PROJECT PROPOSAL
(START-UP)

PROJECT NAME	Predictive processes during simultaneous interpreting from Turkish into English / Türkçeden İngilizceye doğru eşzamanlı çeviri esnasında gerçekleşen tahmine dayalı süreçler
NAME AND SURNAME OF THE PROJECT DIRECTOR	Ena Hodjikj, Dr. Öğr. Üyesi
PROJECT SUMMARY (The summary in the project output [Proje Çıktısı] should be copied here.)	This study takes an interdisciplinary approach applying psycholinguistic methodology to the investigation of predictive processes during simultaneous interpreting (SI), i.e. the oral translation of speech at a very close latency, as an instance of spoken language processing. The importance of prediction has been emphasized during SI between two languages with asymmetrical syntactic structures (Gile, 2009; Seeber, 2013), such as Turkish, a head-final language, and English, a head-initial language. Predictive processes have also been investigated during visual and spoken language processing as part of language comprehension, where words are predicted as a result of contextual constraint, i.e. semantic and syntactic cues available in the context, and transitional probability (TP), i.e. the statistical likelihood with which words appear together in language (McDonald and Shillcock, 2003a, 2003b; Frisson et al., 2005). Effects of contextual constraint and TP on predictive processes will be investigated by measuring the speech latency between the input and output during (i) shadowing in Turkish, a within-language repetition task, and during (ii) SI from Turkish into English. Importantly, a 2x3 experimental design will be used in an attempt to empirically separate the effect of TP from the effect of context as a whole in order to see whether statistical probabilities operate on a different level of processing from semantic and syntactic cues available in the context. The method employed in this study can hopefully be applied to future research on the interpreting process by providing an insight into the mechanisms underlying predictive processing in head-final languages. The role that this specific language structure plays during SI will be examined, which will hopefully reveal something about the component skills of a very complex cognitive task.
The objective of the project, the literature survey, the scientific value, the performance criteria, the plan B and the available facilities should be elaborated intelligently.	

1. OBJECTIVES OF THE PROJECT:

(A thorough discussion of the purpose of the proposed project; results to be achieved; parameters to be investigated in relation with the purpose)

I propose an interdisciplinary research study applying psycholinguistic methods to the investigation of predictive processes during simultaneous interpreting from Turkish into English. Simultaneous interpreting (SI) constitutes the oral translation of speech from one language (the source language) into another (the target language) at a very close latency to the original. During this complex cognitive task, interpreters have to listen to and analyze speech in one language, produce speech in another language, all the while storing information in short-term memory (Gile 2009). At the same time, interpreters are able to switch back and forth between *multiple* efforts (listening and analysis, production, and short-term memory storage) with the help of an attention mechanism (Cowan, 2000). The ability to employ multiple efforts, and to do this *simultaneously* for at least seventy percent of the time (Chernov, 1994), relies

on general cognitive skills like memory and attention, which vary across individuals. In addition, external factors like speed of delivery, pace of speaking, fatigue, listening conditions, familiarity with subject matter, information density of incoming material (e.g. high use of personal names and numbers), etc., affect SI performance to a great extent.

However, more language-dependent factors related to lexicalization patterns and word order have also been found to affect SI performance. For example, SI from German head-final structures, where the verb appears in sentence final position, into head-initial English structures, where the verb is always in second position in the sentence (see 1a), is cognitively more demanding than SI from German head-initial into English head-initial sentence structures (see 1b), as revealed by measures of pupil dilation during SI. At the same time, language-specific differences in sentence structure lead interpreters to develop strategies like anticipation. When the verb is placed in sentence final position in the input and has to be placed in a sentence second position in the output, as is often the case with English and German, the interpreter cannot always afford to wait until the end of the input sentence to start interpreting. So he/she will often strategically anticipate the sentence final verb, and sometimes even produce its interpretation in the output before the original becomes available in the input. In this way, syntactic asymmetry can lead to anticipation, which has been found to relieve cognitive load, resulting in similar effort to that required during SI between symmetrical structures, as revealed by measures of pupil dilation (see Seeber & Kerzel, 2012).

