coat
		Low	He bent over to picky up the	cent
		Low	He was not well prepared for the	fog
		Moderate	The young child is just learning to	crawl
		Low	She was thinking of adding	jam
		Moderate	Mrs. Smith has a fear of	germs
		Moderate	We walk our dogs each day at	dawn

		Low	She was complimented on her	braid
		Moderate	The racing team came in	first
		Moderate	The main course consisted of	beef
		Low	In reality, she did not feel	faint
		Moderate	Behind the counter, the butcher was slicing	ham
		Moderate	The vet examined the bird's	beak
		Low	The curious boy explored the	block
		Moderate	Kids can start school at age	five
		Low	He decided to give away this	belt
		Low	We need to replace this	bed
5	Visual	Moderate	Yesterday, my dog ran after a	cat
		Low	He implied that I was very	fast
		Low	Violet gave me back the	bowl
		Low	Every year, Ashley organizes the	game
		Moderate	The family is planning a trip to	France
		Low	Jordan said that it was	cheese
		Moderate	She was learning how to bake	scones
		Low	Barry complimented us on our	catch
		Moderate	I love to look up at the	moon
		Low	The group provided all of the	fruit
		Low	She had just seen the other	crop
		Moderate	These are the stocks I want to	buy
		Low	He asked me to repair the	hood
		Moderate	My boyfriend gave me a	gift
		Low	Anna was talking about hat awful	bark
		Low	She advised us on his	health
		Moderate	Every day, he grooms his	beard
		Low	The had to repair the	flag
		Moderate	I saw the animals at the	farm
		Low	Theresa thanked me for the	brunch
		Moderate	Every morning, we jog along the	path
		Moderate	Jessie and her friend walked up the	hill
		Moderate	Last night's party was really	dull

			Low	She was not responsible for the	mess
			Moderate	He cooked the vegetables in the	pan
	6	Auditory	Moderate	Jill cleaned up the dirt with a	cloth
			Low	Last weekend, there was no	breeze
			Moderate	The horse was let into the	barn
			Low	Julian wanted to finish the	fence
			Moderate	She is very creative and loves to	draw
			Moderate	The jester dances for the	guests
			Low	They had to clean up the	beer
			Low	Please do not touch my	foot
			Moderate	Our last meeting was very	brief
			Low	I am not sure why it is so	dark
			Moderate	I just threw the dog a	ball
			Moderate	I spent all morning scrubbing the bathroom	sink
			Low	Please stay away from the	cliff
			Low	They could not see the	creek
			Moderate	When I am at the beach, I like to	surf
			Low	Everyone hoped she would not fall	fall
			Low	He tried to put away the	change
			Moderate	The noise made it very hard to	think
			Low	She tested to make sure it was	dead
			Moderate	She put on a clean	blouse
			Moderate	The injury left a very large	bruise
			Low	He looked at the one that is	calm
			Low	I was ready to see the	beach
			Low	She did not want them	fried
			Moderate	Michael told me his favourite seafood is	crab
French	1	Audiovisual	Low	Je me demande s'il y aura du	jazz
			Moderate	Il y a beaucoup de linge à	sécher
			Low	On m'a demandé de créer une illustration contenant des	nains
			Moderate	Dans les bois, Jacques a aperçu un	renard

			Low	J'ai oublié de ranger la	brouette
			Low	Tout le monde observe attentivement le	bras
			Moderate	Son signe du Zodiaque est le	verseau
			Low	Je suis en train de me préparer pour un	spectacle
			Low	On ne lui avait pas donné de	meubles
			Moderate	Les billets pour l'opéra étaient	bons
			Low	Je crois qu'il reste encore plusieurs	pieds
			Moderate	Pendant le procès, le juge me semblait	neutre
			Moderate	Le parc est couvert de	plantes
			Low	On lui a demandé d'être moins	grincheux
			Moderate	Dans le bus ce matin, les gens étaient	courtois
			Moderate	L'animal laissa échapper un cri	perçant
			Low	Il n'avait pas prédit croiser un	babouin
			Moderate	Il y a des canards dans ce	bassin
			Low	Le magasin de chaussure ne vend pas de	bottes
			Moderate	Il est généralement difficile de transplanter un	coeur
			Moderate	J'ai une douleur à la	jambe
			Low	Nous avons eu la chance de voir plusieurs	temples
			Moderate	Ce restaurant est reconnu pour son	vin
			Moderate	La compagnie de téléphone offre de bons	plans
			Low	On lui a dit de se méfier des	lutins
2	Visual		Low	Elle était contente de sa	vitesse
			Moderate	Le magasin de musique vend des	pianos
			Low	Ces gens n'ont toujours pas eu de	congé
			Moderate	Pendant le vol, il y a eu plusieurs	repas
			Low	Nous avons plusieurs projets pour notre	cuisine
			Low	Ils ont décidé de visiter la	crique
			Moderate	Elle fait bouillir de l'eau pour cuire des	patates
			Low	On m'a invité à essayer la	lutte
			Moderate	Le millionnaire a acheté un condo	luxueux
			Moderate	Les instructions sont dans le	livret
			Low	Il nous faut plus de	fonds
			Moderate	Michelle a surpris Jean en lui donnant un	baiser

247

			Low	Elle pense beaucoup au dernier	vol
			Low	Il y a quelques années, toutes mes amies étaient	brunes
			Moderate	Je me suis blessé au	coude
			Moderate	Les pantalons de Kim sont trop	serré
			Low	Malgré tout, il est déjà	loué
			Moderate	Ce nid d'oiseau appartient à un	pinson
			Moderate	En mathématiques, les élèves utilisent des	formules
			Low	Le paquet contenait beaucoup de	cheddar
			Moderate	Les manifestants brandissaient des	bannières
			Low	Elle croit qu'elle a perdu son	passeport
			Moderate	La fille trouvait le garçon très	laid
			Low	Notre objectif est de le distribuer aux	piétons
			Moderate	La vedette se plaint lorsqu'on ignore ses	caprices
3	Auditory		Low	Je tente de m'habituer à cette	maison
			Low	Les enfants n'ont pas envie de	fruits
			Moderate	En temps de crise, il est difficile d'être	calme
			Low	Cette fois, elle se promenait sans	bavette
			Moderate	Je vais à la fruiterie pour acheter des	poires
			Moderate	Le poissonnier avait de bons filets de	thon
			Low	On m'a demandé d'aller vers la	cour
			Moderate	La récolte fut détruite par une infestation de	fourmis
			Moderate	Elles ont décidé d'échanger leurs	jupes
			Low	Je crois avoir besoin de plus de	pin
			Low	Je suis enfin débarrassé de cette	grippe
			Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	serviettes
			Moderate	La chambre d'Henri est en	désordre
			Low	Elle a décidé de se payer une	coiffure
			Moderate	La maison est faite en	bois
			Moderate	Ses fleurs préférées sont les	roses
			Low	Tiens-toi à l'écart de ces	touches
			Moderate	Lisa préfère les légumes	cuits
			Moderate	Les changements climatiques otn provoqué des	pluies
			Low	Mon frère a décidé d'abandonner le	tennis

			Low	Mathilde a développé un intérêt pour la	santé
			Moderate	Son anneau est orné d'un	rubis
			Low	Il y en a tout plein à	coller
			Low	Il nous parlait de ses nouvelles	vaches
			Moderate	Claire portait sa plus belle robe pour le	bal
4	Audiovisual		Low	Mon amie Maryse ne manque jamais de	persil
			Low	J'ai plusieurs souvenirs à propos de la	marelle
			Moderate	Les membres de la congrégation sont très	croyants
			Moderate	Les dents de Marie sont	sensibles
			Low	Elle est experte dans le domaine	dentaire
			Low	En fait, je le trouve très	frais
			Moderate	À la plage, je redoute surtout les	mouettes
			Moderate	Les nomades du Sahara sont entourés de	chameaux
			Low	Mon ami souhaite être plus	svelte
			Low	Richard est nouvellement responsable du	train
			Moderate	Elle suit une diète sans	viande
			Low	Paul a vu beaucoup de	choses
			Moderate	L'homme d'affaire voulait amasser plus de	richesses
			Low	J'espère bien pouvoir profiter des	massages
			Low	On m'a dit de bonnes choses à propos du	poème
			Low	Je me concentre sur mes	biceps
			Moderate	Le vétérinaire a examiné le	chat
			Low	La banderole est en forme de	zombie
			Moderate	Son nouvel emploi est très	facile
			Moderate	Veuillez-vous tourner vers la	droite
			Low	Finalement, je me suis retrouvé au	chalet
			Moderate	Ma voiture vient de se faire	voler
			Moderate	Éric pense que l'hiver prochain sera	long
			Low	On m'assure que c'est bien	jaune
			Moderate	Parmi les fruits secs, je préfère les	pruneaux
5	Visual		Low	On me demande souvent si elles sont	courtes
			Low	On l'a mis en charge du	camion

249

		Moderate	Je me rends au travail en		vélo
		Low	Nous partageons un intérêt pour le		plongeon
		Low	Elles se préparent à nous aider avec la		remise
		Moderate	Suite à ma blessure, l'infirmière m'a donné un		bandage
		Low	Il m'a montré comment dessiner un		fusil
		Moderate	Elle utilise le robinet pour remplir sa		carafe
		Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au		ballon
		Low	On lui a demandé de s'occuper de son		visage
		Low	Elle n'avait pas anticipé la présence du		canon
		Moderate	Après cet exercice, mes jambes sont		raide
		Moderate	Parmi les fruits de mer, j'adore les		crevettes
		Low	Je n'avais jamais entendu ces		contes
		Low	Depuis toujours, Simon s'intéresse aux		maths
		Moderate	Je trouve son écriture très		lisible
		Moderate	Dans mon couscous, je mets des		pois
		Low	On ne sait jamais où trouver des		cuillères
		Low	Tu dois faire attention au		cycliste
		Moderate	Dans la forêt tropicale, on se méfie des		panthères
		Low	Elle m'a offert celui qui est		blanc
		Moderate	Ma danse préférée est la		polka
		Moderate	En creusant, j'ai trouvé un		trésor
		Low	Sur sa trajectoire se trouvait un		joueur
		Moderate	L'épicerie veut engager un nouveau		gérant
6	Auditory	Moderate	Au brunch, Catherine a commandé des		crêpes
		Low	Nous avons reçu un chargement de		dentelle
		Moderate	Mets tes vêtements dans la		valise
		Low	Il n'avait aucun doute qu'elle était		marbrée
		Moderate	Mon ami a préparé une tarte aux		pommes
		Low	J'ai vu qu'elle est pleine de		pollen
		Low	Il préférait de loin le		deuxième
		Moderate	Au supermarché, il y avait peu de		monde
		Low	J'essaies de les rendre un peu moins		frisés

				Moderate	Le garçon avait des yeux	verts
				Moderate	Nous avons traversé le lac en	chaloupe
				Low	Elle m'a passé un morceau de	chêne
				Low	Ils s'apprêtent à apprendre les	lettres
				Moderate	L'été, j'aime profiter de la	mer
				Low	Nous avons décidé d'ignorer les	grenouilles
				Low	Il est en train de se préparer pour la	forêt
				Moderate	À la quincaillerie, j'ai acheté une	pince
				Low	Elles se dirigent vers la	fleur
				Moderate	L'artiste n'arrive pas à vendre ses	tableaux
				Low	Ils s'assurent de bien suivre le	baron
				Low	Elle n'arrivait pas à retrouver les	quilles
				Moderate	Depuis ce matin, j'ai mal au	foie
				Low	Elle n'avait pas remarqué la présence des	voisins
				Moderate	D'après leur expression faciale, les hommes étaient	sévères
				Moderate	Elle a fait percer son	nez
10	English	1	Visual	Moderate	The thieves broke into the	bank
				Moderate	The girl liked to keep her hair short	short
				Low	Harold decided to fix the	lace
				Low	He wanted me to pass him the	jeans
				Moderate	When he heard the joke, he	frowned
				Moderate	Ramona had no choice but to pay the	fee
				Low	He was not a fan of the	chefs
				Moderate	At the park, the children played on the	bars
				Low	Kirk wanted to show us his new	cows
				Moderate	You should not touch the	plants
				Low	I crouched down near the	bush
				Moderate	While on vacation, she gained weight around her	hips
				Low	Gregory dropped the brand-new	bass
				Moderate	Last Monday, the innocent bystander was	hurt
				Low	Jean could not see the	desk
				Moderate	Meditation is excellent for the	brain

			Low	They wondered if this was Susan's	ground
			Low	They danced the polka in the	rain
			Moderate	Despite his effort, he received a failing	grade
			Low	They imagined it would be quite	fresh
			Low	I told him it has been	bought
			Moderate	The teacher made sure to review the	point
			Low	She reminded me to check the	brakes
			Low	Lacey needed a lot of help with the	bread
			Moderate	A sentence must have at least one	word
2		Auditory	Moderate	The salad I had for lunch contained	beans
			Low	He looked at the one that is	black
			Moderate	She touched her head and felt a	bump
			Low	She was Melissa touch her	face
			Moderate	Tracy jumped when she saw the	frog
			Low	My sister went to the store to buy a	fork
			Moderate	In the garden, I used a	hose
			Low	I did not realize this was	fur
			Low	I do not like the look of the	geese
			Moderate	Before the game, he studied the basketball	court
			Moderate	Every Christmas, the children got many	gifts
			Low	I was convinced that Katie was	nine
			Moderate	The exchange student's first language is	French
			Low	The old woman looked at the	bridge
			Low	I wish I had known about the	bear
			Moderate	The friends played a game of	friend
			Low	Amy decided to put down the	boots
			Moderate	He has an excellent sense of	smell
			Low	They looked everywhere for the	book
			Low	Last night, I had a dream about	bugs
			Moderate	I went to the fruit store to buy	grapes
			Low	Rob insisted that it was	ripe
			Moderate	Over the past year, Stan has gotten really	fat
			Moderate	The fruits were delivered in a	crate

		Low	Please pick out the ones that are	blue
3	Audiovisual	Low	They were taking care of the	leak
		Moderate	The dentist told me to	bite
		Low	Lucy thought a lot about that	day
		Moderate	We both agreed on a new meeting	time
		Moderate	The forecast for tomorrow is	clear
		Low	I do not know why she thinks it is	burnt
		Moderate	Jason had to talk to his	dad
		Low	They were staring at my	gums
		Moderate	The clothes on the line are	dry
		Low	She kept all of the	beads
		Low	I know where to put the	bill
		Moderate	Kids love to play in the	dirt
		Low	They search the box for a	bat
		Low	Make sure to keep away from the	dress
		Moderate	He grabbed me by the	hand
		Low	The teenager was very found of her	class
		Low	You should pay attention to the	blood
		Moderate	Bob jumped when he heard the door	close
		Moderate	The child is afraid of the	ghost
		Low	Lily led me through the	corn
		Moderate	She put her things in a	bag
		Low	James told a story about the	brush
		Moderate	I sat down on the	bench
		Moderate	There is a lot of laundry to	fold
		Low	Erin decided to select that	bait
4	Visual	Moderate	He unlocked the door to the	car
		Moderate	The cat fell asleep on my	lap
		Low	You must bring your own	cup
		Low	Todd realized it was too	loose
		Moderate	My best friend's birthday is in	June
		Moderate	Eric could not find the ice	cubes

		Low	I do not know where I go this	dent
		Moderate	The church bells began to	chime
		Low	Nora wanted to throw away the	coat
		Moderate	The store clerk gave me an extra	cent
		Moderate	The ship disappeared into the	fog
		Low	For the past few weeks, Reuben refused to	crawl
		Moderate	At breakfast, Oliver ordered more	jam
		Low	He was ready for anything, even	germs
		Low	Heidi thought that it was	dawn
		Moderate	She was complimented on her	braid
		Low	She looked at the first who was	first
		Low	The young boy did not like this	beef
		Moderate	The flu can leave you feeling	faint
		Low	Christi decided to throw out the	ham
		Low	She had commended on the	beak
		Moderate	Our good friends lived down the	block
		Low	I will be satisfied with	five
		Moderate	His brand-new tuxedo came with a	belt
		Moderate	I was tired an feel asleep on the	bed
5	Auditory	Low	I do not know what to think about that	cat
		Moderate	The team's best player is very	fast
		Moderate	By accident, I broke the	bowl
		Moderate	Yesterday, I lost the tennis	game
		Low	My grandfather is having dinner in	France
		Moderate	This plate of pasta needs more	cheese
		Low	Veronica was busy covering the	scones
		Moderate	The mouse was hard to	catch
		Low	We opted to look at the	moon
		Moderate	I willed my bowl with	fruit
		Moderate	Lionel was bust planting the	crop
		Low	These are the things she wants to	buy
		Moderate	Jack got into an accident and damaged his car's	hood
		Low	Patty was not expecting this	gift

		Moderate	The nervous dog began to	bark
		Moderate	Running is excellent for your	health
		Low	He was looking for the one with the	beard
		Moderate	The pirate ship had a large	flag
		Low	Sarah had missed going to the	farm
		Moderate	My colleague took me out for	brunch
		Low	Beatrix had a great view of the	path
		Low	Yvette spent some time on the	hill
		Low	In then end, it seemed	dull
		Moderate	The child did not make a	mess
		Low	He placed an order for another	pan
6	Audiovisual	Low	Laura's daughter was caught stealing the	cloth
		Moderate	Open the drapes and let in the	breeze
		Low	Talk to Lucie about the	barn
		Moderate	Tomorrow morning, Robert will be painting the	fence
		Low	He selected the girl who could	draw
		Low	They gave their full support to the	guests
		Moderate	When she is thirsty, she likes to drink	beer
		Moderate	She stepped on the glass and cut her	foot
		Low	She expected it to be	brief
		Moderate	Max prefers his coffee to be	dark
		Low	Julie slowly peeked at the	ball
		Low	She received a discount on the	sink
		Moderate	The man tripped and fell off the	cliff
		Moderate	The ducks can be seen in the	creek
		Low	Nous partageons un intérêt pour le	surf
		Moderate	Joan waited for the rain to	fall
		Moderate	In her purse, she kept her	change
		Low	I suspect that he needed to	think
		Moderate	The plants in my office are	dead
		Low	I shone the light on my friend's	blouse
		Low	You should go see Rachel about that	bruise
		Moderate	He looked at the one that is	calm