1a. Wir glauben die Delegierten **treffen** ihre **Entscheidung** nach einer langen Debatte.
     we believe the delegates make their decision   after a   long   debate

'We believe the delegates will make their decision after a long debate.'

1b. Wir glauben dass die Delegierten ihre **Entscheidung** nach einer langen Debatte **treffen**.
     we believe that the delegates their decision   after a   long   debate make

'We believe that the delegates will **make** their **decision** after a long debate.'

Anticipation can also be triggered by the probabilistic nature of language. For instance, in the above examples the semantic cues provided by the context can lead to anticipation but also the high probability of the words *treffen* ('make/reach') and *Entscheidung* ('decision') co-occurring in German, where they form a collocation. Jörg (1997) provides similar examples of verb-object collocations, e.g. *to pay a bill* or to *pay a visit*, which lead to anticipation during SI. In an early study of this topic, Wilss (1978: 348) noted the example of the German word *Namens* ('On behalf of'), often introducing the standard expression of thanks *Namens … darf ich … danken* ('On behalf of … I would like to thank …'): hearing *Namens* thus enables the interpreter to anticipate *danken*, based on the statistical likelihood of the two words co-occurring in German. This is due to the probabilistic nature of language. The statistical likelihood with which words appear together in discourse has been termed the transitional probability (TP) between words and is computed based on word frequency and co-occurrence information in language corpora (e.g. the British National Corpus for English).

The degree to which syntactic and TP cues, which are language-specific, can act as triggers of predictive processes during SI is dependent on the extent to which language-specific form can affect input processing during SI. The latter has been a matter of debate in the SI literature. Proponents of the *Interpretive Theory* argue that some degree of deverbalization of the input is necessary, and that the intermediate stages in processing of the source input are thus associated at least in part with a language-independent message, irrespective of source and target language form (Lederer 1981; Seleskovitch 1984). By contrast, SI researchers following the *Information Processing* approach (Gerver 1976; Gile 2009; Moser 1978) attribute greater importance than interpretive theorists to language-specific form. This view mainly stems from psycholinguistic findings on language processing *per se* (i.e. reading and listening), indicating that language-specific syntactic structure and lexicalization patterns affect comprehension (Otten & Van Berkum 2008; Trueswell & Tannenhaus 1994; Van Berkum et al. 2005) – hence the argument that, if form affects comprehension in general, it should affect any language processing task, including SI.

Even though SI studies offer a comprehensive survey of the type of information that could trigger anticipation, they do not provide an insight into the psychological mechanisms behind anticipation. No connection has so far been established between the specific cues that cause anticipation and the anticipated information during SI. This is mainly because most studies analyze interpretations after the SI task is finished and attempt to receive confirmation on the possible cues they find by interviewing interpreters after SI. But most often interpreters are unable to recall any of the strategies they used during SI after they finish interpreting. Sometimes they do not even recall important information that they have interpreted correctly (Darò & Fabbro 1994). So in order to provide an insight into the psychological processes underlying anticipation during SI, an *on-line* investigation of anticipation during SI is required where the use of specific cues to anticipation is recorded as the SI task unfolds.

Importantly, anticipation is not only characteristic of SI. In fact, building expectations is an integral part of the language comprehension process. Language comprehension proceeds through two types of strategies. The first starts from listening and analyzing the input that we receive (hear, see) through our senses and subsequently matching that input to the context in which it is perceived and to our background knowledge on the topic described by that context. Such strategies are called bottom-up strategies in language processing because they involve analysis from the lowest level of representation of language (the phonetic or orthographic input received through the senses) to the highest level of representation of meaning, context and background knowledge. The second type of strategies involved in language processing are top-down strategies starting from the already built knowledge about the preceding context and our background or world knowledge and matching that to the upcoming sensory input (Marslen-Wilson 1992). The latter types of strategies are assumed to be those that allow people to create expectations about the upcoming linguistic input and consequently predict language (Frisson et al. 2005; Van Berkum et al. 2005; Otten and Van Berkum 2008). This ability to form expectations on what will follow as an integral part of language comprehension is called prediction in studies on reading and listening.

Some linguists argue that prediction, plays only a minor role during language understanding because of the vast possibilities available to the language user as each word is encountered. However, as in SI, during everyday communicative acts prediction can be used strategically to facilitate mutual understanding or to coordinate dialogue as a joint activity. Evidence for this comes from observations that people often complete others' utterances (Wilkes-Gibbs and Clark, 1992). De Ruiter et al. (2006) presented evidence that listeners are highly accurate in predicting the end of other speakers' turns. Moreover, prediction has been found to allow for faster processing and increased efficiency of mental operations (Huettig, 2015). Therefore, psycholinguists have proposed a very important role for predictive language processing.

What causes prediction is one of the central questions in the psycholinguistic literature. So far, findings have determined two main types of cues to prediction: linguistic cues that the language we hear or see itself has to offer and extralinguistic cues based on our background or world knowledge, both adding to the level of constraint of the context, as a whole. A sufficiently constraining context can lead people to make predictive inferences as language unfolds so that if they, for instance, read about a porcelain vase falling from a 20-story building, they predict that it will break. People do this based on the preceding context and on the background or world knowledge that they possess (or have acquired as a result of everyday life experiences) telling them that a vase falling down from a 20-story building breaks as a combination of the height and the material the vase is made of.

While prediction based on these types of contextual cues might be expected, studies on sentence processing have also found that prediction occurs as a result of low level transitional probabilities between words. In other words, the statistical likelihood of words appearing together in a given language has been found to trigger prediction. For example, studies on prediction during reading have found that a high TP verb-noun pair like *to accept defeat* is read faster than a low TP verb-noun pair like *to accept losses*. This is due to the statistical likelihood of the target word (*defeat/losses*) following *accept* – in other words, *forward* TP; but also due to *backward* TP, or the likelihood that *accept* would precede *defeat/losses*. Both forward and backward TP have been found to lead to prediction during reading (Frisson et al. 2005; McDonald & Shillcock 2003a, 2003b).

A parallel can be drawn between cues that have been found to affect anticipation in SI studies and cues to prediction during language processing *per se*. On the one hand, our background knowledge acts top-down to

constrain our processing of the input (reading/listening) and sometimes lead to strategic anticipation in the output (during SI). On the other hand, the likelihood of words appearing together in language, as part of collocations or fixed expressions, also seems to trigger prediction during reading and anticipation during SI. An important question that has been posited in the literature on prediction is how TP fits in the context as a whole. McDonald & Shillcock (2003a, 2003b) have hypothesized that TP operates on a different level of language processing than cues provided by the context as a whole. They argue that while contextual cues rely on higher-order processing of semantic and discourse information, TP cues are the result of lower-order computation of probabilistic information in the sensory input.

As a head-final agglutinative language, Turkish presents a complex but equally fascinating case where syntactic and semantic case encoding is part of the computation of TP. For example, a verb lemma like *düşür-* ('[lower][1]') can receive many inflectional and derivational morphemes to form a word and a noun like *baraj* ('threshold') would have a total of six case marked forms (Göksel & Kerslake 2014). So, their frequency in the Turkish language would be calculated based on their distribution across these forms. However, when the two co-occur to form a collocation in Turkish, i.e. *barajı düşür-* ('[lower] the threshold'), the noun can only appear in its accusative form (*barajı*) due to the syntactic argument structure of the verb requiring a direct object (in the accusative case) as well as the semantic constraints imposed by the verb, i.e. denoting a causal action. This limits their co-occurrence frequency affecting both the likelihood of the verb following the noun (forward TP) and the likelihood of the noun preceding the verb (backward TP). In other words, the case marked form of the noun (*barajı*), rather than the bare noun (*baraj)*, becomes the first element in the noun-verb TP pair. However, when used in context, the case marker also determines the thematic role of the noun in the sentence. And this role persists regardless of word order, so that *barajı* ('threshold.Acc') will assume the patient role (as opposed to *hükümet* ('government') being the agent of the action), across all possible structures of a sentence, even when it does not appear next to the verb with which it forms a collocation (see 2a-f). This means that the verb imposes constraints both on the lexicalization patterns that it forms with other words on a more local level and on the interpretation of the meaning of a sentence on a more global level.