			Moderate	Last summer, we rented a house by the	beach
			Moderate	He preferred his fish to be	fried
			Low	This man was busy selling	crab
French	1	Visual	Moderate	Ce musicien joue du	jazz
			Low	On lui avait suggéré de les	sécher
			Moderate	Il y avait des créatures fantastiques telles que des	nains
			Low	Tiens-moi au courant à propos du	renard
			Moderate	Dans le cabanon, nous avons rangé notre	brouette
			Moderate	Il a couru dans l'escalier et s'est cassé le	bras
			Low	D'après ta description, il semble être un	verseau
			Moderate	Vendredi soir, je vais voir un	spectacle
			Moderate	Alain est un livreur de	meubles
			Low	Si j'ai bien compris, ils étaient	bons
			Moderate	Son terrain s'étendait sur plusieurs	pieds
			Low	Il me semble assez difficile d'être	neutre
			Low	Robert m'écoute parler à propos de	plantes
			Moderate	Avec la vieillesse, les gens deviennent plus	grincheux
			Low	On m'a dit qu'ils sont habituellement	courtois
			Low	Je ne le pensais pas si	perçant
			Moderate	Dans la jungle, j'ai aperçu un	babouin
			Low	Au loin, elle aperçoit un	bassin
			Moderate	Le magasin de chaussure ne vend pas de	bottes
			Low	Il est généralement difficile de transplanter un	coeur
			Low	Mon frère prend bien soin de sa	jambe
			Moderate	À Jérusalem, Annie a visité plusieurs	temples
			Low	Il n'est pas un grand fan de ce	vin
			Low	Après mûre réflexion, elle était satisfaite de ce	plan
			Moderate	Le jeune enfant croit aux	lutins
	2	Auditory	Moderate	Marie s'entraîne pour améliorer sa	vitesse
			Low	Je n'ai jamais vu de	pianos
			Moderate	Les employés de la compagnie de construction sont en	congé
			Low	Il fait de son mieux pour éviter les	repas

			Moderate	Nous allons enfin rénover notre	cuisine
			Moderate	Le bateau a jeté l'ancre dans la	crique
			Low	N'oublie surtout pas d'ajouter des	patates
			Moderate	J'aime les sports individuels comme la	lutte
			Low	Rachel considérait qu'il était très	luxueux
			Low	Les instructions sont dans le	livret
			Moderate	À chaque mois, on organise une collecte	fonds
			Low	Notre conversation portait sur le	baiser
			Moderate	Elle sera en prison pour un	vol
			Moderate	Éric aime bien les femmes	brunes
			Low	Elle a de la difficulté à dessiner le	coude
			Low	De toute façon, il est	serré
			Moderate	Le nouveau condo était déjà	loué
			Low	Annabelle s'est acheté un nouveau	pinson
			Low	On lui a dit de le faire sans	formules
			Moderate	La souris a rongé un morceau de fromage	cheddar
			Low	Ils s'affairaient à préparer des	bannières
			Moderate	Elle désire voyager mais elle n'a pas de	passeport
			Low	J'ai fini par choisir le plus	laid
			Moderate	Le pamphlet a été distribué aux	piétons
			Low	Il suffit simplement d'ignorer ses	caprices
3		Audiovisual	Moderate	Un énorme incendie ravage la	maison
			Moderate	Pour déjeuner, je mange des	fruits
			Low	On lui dit souvent qu'il est très	calme
			Moderate	Les bambins refusent de mettre leurs	bavettes
			Low	J'ai tenté de les échanger pour des	poires
			Low	Son ami lui a offert du	thon
			Moderate	Ma voiture est stationnée dans la	cour
			Low	Dans la boite, il y a des	fourmis
			Low	Elles ont décidé d'échanger leurs	jupes
			Moderate	Le coffre est fait de	pin
			Moderate	Madeleine s'est absentée à cause d'une	grippe
			Low	Hélène a encore oublié ses	serviettes

			Low	Gaston aime vivre dans le	désordre
			Moderate	Elle va au salon pour une	coiffure
			Low	En fin de compte, je n'ai pas besoin de	bois
			Low	Du coin de l'œil, il voit des	roses
			Moderate	Il active le mécanisme en utilisant une série de	touches
			Low	Je les préfère quand ils sont	cuits
			Low	Ces derniers temps, il y a beaucoup de	pluies
			Moderate	Nous t'achèterons des balles de	tennis
			Moderate	Le ministre a révisé son budget pour la	santé
			Low	Nous venons de recevoir de nouveaux	rubis
			Moderate	J'utilise un raccourci clavier pour	coller
			Moderate	Le fermier a vendu les	vaches
			Low	Elle avait envie d'aller au	bal
4	Visual		Moderate	Mon jardin d'herbes contient du	persil
			Moderate	Les jeunes filles jouaient à la	marelle
			Low	On m'a dit que ces gens sont particulièrement	croyants
			Low	Il m'a expliqué pourquoi elles sont	sensibles
			Moderate	Après ses études, elle est devenue chirurgienne	dentaire
			Moderate	Ce fruit me semble très	frais
			Low	Elle devait prépare une présentation sur les	mouettes
			Low	Elle n'avait jamais eu à s'occuper de	chameaux
			Moderate	La jeune gymnaste est très	svelte
			Moderate	Martin s'est présenté à la station de	train
			Low	Il est possible que ce soit sans	viande
			Moderate	Pour Noël, il a reçu plusieurs	choses
			Low	Elle leur explique pourquoi il faut plus de	richesses
			Moderate	Ils vont au spa pour profiter des	massages
			Moderate	L'écrivain a rédigé un excellent	poème
			Moderate	Au gym, je préfère travailler mes	biceps
			Low	Il ne savait pas quoi faire avec le	chat
			Moderate	À l'Halloween, je me suis déguisé en	zombie
			Low	Il le trouve plus ou moins	facile
			Low	J'aimerais que tu me montre la	droite

		Moderate	Ils vont en vacances au	chalet
		Low	Il n'y avait absolument rien à	voler
		Low	J'espère qu'il ne sera pas trop	long
		Moderate	Au karaté, il a obtenu sa ceinture	jaune
		Low	Il ne s'attendait pas du tout aux	pruneaux
5	Auditory	Moderate	Durant l'entrevue, ses réponses étaient	courtes
		Moderate	L'annonce était affichée sur le	camion
		Low	On donne la priorité au	vélo
		Moderate	Mon sport nautique préféré est le	plongeon
		Moderate	La marmotte a creusé un trou sous la	remise
		Low	Lundi prochain, on me donner un	bandage
		Moderate	Tout bon cowboy se doit d'avoir un	fusil
		Low	Mes parents m'ont offert un toute nouvelle	carafe
		Low	Antoine n'a aucun intérêt pour le	ballon
		Moderate	En jouant dehors, elle a sali son	visage
		Moderate	Sur le bateau de pirates se trouvait un	canon
		Low	Ce matin, je suis plutôt	raide
		Low	Elle m'a aidé à choisir les	crevettes
		Moderate	Les troubadours ont récité des	contes
		Moderate	L'école a engagé une nouvelle professeure de	maths
		Low	Il est difficile de dire qu'elle est	lisible
		Low	On m'a offert un sac rempli de	pois
		Moderate	Parmi les ustensiles, il y avait des	cuillères
		Moderate	L'automobiliste a failli heurter un	cycliste
		Low	Daniel se méfie toujours des	panthères
		Moderate	Elle m'a offert du chocolat	blanc
		Low	Elle se renseigne à propos de la	polka
		Low	Martine a finalement retrouvé son	trésor
		Moderate	Le ballon de soccer a été botté sur le	joueur
		Low	Ils sont à la recherche d'un nouveau	gérant
6	Audiovisual	Low	Christina veut se procurer des	crêpes
		Moderate	La robe de la jeune mariée était en	dentelle

				Low	Je viens tout juste de remplir la	valise
				Moderate	La fourrure de mon chat est	marbrée
				Low	Mon ami s'est informé au sujet des	pommes
				Moderate	La ruche est remplie de	pollen
				Moderate	Le coureur a terminé en	deuxième
				Low	Aujourd'hui, il y a peu de	monde
				Moderate	Les cheveux de Caroline sont	frisés
				Low	Je pense bien qu'ils sont	verts
				Low	Ce n'est pas possible sans	chaloupe
				Moderate	Louis a fabriqué une armoire en bois de	chêne
				Moderate	À la prématernelle, les enfants apprennent les	lettres
				Low	Toute ma famille apprécie la	mer
				Moderate	Le cours d'eau sert d'habitat pour ces	grenouilles
				Moderate	Nous allons faire du camping en	forêt
				Low	Elle contact George pour lui rappeler d'apporter ses	pinces
				Moderate	Les abeilles se dirigent vers la	fleur
				Low	On m'a offert d'acheter les	tableaux
				Moderate	Le roi organisa une cérémonie en l'honneur du	baron
				Moderate	Ma grand-mère aime jouer aux	quilles
				Low	Il y a un problème avec son	foie
				Moderate	Son alarme réveille constamment ses	voisins
				Low	Il leur arrive parfois d'être	sévères
				Low	Je n'avais pas pensé au	nez
11	English	1	Auditory	Moderate	The thieves broke into the	bank
				Moderate	The girl liked to keep her hair short	short
				Low	Harold decided to fix the	lace
				Low	He wanted me to pass him the	jeans
				Moderate	When he heard the joke, he	frowned
				Moderate	Ramona had no choice but to pay the	fee
				Low	He was not a fan of the	chefs
				Moderate	At the park, the children played on the	bars
				Low	Kirk wanted to show us his new	cows

		Moderate	You should not touch the	plants
		Low	I crouched down near the	bush
		Moderate	While on vacation, she gained weight around her	hips
		Low	Gregory dropped the brand-new	bass
		Moderate	Last Monday, the innocent bystander was	hurt
		Low	Jean could not see the	desk
		Moderate	Meditation is excellent for the	brain
		Low	They wondered if this was Susan's	ground
		Low	They danced the polka in the	rain
		Moderate	Despite his effort, he received a failing	grade
		Low	They imagined it would be quite	fresh
		Low	I told him it has been	bought
		Moderate	The teacher made sure to review the	point
		Low	She reminded me to check the	brakes
		Low	Lacey needed a lot of help with the	bread
		Moderate	A sentence must have at least one	word
2	Audiovisual	Moderate	The salad I had for lunch contained	beans
		Low	He looked at the one that is	black
		Moderate	She touched her head and felt a	bump
		Low	She was Melissa touch her	face
		Moderate	Tracy jumped when she saw the	frog
		Low	My sister went to the store to buy a	fork
		Moderate	In the garden, I used a	hose
		Low	I did not realize this was	fur
		Low	I do not like the look of the	geese
		Moderate	Before the game, he studied the basketball	court
		Moderate	Every Christmas, the children got many	gifts
		Low	I was convinced that Katie was	nine
		Moderate	The exchange student's first language is	French
		Low	The old woman looked at the	bridge
		Low	I wish I had known about the	bear
		Moderate	The friends played a game of	friend
		Low	Amy decided to put down the	boots

		Moderate	He has an excellent sense of		smell
		Low	They looked everywhere for the		book
		Low	Last night, I had a dream about		bugs
		Moderate	I went to the fruit store to buy		grapes
		Low	Rob insisted that it was		ripe
		Moderate	Over the past year, Stan has gotten really		fat
		Moderate	The fruits were delivered in a		crate
		Low	Please pick out the ones that are		blue
3	Visual	Low	They were taking care of the		leak
		Moderate	The dentist told me to		bite
		Low	Lucy thought a lot about that		day
		Moderate	We both agreed on a new meeting		time
		Moderate	The forecast for tomorrow is		clear
		Low	I do not know why she thinks it is		burnt
		Moderate	Jason had to talk to his		dad
		Low	They were staring at my		gums
		Moderate	The clothes on the line are		dry
		Low	She kept all of the		beads
		Low	I know where to put the		bill
		Moderate	Kids love to play in the		dirt
		Low	They search the box for a		bat
		Low	Make sure to keep away from the		dress
		Moderate	He grabbed me by the		hand
		Low	The teenager was very found of her		class
		Low	You should pay attention to the		blood
		Moderate	Bob jumped when he heard the door		close
		Moderate	The child is afraid of the		ghost
		Low	Lily led me through the		corn
		Moderate	She put her things in a		bag
		Low	James told a story about the		brush
		Moderate	I sat down on the		bench
		Moderate	There is a lot of laundry to		fold
		Low	Erin decided to select that		bait

262

4	Auditory	Moderate	He unlocked the door to the	car
		Moderate	The cat fell asleep on my	lap
		Low	You must bring your own	cup
		Low	Todd realized it was too	loose
		Moderate	My best friend's birthday is in	June
		Moderate	Eric could not find the ice	cubes
		Low	I do not know where I go this	dent
		Moderate	The church bells began to	chime
		Low	Nora wanted to throw away the	coat
		Moderate	The store clerk gave me an extra	cent
		Moderate	The ship disappeared into the	fog
		Low	For the past few weeks, Reuben refused to	crawl
		Moderate	At breakfast, Oliver ordered more	jam
		Low	He was ready for anything, even	germs
		Low	Heidi thought that it was	dawn
		Moderate	She was complimented on her	braid
		Low	She looked at the first who was	first
		Low	The young boy did not like this	beef
		Moderate	The flu can leave you feeling	faint
		Low	Christi decided to throw out the	ham
		Low	She had commended on the	beak
		Moderate	Our good friends lived down the	block
		Low	I will be satisfied with	five
		Moderate	His brand-new tuxedo came with a	belt
		Moderate	I was tired an feel asleep on the	bed
5	Audiovisual	Low	I do not know what to think about that	cat
		Moderate	The team's best player is very	fast
		Moderate	By accident, I broke the	bowl
		Moderate	Yesterday, I lost the tennis	game
		Low	My grandfather is having dinner in	France
		Moderate	This plate of pasta needs more	cheese
		Low	Veronica was busy covering the	scones

		Moderate	The mouse was hard to	catch
		Low	We opted to look at the	moon
		Moderate	I willed my bowl with	fruit
		Moderate	Lionel was bust planting the	crop
		Low	These are the things she wants to	buy
		Moderate	Jack got into an accident and damaged his car's	hood
		Low	Patty was not expecting this	gift
		Moderate	The nervous dog began to	bark
		Moderate	Running is excellent for your	health
		Low	He was looking for the one with the	beard
		Moderate	The pirate ship had a large	flag
		Low	Sarah had missed going to the	farm
		Moderate	My colleague took me out for	brunch
		Low	Beatrix had a great view of the	path
		Low	Yvette spent some time on the	hill
		Low	In then end, it seemed	dull
		Moderate	The child did not make a	mess
		Low	He placed an order for another	pan
6	Visual	Low	Laura's daughter was caught stealing the	cloth
		Moderate	Open the drapes and let in the	breeze
		Low	Talk to Lucie about the	barn
		Moderate	Tomorrow morning, Robert will be painting the	fence
		Low	He selected the girl who could	draw
		Low	They gave their full support to the	guests
		Moderate	When she is thirsty, she likes to drink	beer
		Moderate	She stepped on the glass and cut her	foot
		Low	She expected it to be	brief
		Moderate	Max prefers his coffee to be	dark
		Low	Julie slowly peeked at the	ball
		Low	She received a discount on the	sink
		Moderate	The man tripped and fell off the	cliff
		Moderate	The ducks can be seen in the	creek
		Low	Nous partageons un intérêt pour le	surf

			Moderate	Joan waited for the rain to	fall
			Moderate	In her purse, she kept her	change
			Low	I suspect that he needed to	think
			Moderate	The plants in my office are	dead
			Low	I shone the light on my friend's	blouse
			Low	You should go see Rachel about that	bruise
			Moderate	He looked at the one that is	calm
			Moderate	Last summer, we rented a house by the	beach
			Moderate	He preferred his fish to be	fried
			Low	This man was busy selling	crab
French	1	Auditory	Moderate	Ce musicien joue du	jazz
			Low	On lui avait suggéré de les	sécher
			Moderate	Il y avait des créatures fantastiques telles que des	nains
			Low	Tiens-moi au courant à propos du	renard
			Moderate	Dans le cabanon, nous avons rangé notre	brouette
			Moderate	Il a couru dans l'escalier et s'est cassé le	bras
			Low	D'après ta description, il semble être un	verseau
			Moderate	Vendredi soir, je vais voir un	spectacle
			Moderate	Alain est un livreur de	meubles
			Low	Si j'ai bien compris, ils étaient	bons
			Moderate	Son terrain s'étendait sur plusieurs	pieds
			Low	Il me semble assez difficile d'être	neutre
			Low	Robert m'écoute parler à propos de	plantes
			Moderate	Avec la vieillesse, les gens deviennent plus	grincheux
			Low	On m'a dit qu'ils sont habituellement	courtois
			Low	Je ne le pensais pas si	perçant
			Moderate	Dans la jungle, j'ai aperçu un	babouin
			Low	Au loin, elle aperçoit un	bassin
			Moderate	Le magasin de chaussure ne vend pas de	bottes
			Low	Il est généralement difficile de transplanter un	coeur
			Low	Mon frère prend bien soin de sa	jambe
			Moderate	À Jérusalem, Annie a visité plusieurs	temples
			Low	Il n'est pas un grand fan de ce	vin

		Low	Après mûre réflexion, elle était satisfaite de ce	plans
		Moderate	Le jeune enfant croit aux	lutins
2	Audiovisual	Moderate	Marie s'entraîne pour améliorer sa	vitesse
		Low	Je n'ai jamais vu de	pianos
		Moderate	Les employés de la compagnie de construction sont en	congé
		Low	Il fait de son mieux pour éviter les	repas
		Moderate	Nous allons enfin rénover notre	cuisine
		Moderate	Le bateau a jeté l'ancre dans la	crique
		Low	N'oublie surtout pas d'ajouter des	patates
		Moderate	J'aime les sports individuels comme la	lutte
		Low	Rachel considérait qu'il était très	luxueux
		Low	Les instructions sont dans le	livret
		Moderate	À chaque mois, on organise une collecte	fonds
		Low	Notre conversation portait sur le	baiser
		Moderate	Elle sera en prison pour un	vol
		Moderate	Éric aime bien les femmes	brunes
		Low	Elle a de la difficulté à dessiner le	coude
		Low	De toute façon, il est	serrés
		Moderate	Le nouveau condo était déjà	loué
		Low	Annabelle s'est acheté un nouveau	pinson
		Low	On lui a dit de le faire sans	formules
		Moderate	La souris a rongé un morceau de fromage	cheddar
		Low	Ils s'affairaient à préparer des	bannières
		Moderate	Elle désire voyager mais elle n'a pas de	passeport
		Low	J'ai fini par choisir le plus	laid
		Moderate	Le pamphlet a été distribué aux	piétons
		Low	Il suffit simplement d'ignorer ses	caprices
3	Visual	Moderate	Un énorme incendie ravage la	maison
		Moderate	Pour déjeuner, je mange des	fruits
		Low	On lui dit souvent qu'il est très	calme
		Moderate	Les bambins refusent de mettre leurs	bavette
		Low	J'ai tenté de les échanger pour des	poires