Turkish:
(2a) Hükümet **barajı düşürdü**.
     government.Nom threshold.Acc lowered

(2b) Hükümet **düşürdü barajı**.
     government.Nom. lowered threshold.Acc

(2c) **Düşürdü** hükümet **barajı**.
     lowered government.Nom. threshold.Acc

(2d) **Düşürdü barajı** hükümet.
     lowered threshold. Acc government.Nom

(2e) **Barajı düşürdü** hükümet.
     threshold.Acc lowered government.Nom

(2f) **Barajı** hükümet **düşürdü**.
     threshold.Acc government.Nom lowered

English:

---

[1] The squared brackets denote the verb lemma, to which any affix can be added.

'The government lowered the threshold.'[2]

The question then is, what happens during processing; is the information encoded in the case marker used as a cue to sentence comprehension or is it computed as part of a lexical chunk (i.e. the noun-verb TP pair)? To address this, I propose an experimental study of TP and contextual cues in Turkish using a psycholinguistic method that attempts to empirically separate between the two types of effects in order to investigate the effect of both on prediction, as well as their interaction. Given the parallel drawn between cues to prediction in studies on language processing and SI studies, prediction will be investigated during SI from Turkish into English. The highly different sentence structure employed by these two languages only adds to the importance of investigating prediction in a context like SI, where, as explained above, prediction gains the strategic dimension of successfully performing the task at hand. In the proposed study *prediction* will be used to refer to the creation of expectations on the sentence final verb on line, i.e. as language unfolds. In cases where the verb's interpretation is produced in the output before it becomes available in the input, the term *anticipation* will be used, following SI studies. *Predictive processes* will be used to encompass both, as instances of the same underlying phenomenon.

To my knowledge, there is no previous study investigating TP effects on prediction in Turkish. Nor has this been attempted in a complex context like SI from Turkish into English. Therefore, this will be a novel interdisciplinary study, and as such, will hopefully result in:
- findings relevant to the language processing literature in Turkish
- findings on SI from Turkish into English, more specifically, and
- findings relevant to Interpreting process research, more generally

Three international peer-reviewed journal publications in the three respective areas are envisaged as the main outcome of this study, which will be presented at both national and international scientific meetings. More information on the expected outcomes is provided in the 'Scientific value' and 'Research environment' sections of this proposal.

2. LITERATURE SURVEY
(A survey of national and international literature)

A central question in the literature on prediction, as in the proposed study, is what causes prediction in the first place. Studies on prediction during language processing *per se* have found that language users can form predictions on different levels. They can pre-activate the semantic/conceptual features (Federmeier and Kutas, 1999; Federmeier et al., 2001) but also the morphosyntactic features (Van Berkum et al., 2005; Wicha et al., 2004) of a predicted concept.

Altmann & Mirkovic (2009) claim that prediction consists in realizing a mapping between sentence structures (linguistic cues) and event structures (extralinguistic cues). The unfolding of event structures across time and space is largely internalized as our background or world knowledge, as illustrated by the above example with the falling vase. How internalized event structures are mapped to sentence structure during sentence processing has been explored by visual world eye-tracking studies (e.g., Altmann and Kamide, 1999, Mani and Huettig, 2012, Huettig and Altmann, 2005). Such studies have found anticipatory eye movements on visually presented objects (in space) as a result of semantic effects caused by the thematic roles (e.g. patient, agent, etc.) of those objects, as arguments of the verb, presented in spoken sentences (in time). These effects are particularly evident in head-final languages, such as German and Japanese, where the verb occurs in sentence-final position preceded by its arguments (Kamide, Altmann and Haywood 2003; Kamide, Scheepers & Altmann, 2003).