			Low	Son ami lui a offert du	thon
			Moderate	Ma voiture est stationnée dans la	cour
			Low	Dans la boite, il y a des	fourmis
			Low	Elles ont décidé d'échanger leurs	jupes
			Moderate	Le coffre est fait de	pin
			Moderate	Madeleine s'est absentée à cause d'une	grippe
			Low	Hélène a encore oublié ses	serviettes
			Low	Gaston aime vivre dans le	désordre
			Moderate	Elle va au salon pour une	coiffure
			Low	En fin de compte, je n'ai pas besoin de	bois
			Low	Du coin de l'œil, il voit des	roses
			Moderate	Il active le mécanisme en utilisant une série de	touches
			Low	Je les préfère quand ils sont	cuits
			Low	Ces derniers temps, il y a beaucoup de	pluies
			Moderate	Nous t'achèterons des balles de	tennis
			Moderate	Le ministre a révisé son budget pour la	santé
			Low	Nous venons de recevoir de nouveaux	rubis
			Moderate	J'utilise un raccourci clavier pour	coller
			Moderate	Le fermier a vendu les	vaches
			Low	Elle avait envie d'aller au	bal
4	Auditory		Moderate	Mon jardin d'herbes contient du	persil
			Moderate	Les jeunes filles jouaient à la	marelle
			Low	On m'a dit que ces gens sont particulièrement	croyants
			Low	Il m'a expliqué pourquoi elles sont	sensibles
			Moderate	Après ses études, elle est devenue chirurgienne	dentaire
			Moderate	Ce fruit me semble très	frais
			Low	Elle devait prépare une présentation sur les	mouettes
			Low	Elle n'avait jamais eu à s'occuper de	chameaux
			Moderate	La jeune gymnaste est très	svelte
			Moderate	Martin s'est présenté à la station de	train
			Low	Il est possible que ce soit sans	viande
			Moderate	Pour Noël, il a reçu plusieurs	choses
			Low	Elle leur explique pourquoi il faut plus de	richesses

			Moderate	Ils vont au spa pour profiter des	massages
			Moderate	L'écrivain a rédigé un excellent	poème
			Moderate	Au gym, je préfère travailler mes	biceps
			Low	Il ne savait pas quoi faire avec le	chat
			Moderate	À l'Halloween, je me suis déguisé en	zombie
			Low	Il le trouve plus ou moins	facile
			Low	J'aimerais que tu me montre la	droite
			Moderate	Ils vont en vacances au	chalet
			Low	Il n'y avait absolument rien à	voler
			Low	J'espère qu'il ne sera pas trop	long
			Moderate	Au karaté, il a obtenu sa ceinture	jaune
			Low	Il ne s'attendait pas du tout aux	pruneaux
5	Audiovisual		Moderate	Durant l'entrevue, ses réponses étaient	courtes
			Moderate	L'annonce était affichée sur le	camion
			Low	On donne la priorité au	vélo
			Moderate	Mon sport nautique préféré est le	plongeon
			Moderate	La marmotte a creusé un trou sous la	remise
			Low	Lundi prochain, on me donner un	bandage
			Moderate	Tout bon cowboy se doit d'avoir un	fusil
			Low	Mes parents m'ont offert un toute nouvelle	carafe
			Low	Antoine n'a aucun intérêt pour le	ballon
			Moderate	En jouant dehors, elle a sali son	visage
			Moderate	Sur le bateau de pirates se trouvait un	canon
			Low	Ce matin, je suis plutôt	raides
			Low	Elle m'a aidé à choisir les	crevettes
			Moderate	Les troubadours ont récité des	contes
			Moderate	L'école a engagé une nouvelle professeure de	maths
			Low	Il est difficile de dire qu'elle est	lisible
			Low	On m'a offert un sac rempli de	pois
			Moderate	Parmi les ustensiles, il y avait des	cuillères
			Moderate	L'automobiliste a failli heurter un	cycliste
			Low	Daniel se méfie toujours des	panthères
			Moderate	Elle m'a offert du chocolat	blanc

				Low	Elle se renseigne à propos de la	polka
				Low	Martine a finalement retrouvé son	trésor
				Moderate	Le ballon de soccer a été botté sur le	joueur
				Low	Ils sont à la recherche d'un nouveau	gérant
		6	Visual	Low	Christina veut se procurer des	crêpes
				Moderate	La robe de la jeune mariée était en	dentelle
				Low	Je viens tout juste de remplir la	valise
				Moderate	La fourrure de mon chat est	marbrée
				Low	Mon ami s'est informé au sujet des	pommes
				Moderate	La ruche est remplie de	pollen
				Moderate	Le coureur a terminé en	deuxième
				Low	Aujourd'hui, il y a peu de	monde
				Moderate	Les cheveux de Caroline sont	frisés
				Low	Je pense bien qu'ils sont	verts
				Low	Ce n'est pas possible sans	chaloupe
				Moderate	Louis a fabriqué une armoire en bois de	chêne
				Moderate	À la prématernelle, les enfants apprennent les	lettres
				Low	Toute ma famille apprécie la	mer
				Moderate	Le cours d'eau sert d'habitat pour ces	grenouilles
				Moderate	Nous allons faire du camping en	forêt
				Low	Elle contact George pour lui rappeler d'apporter ses	pince
				Moderate	Les abeilles se dirigent vers la	fleur
				Low	On m'a offert d'acheter les	tableaux
				Moderate	Le roi organisa une cérémonie en l'honneur du	baron
				Moderate	Ma grand-mère aime jouer aux	quilles
				Low	Il y a un problème avec son	foie
				Moderate	Son alarme réveille constamment ses	voisins
				Low	Il leur arrive parfois d'être	sévères
				Low	Je n'avais pas pensé au	nez
12	English	1	Audiovisual	Moderate	The thieves broke into the	bank
				Moderate	The girl liked to keep her hair short	short
				Low	Harold decided to fix the	lace

			Low	He wanted me to pass him the	jeans
			Moderate	When he heard the joke, he	frowned
			Moderate	Ramona had no choice but to pay the	fee
			Low	He was not a fan of the	chefs
			Moderate	At the park, the children played on the	bars
			Low	Kirk wanted to show us his new	cows
			Moderate	You should not touch the	plants
			Low	I crouched down near the	bush
			Moderate	While on vacation, she gained weight around her	hips
			Low	Gregory dropped the brand-new	bass
			Moderate	Last Monday, the innocent bystander was	hurt
			Low	Jean could not see the	desk
			Moderate	Meditation is excellent for the	brain
			Low	They wondered if this was Susan's	ground
			Low	They danced the polka in the	rain
			Moderate	Despite his effort, he received a failing	grade
			Low	They imagined it would be quite	fresh
			Low	I told him it has been	bought
			Moderate	The teacher made sure to review the	point
			Low	She reminded me to check the	brakes
			Low	Lacey needed a lot of help with the	bread
			Moderate	A sentence must have at least one	word
	2	Visual	Moderate	The salad I had for lunch contained	beans
			Low	He looked at the one that is	black
			Moderate	She touched her head and felt a	bump
			Low	She was Melissa touch her	face
			Moderate	Tracy jumped when she saw the	frog
			Low	My sister went to the store to buy a	fork
			Moderate	In the garden, I used a	hose
			Low	I did not realize this was	fur
			Low	I do not like the look of the	geese
			Moderate	Before the game, he studied the basketball	court
			Moderate	Every Christmas, the children got many	gifts

		Low	I was convinced that Katie was	nine
		Moderate	The exchange student's first language is	French
		Low	The old woman looked at the	bridge
		Low	I wish I had known about the	bear
		Moderate	The friends played a game of	friend
		Low	Amy decided to put down the	boots
		Moderate	He has an excellent sense of	smell
		Low	They looked everywhere for the	book
		Low	Last night, I had a dream about	bugs
		Moderate	I went to the fruit store to buy	grapes
		Low	Rob insisted that it was	ripe
		Moderate	Over the past year, Stan has gotten really	fat
		Moderate	The fruits were delivered in a	crate
		Low	Please pick out the ones that are	blue
3	Auditory	Low	They were taking care of the	leak
		Moderate	The dentist told me to	bite
		Low	Lucy thought a lot about that	day
		Moderate	We both agreed on a new meeting	time
		Moderate	The forecast for tomorrow is	clear
		Low	I do not know why she thinks it is	burnt
		Moderate	Jason had to talk to his	dad
		Low	They were staring at my	gums
		Moderate	The clothes on the line are	dry
		Low	She kept all of the	beads
		Low	I know where to put the	bill
		Moderate	Kids love to play in the	dirt
		Low	They search the box for a	bat
		Low	Make sure to keep away from the	dress
		Moderate	He grabbed me by the	hand
		Low	The teenager was very found of her	class
		Low	You should pay attention to the	blood
		Moderate	Bob jumped when he heard the door	close
		Moderate	The child is afraid of the	ghost

		Low	Lily led me through the	corn
		Moderate	She put her things in a	bag
		Low	James told a story about the	brush
		Moderate	I sat down on the	bench
		Moderate	There is a lot of laundry to	fold
		Low	Erin decided to select that	bait
4	Audiovisual	Moderate	He unlocked the door to the	car
		Moderate	The cat fell asleep on my	lap
		Low	You must bring your own	cup
		Low	Todd realized it was too	loose
		Moderate	My best friend's birthday is in	June
		Moderate	Eric could not find the ice	cubes
		Low	I do not know where I go this	dent
		Moderate	The church bells began to	chime
		Low	Nora wanted to throw away the	coat
		Moderate	The store clerk gave me an extra	cent
		Moderate	The ship disappeared into the	fog
		Low	For the past few weeks, Reuben refused to	crawl
		Moderate	At breakfast, Oliver ordered more	jam
		Low	He was ready for anything, even	germs
		Low	Heidi thought that it was	dawn
		Moderate	She was complimented on her	braid
		Low	She looked at the first who was	first
		Low	The young boy did not like this	beef
		Moderate	The flu can leave you feeling	faint
		Low	Christi decided to throw out the	ham
		Low	She had commended on the	beak
		Moderate	Our good friends lived down the	block
		Low	I will be satisfied with	five
		Moderate	His brand-new tuxedo came with a	belt
		Moderate	I was tired an feel asleep on the	bed
5	Visual	Low	I do not know what to think about that	cat

		Moderate	The team's best player is very	fast
		Moderate	By accident, I broke the	bowl
		Moderate	Yesterday, I lost the tennis	game
		Low	My grandfather is having dinner in	France
		Moderate	This plate of pasta needs more	cheese
		Low	Veronica was busy covering the	scones
		Moderate	The mouse was hard to	catch
		Low	We opted to look at the	moon
		Moderate	I willed my bowl with	fruit
		Moderate	Lionel was bust planting the	crop
		Low	These are the things she wants to	buy
		Moderate	Jack got into an accident and damaged his car's	hood
		Low	Patty was not expecting this	gift
		Moderate	The nervous dog began to	bark
		Moderate	Running is excellent for your	health
		Low	He was looking for the one with the	beard
		Moderate	The pirate ship had a large	flag
		Low	Sarah had missed going to the	farm
		Moderate	My colleague took me out for	brunch
		Low	Beatrix had a great view of the	path
		Low	Yvette spent some time on the	hill
		Low	In then end, it seemed	dull
		Moderate	The child did not make a	mess
		Low	He placed an order for another	pan
6	Auditory	Low	Laura's daughter was caught stealing the	cloth
		Moderate	Open the drapes and let in the	breeze
		Low	Talk to Lucie about the	barn
		Moderate	Tomorrow morning, Robert will be painting the	fence
		Low	He selected the girl who could	draw
		Low	They gave their full support to the	guests
		Moderate	When she is thirsty, she likes to drink	beer
		Moderate	She stepped on the glass and cut her	foot
		Low	She expected it to be	brief

			Moderate	Max prefers his coffee to be	dark
			Low	Julie slowly peeked at the	ball
			Low	She received a discount on the	sink
			Moderate	The man tripped and fell off the	cliff
			Moderate	The ducks can be seen in the	creek
			Low	Nous partageons un intérêt pour le	surf
			Moderate	Joan waited for the rain to	fall
			Moderate	In her purse, she kept her	change
			Low	I suspect that he needed to	think
			Moderate	The plants in my office are	dead
			Low	I shone the light on my friend's	blouse
			Low	You should go see Rachel about that	bruise
			Moderate	He looked at the one that is	calm
			Moderate	Last summer, we rented a house by the	beach
			Moderate	He preferred his fish to be	fried
			Low	This man was busy selling	crab
French	1	Audiovisual	Moderate	Ce musicien joue du	jazz
			Low	On lui avait suggéré de les	sécher
			Moderate	Il y avait des créatures fantastiques telles que des	nains
			Low	Tiens-moi au courant à propos du	renard
			Moderate	Dans le cabanon, nous avons rangé notre	brouette
			Moderate	Il a couru dans l'escalier et s'est cassé le	bras
			Low	D'après ta description, il semble être un	verseau
			Moderate	Vendredi soir, je vais voir un	spectacle
			Moderate	Alain est un livreur de	meubles
			Low	Si j'ai bien compris, ils étaient	bons
			Moderate	Son terrain s'étendait sur plusieurs	pieds
			Low	Il me semble assez difficile d'être	neutre
			Low	Robert m'écoute parler à propos de	plantes
			Moderate	Avec la vieillesse, les gens deviennent plus	grincheux
			Low	On m'a dit qu'ils sont habituellement	courtois
			Low	Je ne le pensais pas si	perçant
			Moderate	Dans la jungle, j'ai aperçu un	babouin

			Low	Au loin, elle aperçoit un	bassin
			Moderate	Le magasin de chaussure ne vend pas de	bottes
			Low	Il est généralement difficile de transplanter un	coeur
			Low	Mon frère prend bien soin de sa	jambe
			Moderate	À Jérusalem, Annie a visité plusieurs	temples
			Low	Il n'est pas un grand fan de ce	vin
			Low	Après mûre réflexion, elle était satisfaite de ce	plans
			Moderate	Le jeune enfant croit aux	lutins
2	Visual		Moderate	Marie s'entraîne pour améliorer sa	vitesse
			Low	Je n'ai jamais vu de	pianos
			Moderate	Les employés de la compagnie de construction sont en	congé
			Low	Il fait de son mieux pour éviter les	repas
			Moderate	Nous allons enfin rénover notre	cuisine
			Moderate	Le bateau a jeté l'ancre dans la	crique
			Low	N'oublie surtout pas d'ajouter des	patates
			Moderate	J'aime les sports individuels comme la	lutte
			Low	Rachel considérait qu'il était très	luxueux
			Low	Les instructions sont dans le	livret
			Moderate	À chaque mois, on organise une collecte	fonds
			Low	Notre conversation portait sur le	baiser
			Moderate	Elle sera en prison pour un	vol
			Moderate	Éric aime bien les femmes	brunes
			Low	Elle a de la difficulté à dessiner le	coude
			Low	De toute façon, il est	serrés
			Moderate	Le nouveau condo était déjà	loué
			Low	Annabelle s'est acheté un nouveau	pinson
			Low	On lui a dit de le faire sans	formules
			Moderate	La souris a rongé un morceau de fromage	cheddar
			Low	Ils s'affairaient à préparer des	bannières
			Moderate	Elle désire voyager mais elle n'a pas de	passeport
			Low	J'ai fini par choisir le plus	laid
			Moderate	Le pamphlet a été distribué aux	piétons
			Low	Il suffit simplement d'ignorer ses	caprices

3	Auditory	Moderate	Un énorme incendie ravage la	maison
		Moderate	Pour déjeuner, je mange des	fruits
		Low	On lui dit souvent qu'il est très	calme
		Moderate	Les bambins refusent de mettre leurs	bavette
		Low	J'ai tenté de les échanger pour des	poires
		Low	Son ami lui a offert du	thon
		Moderate	Ma voiture est stationnée dans la	cour
		Low	Dans la boite, il y a des	fourmis
		Low	Elles ont décidé d'échanger leurs	jupes
		Moderate	Le coffre est fait de	pin
		Moderate	Madeleine s'est absentée à cause d'une	grippe
		Low	Hélène a encore oublié ses	serviettes
		Low	Gaston aime vivre dans le	désordre
		Moderate	Elle va au salon pour une	coiffure
		Low	En fin de compte, je n'ai pas besoin de	bois
		Low	Du coin de l'œil, il voit des	roses
		Moderate	Il active le mécanisme en utilisant une série de	touches
		Low	Je les préfère quand ils sont	cuits
		Low	Ces derniers temps, il y a beaucoup de	pluies
		Moderate	Nous t'achèterons des balles de	tennis
		Moderate	Le ministre a révisé son budget pour la	santé
		Low	Nous venons de recevoir de nouveaux	rubis
		Moderate	J'utilise un raccourci clavier pour	coller
		Moderate	Le fermier a vendu les	vaches
		Low	Elle avait envie d'aller au	bal
4	Audiovisual	Moderate	Mon jardin d'herbes contient du	persil
		Moderate	Les jeunes filles jouaient à la	marelle
		Low	On m'a dit que ces gens sont particulièrement	croyants
		Low	Il m'a expliqué pourquoi elles sont	sensibles
		Moderate	Après ses études, elle est devenue chirurgienne	dentaire
		Moderate	Ce fruit me semble très	frais
		Low	Elle devait prépare une présentation sur les	mouettes

		Low	Elle n'avait jamais eu à s'occuper de	chameaux
		Moderate	La jeune gymnaste est très	svelte
		Moderate	Martin s'est présenté à la station de	train
		Low	Il est possible que ce soit sans	viande
		Moderate	Pour Noël, il a reçu plusieurs	choses
		Low	Elle leur explique pourquoi il faut plus de	richesses
		Moderate	Ils vont au spa pour profiter des	massages
		Moderate	L'écrivain a rédigé un excellent	poème
		Moderate	Au gym, je préfère travailler mes	biceps
		Low	Il ne savait pas quoi faire avec le	chat
		Moderate	À l'Halloween, je me suis déguisé en	zombie
		Low	Il le trouve plus ou moins	facile
		Low	J'aimerais que tu me montre la	droite
		Moderate	Ils vont en vacances au	chalet
		Low	Il n'y avait absolument rien à	voler
		Low	J'espère qu'il ne sera pas trop	long
		Moderate	Au karaté, il a obtenu sa ceinture	jaune
		Low	Il ne s'attendait pas du tout aux	pruneaux
5	Visual	Moderate	Durant l'entrevue, ses réponses étaient	courtes
		Moderate	L'annonce était affichée sur le	camion
		Low	On donne la priorité au	vélo
		Moderate	Mon sport nautique préféré est le	plongeon
		Moderate	La marmotte a creusé un trou sous la	remise
		Low	Lundi prochain, on me donner un	bandage
		Moderate	Tout bon cowboy se doit d'avoir un	fusil
		Low	Mes parents m'ont offert un toute nouvelle	carafe
		Low	Antoine n'a aucun intérêt pour le	ballon
		Moderate	En jouant dehors, elle a sali son	visage
		Moderate	Sur le bateau de pirates se trouvait un	canon
		Low	Ce matin, je suis plutôt	raides
		Low	Elle m'a aidé à choisir les	crevettes
		Moderate	Les troubadours ont récité des	contes
		Moderate	L'école a engagé une nouvelle professeure de	maths