---

[2] The emphasis/stress across sentences 2a-f is not the same, but the global context meaning is, as shown by the single English translation of all sentences.

Due to their structure, head-final languages have made for particularly interesting objects of study when it comes to predictive processing. On the one hand, memory-based accounts of head-final sentence processing (Clifton & Frazier, 1989; Gibson, 2000) posit difficulties due to the increase in memory load caused by the storage of multiple arguments preceding the head-final verb. In opposition to these accounts stand prediction-based theories (Hale, 2001; Jurafsky, 2003; Konieczny, 2000; Konieczny & Döring, 2003) postulating an anticipation hypothesis: the arguments preceding a head-final verb do not cause greater processing load, but rather have a facilitation effect by enabling the parser to predict the upcoming verb. In other words, the more arguments preceding the verb, the easier it will be to predict it because the arguments narrow down the focus of the upcoming verb. This type of language processing has to be incremental by nature because only an incremental parser, integrating all upcoming words in a sentence in a piece-by-piece fashion, can lead to a facilitation effect based on prediction.

Studies on sentence processing in Turkish have also provided support for an incremental parser, where rather than waiting for the verb to establish gap filler dependencies between relative clauses and their referents, the parser integrates each word into a structure that is constructed in a piecemeal fashion (Akpınar, 2015; Kahraman et al. 2010; Özge et al. 2015). Based on this, it can be hypothesized that an incremental sentence parser would be guided by information encoded in case markers (as one of the strongest cues to meaning interpretation) to form predictions about upcoming words in Turkish. When the verb is placed in sentence final position, as it is in unmarked Turkish sentences (Göksel & Kerslake, 2014), information on its argument structure (i.e. case markers) will increase the predictability of the verb.

As previously explained, TP has also been established as a cue to prediction (McDonald and Shillcock, 2003a, 2003b). Using the same TP pairs as McDonald and Shillcock (2003b) (e.g. high TP pairs like *accept defeat* versus low TP pairs like *accept losses*), Frisson et al. (2005) applied a 2x2 design in an attempt to separate the effect of TP from the effect of the sentence context, as a whole, creating four experimental conditions: sentences with a constraining context and **high TP** (3a); sentences with a constraining context and **low TP** (3b); sentences with a neutral context and **high TP** (3c); and sentences with a neutral context and **low TP** (3d).

(3a) As they cannot afford to lose the game, the team will not **accept defeat** even when they're far behind (constraining context, **high TP**: C–**H**).

(3b) Since their mission is to make money, the manager will not **accept losses** even when it means pay cuts (constraining context, **low TP**: C–**L**).

(3c) It is silly that they simply will not **accept defeat** even when they're far behind (neutral context, **high TP**: N–**H**).

(3d) It is silly that they simply will not **accept losses** even when it means pay cuts (neutral context, **low TP**: N–**L**).

Prediction was tested in a visual sentence processing (i.e. reading) task using an eye-tracking paradigm. Gaze duration on the target word (the second word in the TP pair in bold) was found to be shorter in constraining contexts than in neutral contexts. There was also an effect of TP on prediction – i.e., reading times for the target word decreased in cases where TP was higher for its combination with the word just before it. Another finding was the lack of interaction between the effects of TP and contextual constraint, suggesting that the two are not independent of each other in their possible effects on prediction.

TP effects have also been investigated during shadowing, i.e. the repetition of speech at a very close latency, in German and during SI from German into English (Hodzik, 2014; Hodzik & Williams 2017). Given that prediction has been found to affect processing speed (Huettig, 2015), a speech latency measure (first employed across speech processing studies by Marslen-Wilson (1973, 1975, 1985, 1987)) was applied on the head-final verb between the input and output, so that a statistically significant decrease in latency between a verb in the input and output as an effect of contextual constraint and TP constituted prediction of the verb.

Hodzik (2014) found an effect of TP on speech latency during shadowing in German (by native German speakers and English-German bilinguals) and during SI between syntactically symmetrical (head-initial) structures in German and English (by English-German bilinguals). No such effect was observed during SI between syntactically asymmetrical (from head-final to head-initial) sentence structures. Language-specific incremental or piecemeal processing of the input and output was posited to account for these findings, with the latency between the source and target languages considered as dependent on the relative probability of the words concerned co-occurring in at least one of the two languages. However, this study employed SI of very short sentences, where the context preceding the TP pair was minimal and neutral – e.g., *Sie bekam Unterstützung* ('She received support') and TP was computed for the verb-noun pair comprised of *bekommen* ('to receive') and *Unterstützung* ('support').

In another attempt to empirically separate the effect of TP from the effect of the context as a whole, a speech latency measurement was applied in a series of shadowing tasks in German (performed by native German speakers and English-German bilinguals) and SI tasks from German into English performed both by English-German bilinguals with no prior experience in interpreting and English-German trainee and professional interpreters (Hodzik & Williams 2017). A 2x2 experimental design was employed to create four contexts in German (4a-d) corresponding to the English sentences created by Frisson et al. (2005) (3a-d above).

(4a) Obwohl er kein Geld hatte, war er entschlossen, in Oxford zu studieren. Da das
     although he no money had was he determined   in Oxford to study   because the
     Studium zu teuer für ihn war, hatte er von der Universität finanzielle
     studies   too expensive for him were had he from the university financial
     Unterstützung bekommen. (constraining context, **high TP**: C–**H**).
     support   received

English translation: 'Although he did not have any money, he was determined to study in Oxford. Because the studies were too expensive for him, he had **received** financial **support** from the university.'

(4b) Obwohl er kein Geld hatte, war er entschlossen, in Oxford zu studieren. Da das
     although he no money had was he determined in Oxford to study   because the
     Studium zu teuer für ihn war, musste er von der Universität finanzielle
     studies   too expensive for him were had to he from the university financial
     Unterstützung verlangen. (constraining context, **low TP**: C–**L**).
     support   request

English translation: 'Although he did not have any money, he was determined to study in Oxford. Because the studies were too expensive for him, he had to **request** financial **support** from the university.'

(4c) Obwohl er kein Auto hatte, war er entschlossen, uns zu besuchen. Gestern hat er
     although he no car   had   was he determined   us to visit   yesterday has he
     uns einen Brief geschickt, in dem er uns erzählt hat, dass er **Unterstützung**
     us   a   letter sent   in which he us told   has that he support
     bekommen hatte. (neutral context, **high TP**: N–**H**).
     received   had

English translation: 'Although he did not have a car, he was determined to visit us. Yesterday he sent us a letter in which he told us that he had **received** financial **support**.'

(4d) Obwohl er kein Auto hatte, war er entschlossen, uns zu besuchen. Gestern hat er
     although he no car   had   was he determined   us to visit   yesterday has he
     uns einen Brief geschickt, in dem er uns erzählt hat, dass er **Unterstützung**

us   a   letter sent   in which he us told   has that he support
verlangen musste. (neutral context, **low TP**: N–**L**).
request   had to

English translation: 'Although he did not have a car, he was determined to visit us. Yesterday he sent us a letter in which he told us that he had to **request** financial **support**.'

A main effect of context was observed both during shadowing and SI. Moreover, a main of effect of TP was also observed during shadowing, although there was no interaction between context and TP. By contrast, SI latency was not affected by TP. In addition, there was no difference between the bilingual and interpreter groups with respect to the effects of context and TP on prediction during SI, despite the overall interpreting speed being much higher in interpreters than bilinguals and instances of strategic anticipation (where the verb's interpretation was produced in the output before it appeared in the input) only being observed in the interpreter groups. Unfortunately, the number of such instances was too low to analyze statistically.