		Low	Il est difficile de dire qu'elle est	lisible
		Low	On m'a offert un sac rempli de	pois
		Moderate	Parmi les ustensiles, il y avait des	cuillères
		Moderate	L'automobiliste a failli heurter un	cycliste
		Low	Daniel se méfie toujours des	panthères
		Moderate	Elle m'a offert du chocolat	blanc
		Low	Elle se renseigne à propos de la	polka
		Low	Martine a finalement retrouvé son	trésor
		Moderate	Le ballon de soccer a été botté sur le	joueur
		Low	Ils sont à la recherche d'un nouveau	gérant
6	Auditory	Low	Christina veut se procurer des	crêpes
		Moderate	La robe de la jeune mariée était en	dentelle
		Low	Je viens tout juste de remplir la	valise
		Moderate	La fourrure de mon chat est	marbrée
		Low	Mon ami s'est informé au sujet des	pommes
		Moderate	La ruche est remplie de	pollen
		Moderate	Le coureur a terminé en	deuxième
		Low	Aujourd'hui, il y a peu de	monde
		Moderate	Les cheveux de Caroline sont	frisés
		Low	Je pense bien qu'ils sont	verts
		Low	Ce n'est pas possible sans	chaloupe
		Moderate	Louis a fabriqué une armoire en bois de	chêne
		Moderate	À la prématernelle, les enfants apprennent les	lettres
		Low	Toute ma famille apprécie la	mer
		Moderate	Le cours d'eau sert d'habitat pour ces	grenouilles
		Moderate	Nous allons faire du camping en	forêt
		Low	Elle contact George pour lui rappeler d'apporter ses	pince
		Moderate	Les abeilles se dirigent vers la	fleur
		Low	On m'a offert d'acheter les	tableaux
		Moderate	Le roi organisa une cérémonie en l'honneur du	baron
		Moderate	Ma grand-mère aime jouer aux	quilles
		Low	Il y a un problème avec son	foie
		Moderate	Son alarme réveille constamment ses	voisins

				Low	Il leur arrive parfois d'être	sévères
				Low	Je n'avais pas pensé au	nez
13	English	1	Visual	Low	She always remembered that special	touch
				Low	Vince insisted that we buy this	stool
				Moderate	I want to pain the table	white
				Low	I am not sure what to do about this	truck
				Moderate	I saw the animals at the	zoo
				Low	The two of them disagreed on the	price
				Low	Margaret gave away all of the	nuts
				Moderate	My car has a new	scratch
				Low	Last weekend, there was no	wind
				Moderate	The young child is just learning to	walk
				Low	She tested to make sure it was	real
				Moderate	When I am at the beach, I like to	tan
				Low	Yesterday, Betty took a look at my	wrist
				Moderate	Behind the counter, the butcher was slicing the	roast
				Low	She did not want them	poached
				Moderate	Kids can start school at age	six
				Low	I made sure it was	warm
				Moderate	It was cold, so he put on his	scarf
				Low	Andrew had trouble locating his	wife
				Low	I suspect that he needed to	nap
				Moderate	I just threw the dog a	treat
				Moderate	Michael told me his favourite seafood is	shrimp
				Low	She was complimented on her	net
				Moderate	We walk our dogs each day at	noon
				Moderate	The mechanic looked at the car's	tires
		2	Auditory	Low	Donald looked everywhere for his	spouse
				Moderate	Jill cleaned up the dirt with a	rag
				Moderate	The friends played a game of	pool
				Low	Roxane had to deal with the	sand

		Moderate	The family is planning a trip to	Spain
		Low	Barry complimented us on our	trap
		Moderate	I love to look up at the	stars
		Low	He tried to put away the	phone
		Moderate	He poured his beverage into a	mug
		Low	He was secretive about the	skates
		Low	I asked Martin for his	stake
		Moderate	Every day, I begin work at	twelve
		Moderate	The fruit I just bought smells really	good
		Low	He implied that I was very	tall
		Low	I am not sure how to use this	verb
		Moderate	This restaurant has great	wine
		Low	Tomorrow morning, Robert with be painting the	walls
		Low	Jordan said that it was	sauce
		Low	Please stay away from the	roof
		Moderate	In his spare time, Owen wrote a	poem
		Low	The cat fell asleep on my	seat
		Moderate	My hat is made of	wool
		Low	He looked at the one that is	wide
		Moderate	The book is resting on top of the	shelf
		Moderate	Every day, he grooms his	pets
3	Audiovisual	Low	Scott was planning to work on his	waist
		Moderate	The weather forecast predicted there would be	snow
		Moderate	The vet examined the bird's	wings
		Low	The pirate ship had a large	sail
		Moderate	The shoes have a broken	strap
		Moderate	They gave their full support to the	queen
		Low	The young lady needed a	chest
		Moderate	During the fight, I was punched in the	nose
		Low	Everyone hoped she would not	cease
		Moderate	Mrs. Smith has a fear of	snakes
		Moderate	He dug a large hole in the	yard
		Low	He was not well prepared for the	night

		Low	The child did not make a	sound
		Moderate	That bakery makes very good	pie
		Low	She had just seen the other	tree
		Low	Anna was talking about that awful	shake
		Moderate	This year, the farmer's main crop is	wheat
		Low	Myriam did not expect the	toys
		Moderate	Shirley bought pants that are too	tight
		Low	Be careful that you do not let it	slam
		Low	You should not touch the	worms
		Moderate	Our last meeting was very	sad
		Low	She tried her best to control the	team
		Moderate	Before leaving, he put on a pair of	slacks
		Low	She was thinking of adding	toast
4	Visual	Low	Johnny and his friends laughed at the	toll
		Moderate	Jessy and her friend walked up the	street
		Moderate	In the mail, I received a	cheque
		Low	I told you about that	vault
		Low	She checked to make sure it was	wet
		Low	I pressed Doris about the	test
		Moderate	At the clinic, the doctor checked my	wound
		Moderate	I looked at they sky and saw the	plane
		Low	We need to replace this	floor
		Low	He asked me to repair the	wheel
		Moderate	The racing team came in	third
		Moderate	In the yard, she trims the	lawn
		Low	She was told to take the	van
		Moderate	The condo that John wanted was already	sold
		Low	Every year, Ashley organizes the	set
		Moderate	She went to prison for a	year
		Moderate	Most days, I take the bus to	work
		Low	They could not see the	pond
		Moderate	The colour of her eyes is	green
		Low	Trudy's brother was examining the	ridge

		Moderate	She asked the tailor to fix her	skirt
		Low	According to Hank, she had been	robbed
		Moderate	The injury left a very large	scar
		Low	The curious boy explored the	road
		Moderate	The dentist carefully examined my	teeth
5	Auditory	Low	He stated that it was	tied
		Moderate	He cooked the vegetables in the	wok
		Low	He was not aware of the	plums
		Low	The group provided all of the	soup
		Moderate	These are the stocks I want to	trade
		Low	Carol tried her best to hide her	score
		Moderate	The skier lost one of his	skis
		Low	Please do not touch my	toe
		Moderate	I heard that musician play the	flute
		Moderate	The necklace is made of	pearls
		Low	They had to clean up the	milk
		Moderate	The baseball player bought a new	mitt
		Moderate	The cake on the counter is very	stale
		Low	In reality, she did not feel	weak
		Moderate	She broiled the ham until it was	cooked
		Low	He decided to give away this	vest
		Moderate	In the woods, the hiker saw a	moose
		Low	She advised us on his	lungs
		Low	The city council purchased the	swings
		Moderate	Every morning, we jog along the	trail
		Low	Violet gave me back the	jar
		Moderate	She is very creative and loves to	sculpt
		Moderate	She styled her hair with a	comb
		Low	The majority of them were	thin
		Moderate	Yesterday, my dog ran after a	man
6	Audiovisual	Low	Milton was about to pick up the	toad

			Low	The young man mostly loved her	soul
			Moderate	The exterminator took care of the	mice
			Low	Teresa thanked me for the	lunch
			Moderate	I called a plumber to repair the	valve
			Low	I was confused about the	place
			Moderate	The exchange student's first language is	Greek
			Low	He bent over to pick up the	dime
			Moderate	She put on a clean	shirt
			Low	She was not sure if he really	smiled
			Low	The room had many things to	wash
			Moderate	Set the table with another	spoon
			Low	I was ready to see the	sea
			Moderate	Last night's party was really	wild
			Moderate	The horse was let into the	stall
			Low	Dale built the cabin around	May
			Moderate	She was learning how to bake	rolls
			Moderate	The farmer tended to his	sheep
			Low	I had a vivid dream about a	witch
			Moderate	My boyfriend gave me a	rose
			Low	I am not sure why it is so	strong
			Moderate	The young fisherman forgot his	rod
			Moderate	I spent all morning scrubbing the bathroom	tub
			Low	I have been told to	spit
			Moderate	The main course consisted of	pork
French	1	Visual	Low	Finalement, je me suis retrouvé au	camping
			Moderate	Les dents de Marie sont	cariées
			Low	Robert m'écoute parler à propos de	gazon
			Moderate	Ce restaurant est reconnu pour son	chef
			Low	Mon amie Maryse ne manque jamais de	cerfeuil
			Low	Je crois qu'il reste encore plusieurs	mètres
			Moderate	Il y a des canards dans ce	ruisseau
			Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	baseball

			Low	Je n'avais jamais entendu ces	comptines
			Moderate	Elle utilise le robinet pour remplir sa	gourde
			Moderate	Les instructions sont dans le	manuel
			Low	Tout le monde observe attentivement le	poignet
			Moderate	Vendredi soir, je vais voir un	groupe
			Moderate	Elle fait bouillir de l'eau pour cuire des	pâtes
			Low	Elle n'avait pas anticipé la présence du	mât
			Moderate	Ce fruit me semble très	juteux
			Moderate	Elle suit une diète sans	sel
			Low	Il nous parlait de ses nouveaux	chevaux
			Low	Il y en a tout plein à	copier
			Low	La banderole est en forme de	vampire
			Moderate	Lisa préfère les légumes	sautés
			Low	Nous avons reçu un chargement de	satin
			Moderate	Son nouvel emploi est très	prisé
			Low	On lui a demandé de s'occuper de son	gilet
			Moderate	Ses fleurs préférées sont les	lilas
2	Auditory		Low	Elle croit qu'elle a perdu son	visa
			Moderate	Ma danse préférée est la	salsa
			Low	J'ai vu qu'elle est pleine de	larves
			Moderate	L'artiste n'arrive pas à vendre ses	sculptures
			Low	Je me concentre sur mes	triceps
			Moderate	Le cuisinier nous a préparé un repas	somptueux
			Low	Cette fois, elle se promenait sans	couche
			Moderate	Avant de sortir, elle a enfilé une	veste
			Low	On m'a demandé d'aller vers la	ruelle
			Moderate	Elle a fait percer son	sourcil
			Moderate	Je trouve son écriture très	brouillonne
			Low	On m'a demandé de créer une illustration contenant des	trolls
			Moderate	Suite à ma blessure, l'infirmière m'a donné un	vaccin
			Moderate	Son anneau est orné d'un	zircon
			Low	Tiens-toi à l'écart de ces	boutons

			Moderate	La maison est faite en	brique
			Low	Je me demande s'il y aura du	blues
			Moderate	Parmi les fruits secs, je préfère les	raisins
			Moderate	La récolte fut détruite par une infestation de	rats
			Low	Nous avons décidé d'ignorer les	cygnes
			Moderate	Les nomades du Sahara sont entourés des	cactus
			Low	Il préférait de loin le	troisième
			Low	Elle pense beaucoup au dernier	jour
			Moderate	Le nouveau condo était déjà	pris
			Low	Nous partageons un intérêt pour le	surf
3		Audiovisual	Low	On m'a invité à essayer la	voile
			Moderate	Les billets pour l'opéra étaient	chers
			Moderate	Les changements climatiques ont provoqué des	tornades
			Low	Elle a décidé de se payer une	coupe
			Low	Elle n'avait pas remarqué la présence des	colocs
			Moderate	Au brunch, Catherine a commandé des	gauffres
			Low	L'annonce était affichée sur le	panneau
			Moderate	La vedette se plaint lorsqu'on ignore ses	désirs
			Low	Elle est experte dans le domaine	plastique
			Moderate	Marie s'entraîne pour améliorer sa	force
			Moderate	L'homme d'affaires voulait amasser plus de	sous
			Low	J'ai oublié de ranger la	tondeuse
			Moderate	Je me rends au travail en	taxi
			Moderate	Il y a beaucoup de linge à	plier
			Low	Elles se dirigent vers la	poubelle
			Moderate	En temps de crise, il est difficile d'être	serein
			Low	Nous avons plusieurs projets pour notre	salon
			Low	Elle ne savait pas comment confectionner des	bottines
			Moderate	Le vétérinaire a examiné le	lapin
			Moderate	Ma voiture vient de se faire	cirer
			Low	Il n'avait aucun doute qu'elle était	soyeuse
			Low	Elle m'a passé un morceau de	bouleau
			Moderate	Dans la forêt tropicale, on se méfie des	jaguars

			Low	De toute façon, il est	grand
			Moderate	Michelle a surprit Jean en lui donnant un	calin
4	Visual		Moderate	Au supermarché, il y avait peu de	choix
			Moderate	Ce nid d'oiseau appartient à un	merle
			Low	Ces gens n'ont toujours pas eu de	relâche
			Moderate	Après cet exercice, mes jambes sont	souples
			Low	Il nous faut plus de dons	dons
			Moderate	Le magasin de musique vend des	guitares
			Low	On ne lui avait pas donné de	pizza
			Low	Ils sont à la recherche d'un nouveau	livreur
			Moderate	La fille trouvait le garçon très	beau
			Low	Paul a vu beaucoup de	personnes
			Low	J'ai tenté de les échanger pour des	melons
			Moderate	L'été, j'aime profiter de la	plage
			Moderate	Éric pense que l'hiver prochain sera	rude
			Low	J'espère bien pouvoir profiter des	saunas
			Moderate	Il est généralement difficile de transplanter un	rein
			Low	Mon frère a décidé d'abandonner le	ping-pong
			Moderate	Le poissonnier avait de bons filets de	saumon
			Low	Tu dois faire attention au	trottoir
			Moderate	Le garçon avait des yeux	marrons
			Low	Il m'a montré comment	lasso
			Moderate	Après mûre réflexion, elle était satisfaite de ce	service
			Low	J'essaies de les rendre un peu moins	cassants
			Moderate	Les membres de la congrégation sont très	fidèles
			Low	Elle devait préparer une présentation sur les	méduses
			Low	Richard est nouvellement responsable du	métro
5	Auditory		Moderate	L'animal laissa échapper un cri	strident
			Moderate	Dans les bois, Jacques a aperçu un	cerf
			Low	Nous avons eu la chance de voir plusieurs	chapelles
			Low	Depuis toujours, Simon s'intéresse au	français
			Moderate	Mets tes vêtements dans la	sécheuse

			Low	Elle n'arrivait pas à retrouver les	dames
			Moderate	Dans mon couscous, je mets des	tomates
			Moderate	Claire portait sa plus belle robe pour le	gala
			Low	Elles se préparent à nous aider avec la	chaussée
			Low	Les enfants n'ont pas envie de	céréales
			Moderate	Nous avons traversé le lac en	kayak
			Moderate	Veuillez-vous tourner vers la	sortie
			Low	Notre objectif est de le distribuer aux	passants
			Low	Je crois avoir besoin de plus de	cèdre
			Moderate	Au karaté, il a obtenu sa ceinture	mauve
			Low	Il est en train de se prépare pour la	campagne
			Moderate	En creusant, j'ai trouvé un	fossile
			Low	Mathilde a développé un intérêt pour la	défense
			Moderate	Pendant le vol, il y a eu plusieurs	secousses
			Low	Ils s'apprêtent à apprendre les	couleurs
			Moderate	En mathématiques, les élèves utilisent des	compas
			Low	On ne sait jamais où trouver les	couteaux
			Low	Je suis enfin débarrassé de cette	migraine
			Moderate	Parmi les fruits de mer, j'adore les	pétoncles
			Low	On lui a demandé d'être moins	prudents
6	Audiovisual		Moderate	J'ai une douleur à la	cheville
			Low	Il n'avait pas prédit croiser un	toucan
			Moderate	Pendant le procès, le juge me semblait	biaisé
			Low	On lui a dit de se méfier des	monstres
			Low	Je tente de m'habituer à cette	savane
			Moderate	Mon ami a préparé une tarte aux	bleuets
			Low	Il y a quelques années, toutes mes amies étaient	rousses
			Low	On m'a dit de bonnes choses à propos du	sonnet
			Moderate	À la quincaillerie, j'ai acheté une	soudeuse
			Moderate	D'après leur expression faciale, les hommes étaient	fâchés
			Low	Sur sa trajectoire se trouvait un	gardien
			Moderate	Son signe du Zodiaque est le	taureau
			Low	Ils s'assurent de bien suivre le	prince

				Level	Sentence	Word
				Moderate	Les manifestants brandissaient des	drapeaux
				Low	Ils ont décidé de visiter la	calanque
				Moderate	La chambre d'Henri est en	bordel
				Low	Le paquet contenait beaucoup de	brie
				Low	Elle m'a offert celui qui est	belge
				Moderate	Dans le bus ce matin, les gens étaient	frustrés
				Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	lunettes
				Low	J'ai plusieurs souvenirs à propos de la	cachette
				Moderate	Depuis ce matin, j'ai mal au	ventre
				Low	Mon ami souhaite être plus	flexible
				Moderate	Je me suis blessé au	doigt
				Low	On me demande souvent si elles sont	fausses
14	English	1	Auditory	Low	She always remembered that special	touch
				Low	Vince insisted that we buy this	stool
				Moderate	I want to pain the table	white
				Low	I am not sure what to do about this	truck
				Moderate	I saw the animals at the	zoo
				Low	The two of them disagreed on the	price
				Low	Margaret gave away all of the	nuts
				Moderate	My car has a new	scratch
				Low	Last weekend, there was no	wind
				Moderate	The young child is just learning to	walk
				Low	She tested to make sure it was	real
				Moderate	When I am at the beach, I like to	tan
				Low	Yesterday, Betty took a look at my	wrist
				Moderate	Behind the counter, the butcher was slicing the	roast
				Low	She did not want them	poached
				Moderate	Kids can start school at age	six
				Low	I made sure it was	warm
				Moderate	It was cold, so he put on his	scarf
				Low	Andrew had trouble locating his	wife
				Low	I suspect that he needed to	nap

		Moderate	I just threw the dog a	treat
		Moderate	Michael told me his favourite seafood is	shrimp
		Low	She was complimented on her	net
		Moderate	We walk our dogs each day at	noon
		Moderate	The mechanic looked at the car's	tires
2	Audiovisual	Low	Donald looked everywhere for his	spouse
		Moderate	Jill cleaned up the dirt with a	rag
		Moderate	The friends played a game of	pool
		Low	Roxane had to deal with the	sand
		Moderate	The family is planning a trip to	Spain
		Low	Barry complimented us on our	trap
		Moderate	I love to look up at the	stars
		Low	He tried to put away the	phone
		Moderate	He poured his beverage into a	mug
		Low	He was secretive about the	skates
		Low	I asked Martin for his	stake
		Moderate	Every day, I begin work at	twelve
		Moderate	The fruit I just bought smells really	good
		Low	He implied that I was very	tall
		Low	I am not sure how to use this	verb
		Moderate	This restaurant has great	wine
		Low	Tomorrow morning, Robert with be painting the	walls
		Low	Jordan said that it was	sauce
		Low	Please stay away from the	roof
		Moderate	In his spare time, Owen wrote a	poem
		Low	The cat fell asleep on my	seat
		Moderate	My hat is made of	wool
		Low	He looked at the one that is	wide
		Moderate	The book is resting on top of the	shelf
		Moderate	Every day, he grooms his	pets
3	Visual	Low	Scott was planning to work on his	waist
		Moderate	The weather forecast predicted there would be	snow

			Moderate	The vet examined the bird's	wings
			Low	The pirate ship had a large	sail
			Moderate	The shoes have a broken	strap
			Moderate	They gave their full support to the	queen
			Low	The young lady needed a	chest
			Moderate	During the fight, I was punched in the	nose
			Low	Everyone hoped she would not	cease
			Moderate	Mrs. Smith has a fear of	snakes
			Moderate	He dug a large hole in the	yard
			Low	He was not well prepared for the	night
			Low	The child did not make a	sound
			Moderate	That bakery makes very good	pie
			Low	She had just seen the other	tree
			Low	Anna was talking about that awful	shake
			Moderate	This year, the farmer's main crop is	wheat
			Low	Myriam did not expect the	toys
			Moderate	Shirley bought pants that are too	tight
			Low	Be careful that you do not let it	slam
			Low	You should not touch the	worms
			Moderate	Our last meeting was very	sad
			Low	She tried her best to control the	team
			Moderate	Before leaving, he put on a pair of	slacks
			Low	She was thinking of adding	toast
4	Auditory		Low	Johnny and his friends laughed at the	toll
			Moderate	Jessy and her friend walked up the	street
			Moderate	In the mail, I received a	cheque
			Low	I told you about that	vault
			Low	She checked to make sure it was	wet
			Low	I pressed Doris about the	test
			Moderate	At the clinic, the doctor checked my	wound
			Moderate	I looked at they sky and saw the	plane
			Low	We need to replace this	floor
			Low	He asked me to repair the	wheel

		Moderate	The racing team came in	third
		Moderate	In the yard, she trims the	lawn
		Low	She was told to take the	van
		Moderate	The condo that John wanted was already	sold
		Low	Every year, Ashley organizes the	set
		Moderate	She went to prison for a	year
		Moderate	Most days, I take the bus to	work
		Low	They could not see the	pond
		Moderate	The colour of her eyes is	green
		Low	Trudy's brother was examining the	ridge
		Moderate	She asked the tailor to fix her	skirt
		Low	According to Hank, she had been	robbed
		Moderate	The injury left a very large	scar
		Low	The curious boy explored the	road
		Moderate	The dentist carefully examined my	teeth
5	Audiovisual	Low	He stated that it was	tied
		Moderate	He cooked the vegetables in the	wok
		Low	He was not aware of the	plums
		Low	The group provided all of the	soup
		Moderate	These are the stocks I want to	trade
		Low	Carol tried her best to hide her	score
		Moderate	The skier lost one of his	skis
		Low	Please do not touch my	toe
		Moderate	I heard that musician play the	flute
		Moderate	The necklace is made of	pearls
		Low	They had to clean up the	milk
		Moderate	The baseball player bought a new	mitt
		Moderate	The cake on the counter is very	stale
		Low	In reality, she did not feel	weak
		Moderate	She broiled the ham until it was	cooked
		Low	He decided to give away this	vest
		Moderate	In the woods, the hiker saw a	moose
		Low	She advised us on his	lungs

		Low	The city council purchased the	swings
		Moderate	Every morning, we jog along the	trail
		Low	Violet gave me back the	jar
		Moderate	She is very creative and loves to	sculpt
		Moderate	She styled her hair with a	comb
		Low	The majority of them were	thin
		Moderate	Yesterday, my dog ran after a	man
6	Visual	Low	Milton was about to pick up the	toad
		Low	The young man mostly loved her	soul
		Moderate	The exterminator took care of the	mice
		Low	Teresa thanked me for the	lunch
		Moderate	I called a plumber to repair the	valve
		Low	I was confused about the	place
		Moderate	The exchange student's first language is	Greek
		Low	He bent over to pick up the	dime
		Moderate	She put on a clean	shirt
		Low	She was not sure if he really	smiled
		Low	The room had many things to	wash
		Moderate	Set the table with another	spoon
		Low	I was ready to see the	sea
		Moderate	Last night's party was really	wild
		Moderate	The horse was let into the	stall
		Low	Dale built the cabin around	May
		Moderate	She was learning how to bake	rolls
		Moderate	The farmer tended to his	sheep
		Low	I had a vivid dream about a	witch
		Moderate	My boyfriend gave me a	rose
		Low	I am not sure why it is so	strong
		Moderate	The young fisherman forgot his	rod
		Moderate	I spent all morning scrubbing the bathroom	tub
		Low	I have been told to	spit
		Moderate	The main course consisted of	pork

French	1	Auditory	Low	Finalement, je me suis retrouvé au	camping
			Moderate	Les dents de Marie sont	cariées
			Low	Robert m'écoute parler à propos de	gazon
			Moderate	Ce restaurant est reconnu pour son	chef
			Low	Mon amie Maryse ne manque jamais de	cerfeuil
			Low	Je crois qu'il reste encore plusieurs	mètres
			Moderate	Il y a des canards dans ce	ruisseau
			Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	baseball
			Low	Je n'avais jamais entendu ces	comptines
			Moderate	Elle utilise le robinet pour remplir sa	gourde
			Moderate	Les instructions sont dans le	manuel
			Low	Tout le monde observe attentivement le	poignet
			Moderate	Vendredi soir, je vais voir un	groupe
			Moderate	Elle fait bouillir de l'eau pour cuire des	pâtes
			Low	Elle n'avait pas anticipé la présence du	mât
			Moderate	Ce fruit me semble très	juteux
			Moderate	Elle suit une diète sans	sel
			Low	Il nous parlait de ses nouveaux	chevaux
			Low	Il y en a tout plein à	copier
			Low	La banderole est en forme de	vampire
			Moderate	Lisa préfère les légumes	sautés
			Low	Nous avons reçu un chargement de	satin
			Moderate	Son nouvel emploi est très	prisé
			Low	On lui a demandé de s'occuper de son	gilet
			Moderate	Ses fleurs préférées sont les	lilas
	2	Audiovisual	Low	Elle croit qu'elle a perdu son	visa
			Moderate	Ma danse préférée est la	salsa
			Low	J'ai vu qu'elle est pleine de	larves
			Moderate	L'artiste n'arrive pas à vendre ses	sculptures
			Low	Je me concentre sur mes	triceps
			Moderate	Le cuisinier nous a préparé un repas	somptueux

			Low	Cette fois, elle se promenait sans	couche
			Moderate	Avant de sortir, elle a enfilé une	veste
			Low	On m'a demandé d'aller vers la	ruelle
			Moderate	Elle a fait percer son	sourcil
			Moderate	Je trouve son écriture très	brouillonne
			Low	On m'a demandé de créer une illustration contenant des	trolls
			Moderate	Suite à ma blessure, l'infirmière m'a donné un	vaccin
			Moderate	Son anneau est orné d'un	zircon
			Low	Tiens-toi à l'écart de ces	boutons
			Moderate	La maison est faite en	brique
			Low	Je me demande s'il y aura du	blues
			Moderate	Parmi les fruits secs, je préfère les	raisins
			Moderate	La récolte fut détruite par une infestation de	rats
			Low	Nous avons décidé d'ignorer les	cygnes
			Moderate	Les nomades du Sahara sont entourés des	cactus
			Low	Il préférait de loin le	troisième
			Low	Elle pense beaucoup au dernier	jour
			Moderate	Le nouveau condo était déjà	pris
			Low	Nous partageons un intérêt pour le	surf
3	Visual		Low	On m'a invité à essayer la	voile
			Moderate	Les billets pour l'opéra étaient	chers
			Moderate	Les changements climatiques ont provoqué des	tornades
			Low	Elle a décidé de se payer une	coupe
			Low	Elle n'avait pas remarqué la présence des	colocs
			Moderate	Au brunch, Catherine a commandé des	gauffres
			Low	L'annonce était affichée sur le	panneau
			Moderate	La vedette se plaint lorsqu'on ignore ses	désirs
			Low	Elle est experte dans le domaine	plastique
			Moderate	Marie s'entraîne pour améliorer sa	force
			Moderate	L'homme d'affaires voulait amasser plus de	sous
			Low	J'ai oublié de ranger la	tondeuse
			Moderate	Je me rends au travail en	taxi

			Moderate	Il y a beaucoup de linge à	plier
			Low	Elles se dirigent vers la	poubelle
			Moderate	En temps de crise, il est difficile d'être	serein
			Low	Nous avons plusieurs projets pour notre	salon
			Low	Elle ne savait pas comment confectionner des	bottines
			Moderate	Le vétérinaire a examiné le	lapin
			Moderate	Ma voiture vient de se faire	cirer
			Low	Il n'avait aucun doute qu'elle était	soyeuse
			Low	Elle m'a passé un morceau de	bouleau
			Moderate	Dans la forêt tropicale, on se méfie des	jaguars
			Low	De toute façon, il est	grand
			Moderate	Michelle a surprit Jean en lui donnant un	calin
4	Auditory		Moderate	Au supermarché, il y avait peu de	choix
			Moderate	Ce nid d'oiseau appartient à un	merle
			Low	Ces gens n'ont toujours pas eu de	relâche
			Moderate	Après cet exercice, mes jambes sont	souples
			Low	Il nous faut plus de dons	dons
			Moderate	Le magasin de musique vend des	guitares
			Low	On ne lui avait pas donné de	pizza
			Low	Ils sont à la recherche d'un nouveau	livreur
			Moderate	La fille trouvait le garçon très	beau
			Low	Paul a vu beaucoup de	personnes
			Low	J'ai tenté de les échanger pour des	melons
			Moderate	L'été, j'aime profiter de la	plage
			Moderate	Éric pense que l'hiver prochain sera	rude
			Low	J'espère bien pouvoir profiter des	saunas
			Moderate	Il est généralement difficile de transplanter un	rein
			Low	Mon frère a décidé d'abandonner le	ping-pong
			Moderate	Le poissonnier avait de bons filets de	saumon
			Low	Tu dois faire attention au	trottoir
			Moderate	Le garçon avait des yeux	marrons
			Low	Il m'a montré comment	lasso
			Moderate	Après mûre réflexion, elle était satisfaite de ce	service

		Low	J'essaies de les rendre un peu moins	cassants
		Moderate	Les membres de la congrégation sont très	fidèles
		Low	Elle devait préparer une présentation sur les	méduses
		Low	Richard est nouvellement responsable du	métro
5	Audiovisual	Moderate	L'animal laissa échapper un cri	strident
		Moderate	Dans les bois, Jacques a aperçu un	cerf
		Low	Nous avons eu la chance de voir plusieurs	chapelles
		Low	Depuis toujours, Simon s'intéresse au	français
		Moderate	Mets tes vêtements dans la	sècheuse
		Low	Elle n'arrivait pas à retrouver les	dames
		Moderate	Dans mon couscous, je mets des	tomates
		Moderate	Claire portait sa plus belle robe pour le	gala
		Low	Elles se préparent à nous aider avec la	chaussée
		Low	Les enfants n'ont pas envie de	céréales
		Moderate	Nous avons traversé le lac en	kayak
		Moderate	Veuillez-vous tourner vers la	sortie
		Low	Notre objectif est de le distribuer aux	passants
		Low	Je crois avoir besoin de plus de	cèdre
		Moderate	Au karaté, il a obtenu sa ceinture	mauve
		Low	Il est en train de se prépare pour la	campagne
		Moderate	En creusant, j'ai trouvé un	fossile
		Low	Mathilde a développé un intérêt pour la	défense
		Moderate	Pendant le vol, il y a eu plusieurs	secousses
		Low	Ils s'apprêtent à apprendre les	couleurs
		Moderate	En mathématiques, les élèves utilisent des	compas
		Low	On ne sait jamais où trouver les	couteaux
		Low	Je suis enfin débarrassé de cette	migraine
		Moderate	Parmi les fruits de mer, j'adore les	pétoncles
		Low	On lui a demandé d'être moins	prudents
6	Visual	Moderate	J'ai une douleur à la	cheville
		Low	Il n'avait pas prédit croiser un	toucan
		Moderate	Pendant le procès, le juge me semblait	biaisé

				Low	On lui a dit de se méfier des	monstres
				Low	Je tente de m'habituer à cette	savane
				Moderate	Mon ami a préparé une tarte aux	bleuets
				Low	Il y a quelques années, toutes mes amies étaient	rousses
				Low	On m'a dit de bonnes choses à propos du	sonnet
				Moderate	À la quincaillerie, j'ai acheté une	soudeuse
				Moderate	D'après leur expression faciale, les hommes étaient	fâchés
				Low	Sur sa trajectoire se trouvait un	gardien
				Moderate	Son signe du Zodiaque est le	taureau
				Low	Ils s'assurent de bien suivre le	prince
				Moderate	Les manifestants brandissaient des	drapeaux
				Low	Ils ont décidé de visiter la	calanque
				Moderate	La chambre d'Henri est en	bordel
				Low	Le paquet contenait beaucoup de	brie
				Low	Elle m'a offert celui qui est	belge
				Moderate	Dans le bus ce matin, les gens étaient	frustrés
				Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	lunettes
				Low	J'ai plusieurs souvenirs à propos de la	cachette
				Moderate	Depuis ce matin, j'ai mal au	ventre
				Low	Mon ami souhaite être plus	flexible
				Moderate	Je me suis blessé au	doigt
				Low	On me demande souvent si elles sont	fausses
15	English	1	Audiovisual	Low	She always remembered that special	touch
				Low	Vince insisted that we buy this	stool
				Moderate	I want to pain the table	white
				Low	I am not sure what to do about this	truck
				Moderate	I saw the animals at the	zoo
				Low	The two of them disagreed on the	price
				Low	Margaret gave away all of the	nuts
				Moderate	My car has a new	scratch
				Low	Last weekend, there was no	wind
				Moderate	The young child is just learning to	walk

		Low	She tested to make sure it was	real
		Moderate	When I am at the beach, I like to	tan
		Low	Yesterday, Betty took a look at my	wrist
		Moderate	Behind the counter, the butcher was slicing the	roast
		Low	She did not want them	poached
		Moderate	Kids can start school at age	six
		Low	I made sure it was	warm
		Moderate	It was cold, so he put on his	scarf
		Low	Andrew had trouble locating his	wife
		Low	I suspect that he needed to	nap
		Moderate	I just threw the dog a	treat
		Moderate	Michael told me his favourite seafood is	shrimp
		Low	She was complimented on her	net
		Moderate	We walk our dogs each day at	noon
		Moderate	The mechanic looked at the car's	tires
2	Visual	Low	Donald looked everywhere for his	spouse
		Moderate	Jill cleaned up the dirt with a	rag
		Moderate	The friends played a game of	pool
		Low	Roxane had to deal with the	sand
		Moderate	The family is planning a trip to	Spain
		Low	Barry complimented us on our	trap
		Moderate	I love to look up at the	stars
		Low	He tried to put away the	phone
		Moderate	He poured his beverage into a	mug
		Low	He was secretive about the	skates
		Low	I asked Martin for his	stake
		Moderate	Every day, I begin work at	twelve
		Moderate	The fruit I just bought smells really	good
		Low	He implied that I was very	tall
		Low	I am not sure how to use this	verb
		Moderate	This restaurant has great	wine
		Low	Tomorrow morning, Robert with be painting the	walls
		Low	Jordan said that it was	sauce

298

		Level	Sentence	Word
		Low	Please stay away from the	roof
		Moderate	In his spare time, Owen wrote a	poem
		Low	The cat fell asleep on my	seat
		Moderate	My hat is made of	wool
		Low	He looked at the one that is	wide
		Moderate	The book is resting on top of the	shelf
		Moderate	Every day, he grooms his	pets
3	Auditory	Low	Scott was planning to work on his	waist
		Moderate	The weather forecast predicted there would be	snow
		Moderate	The vet examined the bird's	wings
		Low	The pirate ship had a large	sail
		Moderate	The shoes have a broken	strap
		Moderate	They gave their full support to the	queen
		Low	The young lady needed a	chest
		Moderate	During the fight, I was punched in the	nose
		Low	Everyone hoped she would not	cease
		Moderate	Mrs. Smith has a fear of	snakes
		Moderate	He dug a large hole in the	yard
		Low	He was not well prepared for the	night
		Low	The child did not make a	sound
		Moderate	That bakery makes very good	pie
		Low	She had just seen the other	tree
		Low	Anna was talking about that awful	shake
		Moderate	This year, the farmer's main crop is	wheat
		Low	Myriam did not expect the	toys
		Moderate	Shirley bought pants that are too	tight
		Low	Be careful that you do not let it	slam
		Low	You should not touch the	worms
		Moderate	Our last meeting was very	sad
		Low	She tried her best to control the	team
		Moderate	Before leaving, he put on a pair of	slacks
		Low	She was thinking of adding	toast

4	Audiovisual	Low	Johnny and his friends laughed at the	toll
		Moderate	Jessy and her friend walked up the	street
		Moderate	In the mail, I received a	cheque
		Low	I told you about that	vault
		Low	She checked to make sure it was	wet
		Low	I pressed Doris about the	test
		Moderate	At the clinic, the doctor checked my	wound
		Moderate	I looked at they sky and saw the	plane
		Low	We need to replace this	floor
		Low	He asked me to repair the	wheel
		Moderate	The racing team came in	third
		Moderate	In the yard, she trims the	lawn
		Low	She was told to take the	van
		Moderate	The condo that John wanted was already	sold
		Low	Every year, Ashley organizes the	set
		Moderate	She went to prison for a	year
		Moderate	Most days, I take the bus to	work
		Low	They could not see the	pond
		Moderate	The colour of her eyes is	green
		Low	Trudy's brother was examining the	ridge
		Moderate	She asked the tailor to fix her	skirt
		Low	According to Hank, she had been	robbed
		Moderate	The injury left a very large	scar
		Low	The curious boy explored the	road
		Moderate	The dentist carefully examined my	teeth
5	Visual	Low	He stated that it was	tied
		Moderate	He cooked the vegetables in the	wok
		Low	He was not aware of the	plums
		Low	The group provided all of the	soup
		Moderate	These are the stocks I want to	trade
		Low	Carol tried her best to hide her	score
		Moderate	The skier lost one of his	skis
		Low	Please do not touch my	toe

		Moderate	I heard that musician play the	flute
		Moderate	The necklace is made of	pearls
		Low	They had to clean up the	milk
		Moderate	The baseball player bought a new	mitt
		Moderate	The cake on the counter is very	stale
		Low	In reality, she did not feel	weak
		Moderate	She broiled the ham until it was	cooked
		Low	He decided to give away this	vest
		Moderate	In the woods, the hiker saw a	moose
		Low	She advised us on his	lungs
		Low	The city council purchased the	swings
		Moderate	Every morning, we jog along the	trail
		Low	Violet gave me back the	jar
		Moderate	She is very creative and loves to	sculpt
		Moderate	She styled her hair with a	comb
		Low	The majority of them were	thin
		Moderate	Yesterday, my dog ran after a	man
6	Auditory	Low	Milton was about to pick up the	toad
		Low	The young man mostly loved her	soul
		Moderate	The exterminator took care of the	mice
		Low	Teresa thanked me for the	lunch
		Moderate	I called a plumber to repair the	valve
		Low	I was confused about the	place
		Moderate	The exchange student's first language is	Greek
		Low	He bent over to pick up the	dime
		Moderate	She put on a clean	shirt
		Low	She was not sure if he really	smiled
		Low	The room had many things to	wash
		Moderate	Set the table with another	spoon
		Low	I was ready to see the	sea
		Moderate	Last night's party was really	wild
		Moderate	The horse was let into the	stall

			Low	Dale built the cabin around	May
			Moderate	She was learning how to bake	rolls
			Moderate	The farmer tended to his	sheep
			Low	I had a vivid dream about a	witch
			Moderate	My boyfriend gave me a	rose
			Low	I am not sure why it is so	strong
			Moderate	The young fisherman forgot his	rod
			Moderate	I spent all morning scrubbing the bathroom	tub
			Low	I have been told to	spit
			Moderate	The main course consisted of	pork
French	1	Audiovisual	Low	Finalement, je me suis retrouvé au	camping
			Moderate	Les dents de Marie sont	cariées
			Low	Robert m'écoute parler à propos de	gazon
			Moderate	Ce restaurant est reconnu pour son	chef
			Low	Mon amie Maryse ne manque jamais de	cerfeuil
			Low	Je crois qu'il reste encore plusieurs	mètres
			Moderate	Il y a des canards dans ce	ruisseau
			Moderate	Durant les cours d'éducation physique, Gabriel aime jouer au	baseball
			Low	Je n'avais jamais entendu ces	comptines
			Moderate	Elle utilise le robinet pour remplir sa	gourde
			Moderate	Les instructions sont dans le	manuel
			Low	Tout le monde observe attentivement le	poignet
			Moderate	Vendredi soir, je vais voir un	groupe
			Moderate	Elle fait bouillir de l'eau pour cuire des	pâtes
			Low	Elle n'avait pas anticipé la présence du	mât
			Moderate	Ce fruit me semble très	juteux
			Moderate	Elle suit une diète sans	sel
			Low	Il nous parlait de ses nouveaux	chevaux
			Low	Il y en a tout plein à	copier
			Low	La banderole est en forme de	vampire
			Moderate	Lisa préfère les légumes	sautés
			Low	Nous avons reçu un chargement de	satin

		Moderate	Son nouvel emploi est très		prisé
		Low	On lui a demandé de s'occuper de son		gilet
		Moderate	Ses fleurs préférées sont les		lilas
2	Visual	Low	Elle croit qu'elle a perdu son		visa
		Moderate	Ma danse préférée est la		salsa
		Low	J'ai vu qu'elle est pleine de		larves
		Moderate	L'artiste n'arrive pas à vendre ses		sculptures
		Low	Je me concentre sur mes		triceps
		Moderate	Le cuisinier nous a préparé un repas		somptueux
		Low	Cette fois, elle se promenait sans		couche
		Moderate	Avant de sortir, elle a enfilé une		veste
		Low	On m'a demandé d'aller vers la		ruelle
		Moderate	Elle a fait percer son		sourcil
		Moderate	Je trouve son écriture très		brouillonne
		Low	On m'a demandé de créer une illustration contenant des		trolls
		Moderate	Suite à ma blessure, l'infirmière m'a donné un		vaccin
		Moderate	Son anneau est orné d'un		zircon
		Low	Tiens-toi à l'écart de ces		boutons
		Moderate	La maison est faite en		brique
		Low	Je me demande s'il y aura du		blues
		Moderate	Parmi les fruits secs, je préfère les		raisins
		Moderate	La récolte fut détruite par une infestation de		rats
		Low	Nous avons décidé d'ignorer les		cygnes
		Moderate	Les nomades du Sahara sont entourés des		cactus
		Low	Il préférait de loin le		troisième
		Low	Elle pense beaucoup au dernier		jour
		Moderate	Le nouveau condo était déjà		pris
		Low	Nous partageons un intérêt pour le		surf
3	Auditory	Low	On m'a invité à essayer la		voile
		Moderate	Les billets pour l'opéra étaient		chers
		Moderate	Les changements climatiques ont provoqué des		tornades

			Low	Elle a décidé de se payer une	coupe
			Low	Elle n'avait pas remarqué la présence des	colocs
			Moderate	Au brunch, Catherine a commandé des	gauffres
			Low	L'annonce était affichée sur le	panneau
			Moderate	La vedette se plaint lorsqu'on ignore ses	désirs
			Low	Elle est experte dans le domaine	plastique
			Moderate	Marie s'entraîne pour améliorer sa	force
			Moderate	L'homme d'affaires voulait amasser plus de	sous
			Low	J'ai oublié de ranger la	tondeuse
			Moderate	Je me rends au travail en	taxi
			Moderate	Il y a beaucoup de linge à	plier
			Low	Elles se dirigent vers la	poubelle
			Moderate	En temps de crise, il est difficile d'être	serein
			Low	Nous avons plusieurs projets pour notre	salon
			Low	Elle ne savait pas comment confectionner des	bottines
			Moderate	Le vétérinaire a examiné le	lapin
			Moderate	Ma voiture vient de se faire	cirer
			Low	Il n'avait aucun doute qu'elle était	soyeuse
			Low	Elle m'a passé un morceau de	bouleau
			Moderate	Dans la forêt tropicale, on se méfie des	jaguars
			Low	De toute façon, il est	grand
			Moderate	Michelle a surprit Jean en lui donnant un	calin
4	Audiovisual		Moderate	Au supermarché, il y avait peu de	choix
			Moderate	Ce nid d'oiseau appartient à un	merle
			Low	Ces gens n'ont toujours pas eu de	relâche
			Moderate	Après cet exercice, mes jambes sont	souples
			Low	Il nous faut plus de dons	dons
			Moderate	Le magasin de musique vend des	guitares
			Low	On ne lui avait pas donné de	pizza
			Low	Ils sont à la recherche d'un nouveau	livreur
			Moderate	La fille trouvait le garçon très	beau
			Low	Paul a vu beaucoup de	personnes
			Low	J'ai tenté de les échanger pour des	melons

		Moderate	L'été, j'aime profiter de la	plage
		Moderate	Éric pense que l'hiver prochain sera	rude
		Low	J'espère bien pouvoir profiter des	saunas
		Moderate	Il est généralement difficile de transplanter un	rein
		Low	Mon frère a décidé d'abandonner le	ping-pong
		Moderate	Le poissonnier avait de bons filets de	saumon
		Low	Tu dois faire attention au	trottoir
		Moderate	Le garçon avait des yeux	marrons
		Low	Il m'a montré comment	lasso
		Moderate	Après mûre réflexion, elle était satisfaite de ce	service
		Low	J'essaies de les rendre un peu moins	cassants
		Moderate	Les membres de la congrégation sont très	fidèles
		Low	Elle devait préparer une présentation sur les	méduses
		Low	Richard est nouvellement responsable du	métro
5	Visual	Moderate	L'animal laissa échapper un cri	strident
		Moderate	Dans les bois, Jacques a aperçu un	cerf
		Low	Nous avons eu la chance de voir plusieurs	chapelles
		Low	Depuis toujours, Simon s'intéresse au	français
		Moderate	Mets tes vêtements dans la	sècheuse
		Low	Elle n'arrivait pas à retrouver les	dames
		Moderate	Dans mon couscous, je mets des	tomates
		Moderate	Claire portait sa plus belle robe pour le	gala
		Low	Elles se préparent à nous aider avec la	chaussée
		Low	Les enfants n'ont pas envie de	céréales
		Moderate	Nous avons traversé le lac en	kayak
		Moderate	Veuillez-vous tourner vers la	sortie
		Low	Notre objectif est de le distribuer aux	passants
		Low	Je crois avoir besoin de plus de	cèdre
		Moderate	Au karaté, il a obtenu sa ceinture	mauve
		Low	Il est en train de se prépare pour la	campagne
		Moderate	En creusant, j'ai trouvé un	fossile
		Low	Mathilde a développé un intérêt pour la	défense
		Moderate	Pendant le vol, il y a eu plusieurs	secousses

305

		Low	Ils s'apprêtent à apprendre les	couleurs
		Moderate	En mathématiques, les élèves utilisent des	compas
		Low	On ne sait jamais où trouver les	couteaux
		Low	Je suis enfin débarrassé de cette	migraine
		Moderate	Parmi les fruits de mer, j'adore les	pétoncles
		Low	On lui a demandé d'être moins	prudents
6	Auditory	Moderate	J'ai une douleur à la	cheville
		Low	Il n'avait pas prédit croiser un	toucan
		Moderate	Pendant le procès, le juge me semblait	biaisé
		Low	On lui a dit de se méfier des	monstres
		Low	Je tente de m'habituer à cette	savane
		Moderate	Mon ami a préparé une tarte aux	bleuets
		Low	Il y a quelques années, toutes mes amies étaient	rousses
		Low	On m'a dit de bonnes choses à propos du	sonnet
		Moderate	À la quincaillerie, j'ai acheté une	soudeuse
		Moderate	D'après leur expression faciale, les hommes étaient	fâchés
		Low	Sur sa trajectoire se trouvait un	gardien
		Moderate	Son signe du Zodiaque est le	taureau
		Low	Ils s'assurent de bien suivre le	prince
		Moderate	Les manifestants brandissaient des	drapeaux
		Low	Ils ont décidé de visiter la	calanque
		Moderate	La chambre d'Henri est en	bordel
		Low	Le paquet contenait beaucoup de	brie
		Low	Elle m'a offert celui qui est	belge
		Moderate	Dans le bus ce matin, les gens étaient	frustrés
		Moderate	Avant d'aller à la plage, assures-toi d'avoir tes	lunettes
		Low	J'ai plusieurs souvenirs à propos de la	cachette
		Moderate	Depuis ce matin, j'ai mal au	ventre
		Low	Mon ami souhaite être plus	flexible
		Moderate	Je me suis blessé au	doigt
		Low	On me demande souvent si elles sont	fausses

16	English	1	Visual	Moderate	He has an excellent sense of	touch
				Moderate	I sat down on the	stool
				Low	He looked at the one that is	white
				Moderate	He unlocked the door of the	truck
				Low	Sarah had missed going to the	zoo
				Moderate	Ramona had no choice but to pay the	price
				Moderate	The salad I had for lunch contained	nuts
				Low	I do not know where I got this	scratch
				Moderate	Open the drapes and let in the	wind
				Low	For the past few weeks, Reuben refused to	walk
				Moderate	The plants in my office are	real
				Low	She does not have much time to	tan
				Moderate	He grabbed me by the	wrist
				Low	Christi decided to throw out the	roast
				Moderate	He preferred his fish to be	poached
				Low	I will be satisfied with	six
				Moderate	The forecast for tomorrow is	warm
				Low	It was cold, so he put on his	scarf
				Moderate	Jason had to talk to his	wife
				Moderate	The noise made it very hard to	nap
				Low	Julie slowly peeked at the	treat
				Low	Michael told me his favourite seafood is	shrimp
				Moderate	She kept her hair in a	net
				Low	Heidi thought that it was	noon
				Low	She reminded me to check the	tires
		2	Auditory	Moderate	He was distraught and confided in his	spouse
				Low	Laura's daughter was caught stealing the	rag
				Low	The old woman looked at the	pool
				Moderate	Kids love to play in the	sand
				Low	My grandfather is having dinner in	Spain
				Moderate	The mouse was hard to	trap
				Low	We opted to look at the	stars
				Moderate	In her purse, she kept her	phone

307

		Low	You must bring your own	mug
		Moderate	Eric could not find the ice	skates
		Moderate	In the garden, I used a	stake
		Low	I was convinced that Katie was	twelve
		Low	Rob insisted that it was	good
		Moderate	The team's best player is very	tall
		Moderate	A sentence must have at least one	verb
		Low	He was not a fan of the	wine
		Moderate	Tomorrow morning, Robert will be painting the	walls
		Moderate	This plate of pasta needs more	sauce
		Moderate	Please stay away from the	roof
		Low	They looked everywhere for the	poem
		Moderate	The cat fell asleep on my	seat
		Low	I did not realize this was	wool
		Moderate	Rachel saw that the sea was really	wide
		Low	Jean could not see the	shelf
		Low	He was looking for the one with the	pets
3	Audiovisual	Moderate	While on vacation, she gained weight around her	waist
		Low	They danced the polka in the	snow
		Low	She had commented on the	wings
		Moderate	The pirate ship had a large	sail
		Low	Harold had decided to fix the	strap
		Low	They gave their full support to the	queen
		Moderate	She put her things in a	chest
		Low	She saw Melissa touch her	nose
		Moderate	Joan waited for the rain to	cease
		Low	He was ready for anything, even	snakes
		Low	They wondered if this was Susan's	yard
		Moderate	The ship disappeared into the	night
		Moderate	The child did not make a	sound
		Low	Lacey needed a lot of help with the	pie
		Moderate	Lionel was busy planting the	tree
		Moderate	The nervous dog began to	shake

		Low	Lily led me through the	wheat
		Moderate	Every Christmas, the children got many	toys
		Low	Todd realized it was too	tight
		Moderate	Bob jumped when he heard the door	slam
		Moderate	Our garden is full of	worms
		Low	Our last meeting was very	sad
		Moderate	Before the game, he studied the basketball	team
		Low	He wanted me to pass him the	slacks
		Moderate	At breakfast, Oliver ordered more	toast
4	Visual	Moderate	The church bells began to	toll
		Low	Yvette spent some time on the	street
		Low	I know where to put the	cheque
		Moderate	The thieves broke into the	vault
		Moderate	The clothes on the line are	wet
		Moderate	The teacher made sure to review the	test
		Low	You should pay attention to the	wound
		Low	I do not like the look of the	plane
		Moderate	We need to replace this	floor
		Moderate	Jack got into an accident and damaged his car's	wheel
		Low	She looked at the girl who was	third
		Low	I crouched down near the	lawn
		Moderate	The fruits were delivered in a	van
		Low	I told him it has been	sold
		Moderate	Yesterday, I lost the tennis	set
		Low	Lucy thought a lot about that	year
		Low	The teenager was very fond of her	work
		Moderate	The ducks can be seen in the	pond
		Low	Please pick out the ones that are	green
		Moderate	She touched her head and felt a	ridge
		Low	Make sure to keep away from the	skirt
		Moderate	Last Monday, the innocent bystander was	robbed
		Low	You should go see Rachel about that	scar
		Moderate	The curious boy explored the	road

		Low	They were staring at my	teeth
5	Auditory	Moderate	The girl liked to keep her hair	tied
		Low	He placed an order for another	wok
		Moderate	I went to the fruit store to buy	plums
		Moderate	I filled my bowl with	soup
		Low	These are the things she wants to	trade
		Moderate	Despite his effort, he received a failing	score
		Low	Amy decided to put down the	skis
		Moderate	She stepped on the glass and cut her	toe
		Low	Gregory dropped the brand-new	flute
		Low	She kept all of the	pearls
		Moderate	When she is thirsty, she likes to drink	milk
		Low	They searched the box for a	mitt
		Low	They imagined it would be quite	stale
		Moderate	The flu can leave you feeling	weak
		Low	I do not know why she thinks it is	cooked
		Moderate	His brand-new tuxedo came with a	vest
		Low	I wish I had known about the	moose
		Moderate	Running is excellent for your	lungs
		Moderate	At the park, they children played on the	swings
		Low	Beatrix had a great view of the	trail
		Moderate	By accident, I broke the	jar
		Low	He selected the girl who could	sculpt
		Low	James told me a story about the	comb
		Moderate	Over the past year, Stan had gotten really	thin
		Low	I do not know what to think about that	man
6	Audiovisual	Moderate	Tracy jumped when she saw the	toad
		Moderate	Meditation is excellent for the	soul
		Low	Last night, I had a dream about	mice
		Moderate	My colleague took me out for	lunch
		Low	They were taking care of the	valve
		Moderate	We both agreed on a new meeting	place

				Low	I could not tell that they were	Greek
				Moderate	The store clerk gave me an extra	dime
				Low	I shone the light on my friend's	shirt
				Moderate	When he heard the joke, he	smiled
				Moderate	There is a lot of laundry to	wash
				Low	My sister went to the store to buy a	spoon
				Moderate	Last summer, we rented a house by the	sea
				Low	In the end, it seemed	wild
				Low	Talk to Lucie about the	stall
				Moderate	My best friend's birthday is in	May
				Low	Veronica was busy covering the	rolls
				Low	Kirk wanted to show us his new	sheep
				Moderate	The child is afraid of the	witch
				Low	Patty was not expecting this	rose
				Moderate	Max prefers his coffee to be	strong
				Low	Erin decided to select that	rod
				Low	She received a discount on the	tub
				Moderate	The dentist told me to	spit
				Low	The young boy did not like this	pork
French	1	Visual		Moderate	Ils vont en vacances au	camping
				Low	Il m'a expliqué pourquoi elles sont	cariées
				Moderate	Le parc est couvert de	gazon
				Low	Il n'est pas un grand fan de ce	chef
				Moderate	Mon jardin d'herbes contient du	cerfeuil
				Moderate	Son terrain s'étendait sur plusieurs	mètres
				Low	Au loin, elle aperçoit un	ruisseau
				Low	Antoine n'a aucun intérêt pour le	baseball
				Moderate	Les troubadours ont récité des	comptines
				Low	Mes parents m'ont offert une toute nouvelle	gourde
				Low	Mon ami m'a passé un	manuel
				Moderate	Il a couru dans l'escalier et s'est cassé le	poignet
				Low	Je suis en train de me préparer pour le	groupe
				Low	N'oublie surtout pas d'ajouter des	pâtes

			Moderate	Sur le bateau de pirates se trouvait un	mât
			Low	En fait, je le trouve très	juteux
			Low	Il est possible que ce soit sans	sel
			Moderate	Le fermier a vendu les	chevaux
			Moderate	J'utilise un raccourci clavier pour	copier
			Moderate	À l'Halloween, je me suis déguisé en	vampire
			Low	Je les préfère quand ils sont	sautés
			Moderate	La robe de la jeune mariée était en	satin
			Low	Il le trouve le ou moins	prisé
			Moderate	En jouant dehors, elle a sali son	gilet
			Low	Du coin de l'œil, il voit des	lilas
2		Auditory	Moderate	Elle désire voyager mais elle n'a pas de	visa
			Low	Elle se renseigne à propos de la	salsa
			Moderate	La ruche est remplie de	larves
			Low	On m'a offert d'acheter les	sculptures
			Moderate	Au gym, je préfère travailler mes	triceps
			Low	Nous sommes tous d'accord qu'il est très	somptueux
			Moderate	Les bambins refusent de mettre leur	couche
			Low	Elles ont décidé d'échanger leur	veste
			Moderate	Ma voiture est stationnée dans la	ruelle
			Low	Je n'avais pas pensé au	sourcil
			Low	Il est difficile de dire qu'elle est	brouillonne
			Moderate	Il y avait des créatures fantastiques telles que des	trolls
			Low	Lundi prochain, on me donner un	vaccin
			Low	Nous venons de recevoir de nouveaux	zircons
			Moderate	Il active le mécanisme en utilisant une série de	boutons
			Low	En fin de compte, je n'ai pas besoin de	brique
			Moderate	Ce musicien joue du	blues
			Low	Il ne s'attendait pas du tout aux	raisins
			Low	Dans la boite, il y a des	rats
			Moderate	Le cours d'eau sert d'habitat pour ces	cygnes
			Low	La photo avait pour sujet un	cactus
			Moderate	Le coureur a terminé en	troisième

		Moderate	Elle sera en prison pour un	jour
		Low	Malgré tout, il est déjà	pris
		Moderate	Mon sport nautique préféré est le	surf
3	Audiovisual	Moderate	J'aime les sports individuels comme la	voile
		Low	Si j'ai bien compris, ils étaient	chers
		Low	Ces derniers temps, il y a beaucoup de	tornades
		Moderate	Elle va au salon pour une	coupe
		Moderate	Son alarme réveille constamment ses	colocs
		Low	Christian veut se procurer des	gauffres
		Moderate	On l'a mis en charge du	panneau
		Low	Il suffit simplement d'ignorer ses	désirs
		Moderate	Après ses études, elle est devenue chirurgienne	plastique
		Low	Elle était contente de sa	force
		Low	Elle leur explique pourquoi il faut plus de	sous
		Moderate	Dans le cabanon, nous avons rangé notre	tondeuse
		Low	On donne la priorité au	taxi
		Low	On lui avait suggéré de les	plier
		Moderate	Les abeilles se dirigent vers la	poubelle
		Low	On lui dit souvent qu'il est très	serein
		Moderate	Nous allons enfin rénover notre	salon
		Moderate	Le magasin de chaussure ne vend pas de	bottines
		Low	Il ne savait pas quoi faire avec le	lapin
		Low	Il n'y avait absolument rien à	cirer
		Moderate	La fourrure de mon chat est	soyeuse
		Moderate	Louis a fabriqué une armoire en bois de	bouleau
		Low	Daniel se méfie toujours des	jaguars
		Moderate	Les pantalons de Kim sont trop	grands
		Low	Notre conversation portait sur le	calin
4	Visual	Low	Aujourd'hui, il y a peu de	choix
		Low	Annabelle s'est acheté un nouveau	merle
		Moderate	Les employés de la compagnie de construction sont en	relâche
		Low	Ce matin, je suis plutôt	souple

		Moderate	À chaque mois, on organise une collecte de	dons
		Low	Je n'ai jamais vue de	guitares
		Moderate	Alain est un livreur de	pizza
		Moderate	L'épicerie veut engager un nouveau	livreur
		Low	J'ai fini par choisir le plus	beau
		Moderate	Pour Noël, il a reçu plusieurs	personnes
		Moderate	Je vais à la fruiterie pour acheter des	melons
		Low	Toute ma famille apprécie la	plage
		Low	J'espère qu'il ne sera pas trop	rude
		Moderate	Ils vont au spa pour profiter des	saunas
		Low	Il est en train d'étudier le fonctionnement du	rein
		Moderate	Nous t'achèterons des balles de	ping-pong
		Low	Son ami lui a offert du	saumon
		Moderate	L'automobiliste a failli heurter un	trottoir
		Low	Je pense bien qu'ils sont	marrons
		Moderate	Tout bon cowboy se doit d'avoir un	lasso
		Low	Après mûre réflexion, elle était satisfaite de ce	service
		Moderate	Les cheveux de Caroline sont	cassants
		Low	On m'a dit que ces gens sont particulièrement	fidèles
		Moderate	À la plage, je redoute surtout les	méduses
		Moderate	Martin s'est présenté à la station de	métro
5	Auditory	Low	Je ne le pensais pas si	strident
		Low	Tiens-moi au courant à propos du	cerf
		Moderate	À Jérusalem, Annie a visité plusieurs	chapelles
		Moderate	L'école a engagé une nouvelle professeure de	français
		Low	Mets tes vêtements dans la	sècheuse
		Moderate	Ma grand-mère aime jouer aux	dames
		Low	On m'a offert un sac rempli de	tomates
		Low	Elle avait envie d'aller au	gala
		Moderate	La marmotte a creusé un trou sous la	chaussée
		Moderate	Pour déjeuner, je mange des	céréales
		Low	Ce n'est pas possible sans	kayak
		Low	J'aimerais que tu me montre la	sortie

		Moderate	Le pamphlet a été distribué aux		passants
		Moderate	Le coffre est fait de		cèdre
		Low	On m'assure que c'est bien		mauve
		Moderate	Nous allons faire du camping en		campagne
		Low	Martine a finalement retrouvé son		fossile
		Moderate	Le ministre a révisé son budget pour la		défense
		Low	Il fait de son mieux pour éviter les		secousses
		Moderate	À la prématernelle, les enfants apprennent les		couleurs
		Low	On lui a dit de le faire sans		compas
		Moderate	Parmi les ustensiles, il y avait des		couteaux
		Moderate	Madeleine s'est absentée à cause d'une		migraine
		Low	Elle m'a aidé à choisir les		pétoncles
		Moderate	Avec la vieillesse, les gens deviennent plus		prudents
6	Audiovisual	Low	Mon frère prend bien soin de sa		cheville
		Moderate	Dans la jungle, j'ai aperçu		toucan
		Low	Il me semble assez difficile		biaisé
		Moderate	Le jeune enfant croit aux		monstres
		Moderate	Un énorme incendie ravage la		savane
		Low	Mon ami s'est informé au sujet des		bleuets
		Moderate	Éric aime bien les femmes		rousses
		Moderate	L'écrivain a rédigé un excellent		sonnet
		Low	Elle contact George pour lui rappeler d'apporter sa		soudeuse
		Low	Il leur arrive parfois d'être		fâchés
		Moderate	Le ballon de soccer a été botté sur le		gardien
		Low	D'après ta description, il semble être un		taureau
		Moderate	Le roi organisa une cérémonie en l'honneur du		prince
		Low	Ils s'affairaient à préparer des		drapeaux
		Moderate	Le bateau a jeté l'ancre dans la		calanque
		Low	Gaston a décidé de ne pas supporter le		bordel
		Moderate	La souris a rongé un morceau de fromage		brie
		Moderate	Elle m'a offert du chocolat		belge
		Low	On m'a dit qu'ils sont habituellement		frustrés
		Low	Hélène a encore oublié ses		lunettes

				Moderate	Les jeunes filles jouaient à la	cachette
				Low	Il y a un problème avec son	ventre
				Moderate	La jeune gymnaste est très	flexible
				Low	Elle a de la difficulté à dessiner le	doigt
				Moderate	Durant l'entrevue, ses réponses étaient	fausses
17	English	1	Auditory	Moderate	He has an excellent sense of	touch
				Moderate	I sat down on the	stool
				Low	He looked at the one that is	white
				Moderate	He unlocked the door of the	truck
				Low	Sarah had missed going to the	zoo
				Moderate	Ramona had no choice but to pay the	price
				Moderate	The salad I had for lunch contained	nuts
				Low	I do not know where I got this	scratch
				Moderate	Open the drapes and let in the	wind
				Low	For the past few weeks, Reuben refused to	walk
				Moderate	The plants in my office are	real
				Low	She does not have much time to	tan
				Moderate	He grabbed me by the	wrist
				Low	Christi decided to throw out the	roast
				Moderate	He preferred his fish to be	poached
				Low	I will be satisfied with	six
				Moderate	The forecast for tomorrow is	warm
				Low	It was cold, so he put on his	scarf
				Moderate	Jason had to talk to his	wife
				Moderate	The noise made it very hard to	nap
				Low	Julie slowly peeked at the	treat
				Low	Michael told me his favourite seafood is	shrimp
				Moderate	She kept her hair in a	net
				Low	Heidi thought that it was	noon
				Low	She reminded me to check the	tires
		2	Audiovisual	Moderate	He was distraught and confided in his	spouse

			Low	Laura's daughter was caught stealing the	rag
			Low	The old woman looked at the	pool
			Moderate	Kids love to play in the	sand
			Low	My grandfather is having dinner in	Spain
			Moderate	The mouse was hard to	trap
			Low	We opted to look at the	stars
			Moderate	In her purse, she kept her	phone
			Low	You must bring your own	mug
			Moderate	Eric could not find the ice	skates
			Moderate	In the garden, I used a	stake
			Low	I was convinced that Katie was	twelve
			Low	Rob insisted that it was	good
			Moderate	The team's best player is very	tall
			Moderate	A sentence must have at least one	verb
			Low	He was not a fan of the	wine
			Moderate	Tomorrow morning, Robert will be painting the	walls
			Moderate	This plate of pasta needs more	sauce
			Moderate	Please stay away from the	roof
			Low	They looked everywhere for the	poem
			Moderate	The cat fell asleep on my	seat
			Low	I did not realize this was	wool
			Moderate	Rachel saw that the sea was really	wide
			Low	Jean could not see the	shelf
			Low	He was looking for the one with the	pets
3	Visual		Moderate	While on vacation, she gained weight around her	waist
			Low	They danced the polka in the	snow
			Low	She had commented on the	wings
			Moderate	The pirate ship had a large	sail
			Low	Harold had decided to fix the	strap
			Low	They gave their full support to the	queen
			Moderate	She put her things in a	chest
			Low	She saw Melissa touch her	nose
			Moderate	Joan waited for the rain to	cease

	Low	He was ready for anything, even		snakes
	Low	They wondered if this was Susan's		yard
	Moderate	The ship disappeared into the		night
	Moderate	The child did not make a		sound
	Low	Lacey needed a lot of help with the		pie
	Moderate	Lionel was busy planting the		tree
	Moderate	The nervous dog began to		shake
	Low	Lily led me through the		wheat
	Moderate	Every Christmas, the children got many		toys
	Low	Todd realized it was too		tight
	Moderate	Bob jumped when he heard the door		slam
	Moderate	Our garden is full of		worms
	Low	Our last meeting was very		sad
	Moderate	Before the game, he studied the basketball		team
	Low	He wanted me to pass him the		slacks
	Moderate	At breakfast, Oliver ordered more		toast
4	Auditory	Moderate	The church bells began to	toll
		Low	Yvette spent some time on the	street
		Low	I know where to put the	cheque
		Moderate	The thieves broke into the	vault
		Moderate	The clothes on the line are	wet
		Moderate	The teacher made sure to review the	test
		Low	You should pay attention to the	wound
		Low	I do not like the look of the	plane
		Moderate	We need to replace this	floor
		Moderate	Jack got into an accident and damaged his car's	wheel
		Low	She looked at the girl who was	third
		Low	I crouched down near the	lawn
		Moderate	The fruits were delivered in a	van
		Low	I told him it has been	sold
		Moderate	Yesterday, I lost the tennis	set
		Low	Lucy thought a lot about that	year
		Low	The teenager was very fond of her	work

		Moderate	The ducks can be seen in the	pond
		Low	Please pick out the ones that are	green
		Moderate	She touched her head and felt a	ridge
		Low	Make sure to keep away from the	skirt
		Moderate	Last Monday, the innocent bystander was	robbed
		Low	You should go see Rachel about that	scar
		Moderate	The curious boy explored the	road
		Low	They were staring at my	teeth
5	Audiovisual	Moderate	The girl liked to keep her hair	tied
		Low	He placed an order for another	wok
		Moderate	I went to the fruit store to buy	plums
		Moderate	I filled my bowl with	soup
		Low	These are the things she wants to	trade
		Moderate	Despite his effort, he received a failing	score
		Low	Amy decided to put down the	skis
		Moderate	She stepped on the glass and cut her	toe
		Low	Gregory dropped the brand-new	flute
		Low	She kept all of the	pearls
		Moderate	When she is thirsty, she likes to drink	milk
		Low	They searched the box for a	mitt
		Low	They imagined it would be quite	stale
		Moderate	The flu can leave you feeling	weak
		Low	I do not know why she thinks it is	cooked
		Moderate	His brand-new tuxedo came with a	vest
		Low	I wish I had known about the	moose
		Moderate	Running is excellent for your	lungs
		Moderate	At the park, they children played on the	swings
		Low	Beatrix had a great view of the	trail
		Moderate	By accident, I broke the	jar
		Low	He selected the girl who could	sculpt
		Low	James told me a story about the	comb
		Moderate	Over the past year, Stan had gotten really	thin
		Low	I do not know what to think about that	man

	6	Visual	Moderate	Tracy jumped when she saw the	toad
			Moderate	Meditation is excellent for the	soul
			Low	Last night, I had a dream about	mice
			Moderate	My colleague took me out for	lunch
			Low	They were taking care of the	valve
			Moderate	We both agreed on a new meeting	place
			Low	I could not tell that they were	Greek
			Moderate	The store clerk gave me an extra	dime
			Low	I shone the light on my friend's	shirt
			Moderate	When he heard the joke, he	smiled
			Moderate	There is a lot of laundry to	wash
			Low	My sister went to the store to buy a	spoon
			Moderate	Last summer, we rented a house by the	sea
			Low	In the end, it seemed	wild
			Low	Talk to Lucie about the	stall
			Moderate	My best friend's birthday is in	May
			Low	Veronica was busy covering the	rolls
			Low	Kirk wanted to show us his new	sheep
			Moderate	The child is afraid of the	witch
			Low	Patty was not expecting this	rose
			Moderate	Max prefers his coffee to be	strong
			Low	Erin decided to select that	rod
			Low	She received a discount on the	tub
			Moderate	The dentist told me to	spit
			Low	The young boy did not like this	pork
French	1	Auditory	Moderate	Ils vont en vacances au	camping
			Low	Il m'a expliqué pourquoi elles sont	cariées
			Moderate	Le parc est couvert de	gazon
			Low	Il n'est pas un grand fan de ce	chef
			Moderate	Mon jardin d'herbes contient du	cerfeuil
			Moderate	Son terrain s'étendait sur plusieurs	mètres
			Low	Au loin, elle aperçoit un	ruisseau

320

		Low	Antoine n'a aucun intérêt pour le	baseball
		Moderate	Les troubadours ont récité des	comptines
		Low	Mes parents m'ont offert une toute nouvelle	gourde
		Low	Mon ami m'a passé un	manuel
		Moderate	Il a couru dans l'escalier et s'est cassé le	poignet
		Low	Je suis en train de me préparer pour le	groupe
		Low	N'oublie surtout pas d'ajouter des	pâtes
		Moderate	Sur le bateau de pirates se trouvait un	mât
		Low	En fait, je le trouve très	juteux
		Low	Il est possible que ce soit sans	sel
		Moderate	Le fermier a vendu les	chevaux
		Moderate	J'utilise un raccourci clavier pour	copier
		Moderate	À l'Halloween, je me suis déguisé en	vampire
		Low	Je les préfère quand ils sont	sautés
		Moderate	La robe de la jeune mariée était en	satin
		Low	Il le trouve le ou moins	prisé
		Moderate	En jouant dehors, elle a sali son	gilet
		Low	Du coin de l'œil, il voit des	lilas
2	Audiovisual	Moderate	Elle désire voyager mais elle n'a pas de	visa
		Low	Elle se renseigne à propos de la	salsa
		Moderate	La ruche est remplie de	larves
		Low	On m'a offert d'acheter les	sculptures
		Moderate	Au gym, je préfère travailler mes	triceps
		Low	Nous sommes tous d'accord qu'il est très	somptueux
		Moderate	Les bambins refusent de mettre leur	couche
		Low	Elles ont décidé d'échanger leur	veste
		Moderate	Ma voiture est stationnée dans la	ruelle
		Low	Je n'avais pas pensé au	sourcil
		Low	Il est difficile de dire qu'elle est	brouillonne
		Moderate	Il y avait des créatures fantastiques telles que des	trolls
		Low	Lundi prochain, on me donner un	vaccin
		Low	Nous venons de recevoir de nouveaux	zircons
		Moderate	Il active le mécanisme en utilisant une série de	boutons

			Low	En fin de compte, je n'ai pas besoin de	brique
			Moderate	Ce musicien joue du	blues
			Low	Il ne s'attendait pas du tout aux	raisins
			Low	Dans la boite, il y a des	rats
			Moderate	Le cours d'eau sert d'habitat pour ces	cygnes
			Low	La photo avait pour sujet un	cactus
			Moderate	Le coureur a terminé en	troisième
			Moderate	Elle sera en prison pour un	jour
			Low	Malgré tout, il est déjà	pris
			Moderate	Mon sport nautique préféré est le	surf
3	Visual		Moderate	J'aime les sports individuels comme la	voile
			Low	Si j'ai bien compris, ils étaient	chers
			Low	Ces derniers temps, il y a beaucoup de	tornades
			Moderate	Elle va au salon pour une	coupe
			Moderate	Son alarme réveille constamment ses	colocs
			Low	Christian veut se procurer des	gauffres
			Moderate	On l'a mis en charge du	panneau
			Low	Il suffit simplement d'ignorer ses	désirs
			Moderate	Après ses études, elle est devenue chirurgienne	plastique
			Low	Elle était contente de sa	force
			Low	Elle leur explique pourquoi il faut plus de	sous
			Moderate	Dans le cabanon, nous avons rangé notre	tondeuse
			Low	On donne la priorité au	taxi
			Low	On lui avait suggéré de les	plier
			Moderate	Les abeilles se dirigent vers la	poubelle
			Low	On lui dit souvent qu'il est très	serein
			Moderate	Nous allons enfin rénover notre	salon
			Moderate	Le magasin de chaussure ne vend pas de	bottines
			Low	Il ne savait pas quoi faire avec le	lapin
			Low	Il n'y avait absolument rien à	cirer
			Moderate	La fourrure de mon chat est	soyeuse
			Moderate	Louis a fabriqué une armoire en bois de	bouleau
			Low	Daniel se méfie toujours des	jaguars

		Moderate	Les pantalons de Kim sont trop	grands
		Low	Notre conversation portait sur le	calin
4	Auditory	Low	Aujourd'hui, il y a peu de	choix
		Low	Annabelle s'est acheté un nouveau	merle
		Moderate	Les employés de la compagnie de construction sont en	relâche
		Low	Ce matin, je suis plutôt	souple
		Moderate	À chaque mois, on organise une collecte de	dons
		Low	Je n'ai jamais vue de	guitares
		Moderate	Alain est un livreur de	pizza
		Moderate	L'épicerie veut engager un nouveau	livreur
		Low	J'ai fini par choisir le plus	beau
		Moderate	Pour Noël, il a reçu plusieurs	personnes
		Moderate	Je vais à la fruiterie pour acheter des	melons
		Low	Toute ma famille apprécie la	plage
		Low	J'espère qu'il ne sera pas trop	rude
		Moderate	Ils vont au spa pour profiter des	saunas
		Low	Il est en train d'étudier le fonctionnement du	rein
		Moderate	Nous t'achèterons des balles de	ping-pong
		Low	Son ami lui a offert du	saumon
		Moderate	L'automobiliste a failli heurter un	trottoir
		Low	Je pense bien qu'ils sont	marrons
		Moderate	Tout bon cowboy se doit d'avoir un	lasso
		Low	Après mûre réflexion, elle était satisfaite de ce	service
		Moderate	Les cheveux de Caroline sont	cassants
		Low	On m'a dit que ces gens sont particulièrement	fidèles
		Moderate	À la plage, je redoute surtout les	méduses
		Moderate	Martin s'est présenté à la station de	métro
5	Audiovisual	Low	Je ne le pensais pas si	strident
		Low	Tiens-moi au courant à propos du	cerf
		Moderate	À Jérusalem, Annie a visité plusieurs	chapelles
		Moderate	L'école a engagé une nouvelle professeure de	français
		Low	Mets tes vêtements dans la	sécheuse

			Moderate	Ma grand-mère aime jouer aux	dames
			Low	On m'a offert un sac rempli de	tomates
			Low	Elle avait envie d'aller au	gala
			Moderate	La marmotte a creusé un trou sous la	chaussée
			Moderate	Pour déjeuner, je mange des	céréales
			Low	Ce n'est pas possible sans	kayak
			Low	J'aimerais que tu me montre la	sortie
			Moderate	Le pamphlet a été distribué aux	passants
			Moderate	Le coffre est fait de	cèdre
			Low	On m'assure que c'est bien	mauve
			Moderate	Nous allons faire du camping en	campagne
			Low	Martine a finalement retrouvé son	fossile
			Moderate	Le ministre a révisé son budget pour la	défense
			Low	Il fait de son mieux pour éviter les	secousses
			Moderate	À la prématernelle, les enfants apprennent les	couleurs
			Low	On lui a dit de le faire sans	compas
			Moderate	Parmi les ustensiles, il y avait des	couteaux
			Moderate	Madeleine s'est absentée à cause d'une	migraine
			Low	Elle m'a aidé à choisir les	pétoncles
			Moderate	Avec la vieillesse, les gens deviennent plus	prudents
6	Visual		Low	Mon frère prend bien soin de sa	cheville
			Moderate	Dans la jungle, j'ai aperçu	toucan
			Low	Il me semble assez difficile	biaisé
			Moderate	Le jeune enfant croit aux	monstres
			Moderate	Un énorme incendie ravage la	savane
			Low	Mon ami s'est informé au sujet des	bleuets
			Moderate	Éric aime bien les femmes	rousses
			Moderate	L'écrivain a rédigé un excellent	sonnet
			Low	Elle contact George pour lui rappeler d'apporter sa	soudeuse
			Low	Il leur arrive parfois d'être	fâchés
			Moderate	Le ballon de soccer a été botté sur le	gardien
			Low	D'après ta description, il semble être un	taureau
			Moderate	Le roi organisa une cérémonie en l'honneur du	prince

				Low	Ils s'affairaient à préparer des	drapeaux
				Moderate	Le bateau a jeté l'ancre dans la	calanque
				Low	Gaston a décidé de ne pas supporter le	bordel
				Moderate	La souris a rongé un morceau de fromage	brie
				Moderate	Elle m'a offert du chocolat	belge
				Low	On m'a dit qu'ils sont habituellement	frustrés
				Low	Hélène a encore oublié ses	lunettes
				Moderate	Les jeunes filles jouaient à la	cachette
				Low	Il y a un problème avec son	ventre
				Moderate	La jeune gymnaste est très	flexible
				Low	Elle a de la difficulté à dessiner le	doigt
				Moderate	Durant l'entrevue, ses réponses étaient	fausses
18	English	1	Audiovisual	Moderate	He has an excellent sense of	touch
				Moderate	I sat down on the	stool
				Low	He looked at the one that is	white
				Moderate	He unlocked the door of the	truck
				Low	Sarah had missed going to the	zoo
				Moderate	Ramona had no choice but to pay the	price
				Moderate	The salad I had for lunch contained	nuts
				Low	I do not know where I got this	scratch
				Moderate	Open the drapes and let in the	wind
				Low	For the past few weeks, Reuben refused to	walk
				Moderate	The plants in my office are	real
				Low	She does not have much time to	tan
				Moderate	He grabbed me by the	wrist
				Low	Christi decided to throw out the	roast
				Moderate	He preferred his fish to be	poached
				Low	I will be satisfied with	six
				Moderate	The forecast for tomorrow is	warm
				Low	It was cold, so he put on his	scarf
				Moderate	Jason had to talk to his	wife
				Moderate	The noise made it very hard to	nap

		Low	Julie slowly peeked at the	treat
		Low	Michael told me his favourite seafood is	shrimp
		Moderate	She kept her hair in a	net
		Low	Heidi thought that it was	noon
		Low	She reminded me to check the	tires
2	Visual	Moderate	He was distraught and confided in his	spouse
		Low	Laura's daughter was caught stealing the	rag
		Low	The old woman looked at the	pool
		Moderate	Kids love to play in the	sand
		Low	My grandfather is having dinner in	Spain
		Moderate	The mouse was hard to	trap
		Low	We opted to look at the	stars
		Moderate	In her purse, she kept her	phone
		Low	You must bring your own	mug
		Moderate	Eric could not find the ice	skates
		Moderate	In the garden, I used a	stake
		Low	I was convinced that Katie was	twelve
		Low	Rob insisted that it was	good
		Moderate	The team's best player is very	tall
		Moderate	A sentence must have at least one	verb
		Low	He was not a fan of the	wine
		Moderate	Tomorrow morning, Robert will be painting the	walls
		Moderate	This plate of pasta needs more	sauce
		Moderate	Please stay away from the	roof
		Low	They looked everywhere for the	poem
		Moderate	The cat fell asleep on my	seat
		Low	I did not realize this was	wool
		Moderate	Rachel saw that the sea was really	wide
		Low	Jean could not see the	shelf
		Low	He was looking for the one with the	pets
3	Auditory	Moderate	While on vacation, she gained weight around her	waist
		Low	They danced the polka in the	snow

		Low	She had commented on the	wings
		Moderate	The pirate ship had a large	sail
		Low	Harold had decided to fix the	strap
		Low	They gave their full support to the	queen
		Moderate	She put her things in a	chest
		Low	She saw Melissa touch her	nose
		Moderate	Joan waited for the rain to	cease
		Low	He was ready for anything, even	snakes
		Low	They wondered if this was Susan's	yard
		Moderate	The ship disappeared into the	night
		Moderate	The child did not make a	sound
		Low	Lacey needed a lot of help with the	pie
		Moderate	Lionel was busy planting the	tree
		Moderate	The nervous dog began to	shake
		Low	Lily led me through the	wheat
		Moderate	Every Christmas, the children got many	toys
		Low	Todd realized it was too	tight
		Moderate	Bob jumped when he heard the door	slam
		Moderate	Our garden is full of	worms
		Low	Our last meeting was very	sad
		Moderate	Before the game, he studied the basketball	team
		Low	He wanted me to pass him the	slacks
		Moderate	At breakfast, Oliver ordered more	toast
4	Audiovisual	Moderate	The church bells began to	toll
		Low	Yvette spent some time on the	street
		Low	I know where to put the	cheque
		Moderate	The thieves broke into the	vault
		Moderate	The clothes on the line are	wet
		Moderate	The teacher made sure to review the	test
		Low	You should pay attention to the	wound
		Low	I do not like the look of the	plane
		Moderate	We need to replace this	floor
		Moderate	Jack got into an accident and damaged his car's	wheel

		Low	She looked at the girl who was	third
		Low	I crouched down near the	lawn
		Moderate	The fruits were delivered in a	van
		Low	I told him it has been	sold
		Moderate	Yesterday, I lost the tennis	set
		Low	Lucy thought a lot about that	year
		Low	The teenager was very fond of her	work
		Moderate	The ducks can be seen in the	pond
		Low	Please pick out the ones that are	green
		Moderate	She touched her head and felt a	ridge
		Low	Make sure to keep away from the	skirt
		Moderate	Last Monday, the innocent bystander was	robbed
		Low	You should go see Rachel about that	scar
		Moderate	The curious boy explored the	road
		Low	They were staring at my	teeth
5	Visual	Moderate	The girl liked to keep her hair	tied
		Low	He placed an order for another	wok
		Moderate	I went to the fruit store to buy	plums
		Moderate	I filled my bowl with	soup
		Low	These are the things she wants to	trade
		Moderate	Despite his effort, he received a failing	score
		Low	Amy decided to put down the	skis
		Moderate	She stepped on the glass and cut her	toe
		Low	Gregory dropped the brand-new	flute
		Low	She kept all of the	pearls
		Moderate	When she is thirsty, she likes to drink	milk
		Low	They searched the box for a	mitt
		Low	They imagined it would be quite	stale
		Moderate	The flu can leave you feeling	weak
		Low	I do not know why she thinks it is	cooked
		Moderate	His brand-new tuxedo came with a	vest
		Low	I wish I had known about the	moose
		Moderate	Running is excellent for your	lungs

		Moderate	At the park, they children played on the	swings
		Low	Beatrix had a great view of the	trail
		Moderate	By accident, I broke the	jar
		Low	He selected the girl who could	sculpt
		Low	James told me a story about the	comb
		Moderate	Over the past year, Stan had gotten really	thin
		Low	I do not know what to think about that	man
6	Auditory	Moderate	Tracy jumped when she saw the	toad
		Moderate	Meditation is excellent for the	soul
		Low	Last night, I had a dream about	mice
		Moderate	My colleague took me out for	lunch
		Low	They were taking care of the	valve
		Moderate	We both agreed on a new meeting	place
		Low	I could not tell that they were	Greek
		Moderate	The store clerk gave me an extra	dime
		Low	I shone the light on my friend's	shirt
		Moderate	When he heard the joke, he	smiled
		Moderate	There is a lot of laundry to	wash
		Low	My sister went to the store to buy a	spoon
		Moderate	Last summer, we rented a house by the	sea
		Low	In the end, it seemed	wild
		Low	Talk to Lucie about the	stall
		Moderate	My best friend's birthday is in	May
		Low	Veronica was busy covering the	rolls
		Low	Kirk wanted to show us his new	sheep
		Moderate	The child is afraid of the	witch
		Low	Patty was not expecting this	rose
		Moderate	Max prefers his coffee to be	strong
		Low	Erin decided to select that	rod
		Low	She received a discount on the	tub
		Moderate	The dentist told me to	spit
		Low	The young boy did not like this	pork

French	1	Audiovisual	Moderate	Ils vont en vacances au	camping
			Low	Il m'a expliqué pourquoi elles sont	cariées
			Moderate	Le parc est couvert de	gazon
			Low	Il n'est pas un grand fan de ce	chef
			Moderate	Mon jardin d'herbes contient du	cerfeuil
			Moderate	Son terrain s'étendait sur plusieurs	mètres
			Low	Au loin, elle aperçoit un	ruisseau
			Low	Antoine n'a aucun intérêt pour le	baseball
			Moderate	Les troubadours ont récité des	comptines
			Low	Mes parents m'ont offert une toute nouvelle	gourde
			Low	Mon ami m'a passé un	manuel
			Moderate	Il a couru dans l'escalier et s'est cassé le	poignet
			Low	Je suis en train de me préparer pour le	groupe
			Low	N'oublie surtout pas d'ajouter des	pâtes
			Moderate	Sur le bateau de pirates se trouvait un	mât
			Low	En fait, je le trouve très	juteux
			Low	Il est possible que ce soit sans	sel
			Moderate	Le fermier a vendu les	chevaux
			Moderate	J'utilise un raccourci clavier pour	copier
			Moderate	À l'Halloween, je me suis déguisé en	vampire
			Low	Je les préfère quand ils sont	sautés
			Moderate	La robe de la jeune mariée était en	satin
			Low	Il le trouve le ou moins	prisé
			Moderate	En jouant dehors, elle a sali son	gilet
			Low	Du coin de l'œil, il voit des	lilas
	2	Visual	Moderate	Elle désire voyager mais elle n'a pas de	visa
			Low	Elle se renseigne à propos de la	salsa
			Moderate	La ruche est remplie de	larves
			Low	On m'a offert d'acheter les	sculptures
			Moderate	Au gym, je préfère travailler mes	triceps
			Low	Nous sommes tous d'accord qu'il est très	somptueux
			Moderate	Les bambins refusent de mettre leur	couche
			Low	Elles ont décidé d'échanger leur	veste

			Moderate	Ma voiture est stationnée dans la	ruelle
			Low	Je n'avais pas pensé au	sourcil
			Low	Il est difficile de dire qu'elle est	brouillonne
			Moderate	Il y avait des créatures fantastiques telles que des	trolls
			Low	Lundi prochain, on me donner un	vaccin
			Low	Nous venons de recevoir de nouveaux	zircons
			Moderate	Il active le mécanisme en utilisant une série de	boutons
			Low	En fin de compte, je n'ai pas besoin de	brique
			Moderate	Ce musicien joue du	blues
			Low	Il ne s'attendait pas du tout aux	raisins
			Low	Dans la boite, il y a des	rats
			Moderate	Le cours d'eau sert d'habitat pour ces	cygnes
			Low	La photo avait pour sujet un	cactus
			Moderate	Le coureur a terminé en	troisième
			Moderate	Elle sera en prison pour un	jour
			Low	Malgré tout, il est déjà	pris
			Moderate	Mon sport nautique préféré est le	surf
3	Auditory		Moderate	J'aime les sports individuels comme la	voile
			Low	Si j'ai bien compris, ils étaient	chers
			Low	Ces derniers temps, il y a beaucoup de	tornades
			Moderate	Elle va au salon pour une	coupe
			Moderate	Son alarme réveille constamment ses	colocs
			Low	Christian veut se procurer des	gauffres
			Moderate	On l'a mis en charge du	panneau
			Low	Il suffit simplement d'ignorer ses	désirs
			Moderate	Après ses études, elle est devenue chirurgienne	plastique
			Low	Elle était contente de sa	force
			Low	Elle leur explique pourquoi il faut plus de	sous
			Moderate	Dans le cabanon, nous avons rangé notre	tondeuse
			Low	On donne la priorité au	taxi
			Low	On lui avait suggéré de les	plier
			Moderate	Les abeilles se dirigent vers la	poubelle
			Low	On lui dit souvent qu'il est très	serein

			Moderate	Nous allons enfin rénover notre	salon
			Moderate	Le magasin de chaussure ne vend pas de	bottines
			Low	Il ne savait pas quoi faire avec le	lapin
			Low	Il n'y avait absolument rien à	cirer
			Moderate	La fourrure de mon chat est	soyeuse
			Moderate	Louis a fabriqué une armoire en bois de	bouleau
			Low	Daniel se méfie toujours des	jaguars
			Moderate	Les pantalons de Kim sont trop	grands
			Low	Notre conversation portait sur le	calin
4	Audiovisual		Low	Aujourd'hui, il y a peu de	choix
			Low	Annabelle s'est acheté un nouveau	merle
			Moderate	Les employés de la compagnie de construction sont en	relâche
			Low	Ce matin, je suis plutôt	souple
			Moderate	À chaque mois, on organise une collecte de	dons
			Low	Je n'ai jamais vue de	guitares
			Moderate	Alain est un livreur de	pizza
			Moderate	L'épicerie veut engager un nouveau	livreur
			Low	J'ai fini par choisir le plus	beau
			Moderate	Pour Noël, il a reçu plusieurs	personnes
			Moderate	Je vais à la fruiterie pour acheter des	melons
			Low	Toute ma famille apprécie la	plage
			Low	J'espère qu'il ne sera pas trop	rude
			Moderate	Ils vont au spa pour profiter des	saunas
			Low	Il est en train d'étudier le fonctionnement du	rein
			Moderate	Nous t'achèterons des balles de	ping-pong
			Low	Son ami lui a offert du	saumon
			Moderate	L'automobiliste a failli heurter un	trottoir
			Low	Je pense bien qu'ils sont	marrons
			Moderate	Tout bon cowboy se doit d'avoir un	lasso
			Low	Après mûre réflexion, elle était satisfaite de ce	service
			Moderate	Les cheveux de Caroline sont	cassants
			Low	On m'a dit que ces gens sont particulièrement	fidèles
			Moderate	À la plage, je redoute surtout les	méduses

		Moderate	Martin s'est présenté à la station de	métro
5	Visual	Low	Je ne le pensais pas si	strident
		Low	Tiens-moi au courant à propos du	cerf
		Moderate	À Jérusalem, Annie a visité plusieurs	chapelles
		Moderate	L'école a engagé une nouvelle professeure de	français
		Low	Mets tes vêtements dans la	sècheuse
		Moderate	Ma grand-mère aime jouer aux	dames
		Low	On m'a offert un sac rempli de	tomates
		Low	Elle avait envie d'aller au	gala
		Moderate	La marmotte a creusé un trou sous la	chaussée
		Moderate	Pour déjeuner, je mange des	céréales
		Low	Ce n'est pas possible sans	kayak
		Low	J'aimerais que tu me montre la	sortie
		Moderate	Le pamphlet a été distribué aux	passants
		Moderate	Le coffre est fait de	cèdre
		Low	On m'assure que c'est bien	mauve
		Moderate	Nous allons faire du camping en	campagne
		Low	Martine a finalement retrouvé son	fossile
		Moderate	Le ministre a révisé son budget pour la	défense
		Low	Il fait de son mieux pour éviter les	secousses
		Moderate	À la prématernelle, les enfants apprennent les	couleurs
		Low	On lui a dit de le faire sans	compas
		Moderate	Parmi les ustensiles, il y avait des	couteaux
		Moderate	Madeleine s'est absentée à cause d'une	migraine
		Low	Elle m'a aidé à choisir les	pétoncles
		Moderate	Avec la vieillesse, les gens deviennent plus	prudents
6	Auditory	Low	Mon frère prend bien soin de sa	cheville
		Moderate	Dans la jungle, j'ai aperçu	toucan
		Low	Il me semble assez difficile	biaisé
		Moderate	Le jeune enfant croit aux	monstres
		Moderate	Un énorme incendie ravage la	savane
		Low	Mon ami s'est informé au sujet des	bleuets

Moderate	Éric aime bien les femmes	rousses
Moderate	L'écrivain a rédigé un excellent	sonnet
Low	Elle contact George pour lui rappeler d'apporter sa	soudeuse
Low	Il leur arrive parfois d'être	fâchés
Moderate	Le ballon de soccer a été botté sur le	gardien
Low	D'après ta description, il semble être un	taureau
Moderate	Le roi organisa une cérémonie en l'honneur du	prince
Low	Ils s'affairaient à préparer des	drapeaux
Moderate	Le bateau a jeté l'ancre dans la	calanque
Low	Gaston a décidé de ne pas supporter le	bordel
Moderate	La souris a rongé un morceau de fromage	brie
Moderate	Elle m'a offert du chocolat	belge
Low	On m'a dit qu'ils sont habituellement	frustrés
Low	Hélène a encore oublié ses	lunettes
Moderate	Les jeunes filles jouaient à la	cachette
Low	Il y a un problème avec son	ventre
Moderate	La jeune gymnaste est très	flexible
Low	Elle a de la difficulté à dessiner le	doigt
Moderate	Durant l'entrevue, ses réponses étaient	fausses