Given that TP effects have previously been observed during reading, shadowing, and SI between syntactically symmetrical structures, the lack of such effects during SI between asymmetrical sentence structures might be related to this asymmetry requiring a conversion of word order from the source (head-final) language structure into the target (head-initial) language structure. This conversion of word order might be causing more localized or lower-level TP effects to be overridden (literally, lost in translation) by contextual effects. Therefore, it is difficult to separate TP effects from effects of the context, as a whole. As previously explained, Turkish presents a very interesting case for investigating contextual and TP effects due to the constraints imposed by the verb on the sentence, on a more global level, and on lexicalization patterns, more locally. Following above discussed evidence for incremental processing of head-final structures in Turkish, such constraints should act top-down to narrow down the focus and generate predictions on the sentence final verb.

The study I propose will hopefully provide further support for an incremental parser during language processing in Turkish, addressing two main research questions:

- What types of cues cause predictive processes during SI from Turkish into English?
- What are the mechanisms underlying predictive processing in Turkish?

The first question will be addressed by adapting Frisson et al.'s (2005) and Hodzik & William's (2017) experimental design to an investigation of the effect of contextual constraint and forward and backward TP on prediction during SI from Turkish into English using a speech latency measurement method. The second question will be addressed by comparing the effects on speech latency obtained during SI with effects obtained in a monolingual Turkish language processing task, i.e. shadowing.

3. SCIENTIFIC VALUE
(Original scientific contribution of the proposed technology, method or theory to literature)

The findings obtained in this study can have implications for interpreting process research, research on SI from Turkish into English, and research on language processing in Turkish. These would be used as bases for the three main outcomes of the project, which should help inform interpreter training.

Given that Interpreting Studies is a multifaceted discipline that can be investigated from many different aspects, including socio-cultural, cognitive, linguistic, psychological, etc., it has to rely on methods from the aforementioned disciplines. This is why the proposed study takes an interdisciplinary approach adapting methodology used in psycholinguistics to the investigation of SI. This methodology allows for an on-line investigation of predictive

processes during SI, i.e. as the task unfolds, which is not the case with other SI studies looking at the same phenomenon (Gile 1992; Jörg, 1995; Kohn & Kalina, 1996; Van Besien, 1999; Wilss, 1978), as explained above. Moreover, since prediction is an integral part of language comprehension, looking at how expectations are built during SI might reveal something about the mechanisms underlying predictive processing.

Even though there is emerging research (referred to above) on predictive processing in Turkish, this mainly looks at the pre-activation of morpho-syntactic cues due to the rich morphological structure of the language. However, adding transitional probabilities and their close interaction with morpho-syntactic cues - more specifically, case markers – to the equation will allow for a more fine-grained investigation of prediction, relying on corpus (frequency and co-occurrence) data to create experimental materials. When paired with widely used experimental material reliability measures, e.g. the cloze test asking participants to guess a missing/target word (further explained in Methodology), corpus data offers a more objective and reliable predictability measure (Smith & Levy, 2011). With respect to research on Turkish in the context of Conference Interpreting Studies, with the exception of substantial contributions towards research on the socio-cultural, and to a large extent cognitive, aspects of the task (Diriker 2004, 2008, 2011), Turkish still remains underinvestigated when it comes to research of the interpreting process. Consequently, the proposed study will hopefully inspire interpreting process research on Turkish as a source language.

There is growing evidence in psycholinguistic studies that prediction is not only an integral part of comprehension but also that predictive processing is hierarchical by nature, so that information on the morpho-syntactic level, such as number and gender markers on a word, can be pre-activated and thus help predict the word before it is encountered in the sensory input (DeLong et al. 2005; Kutas et al. 2011). This evidence comes from reading and listening studies, but also from studies looking at prediction across sensory modalities, so that a visual non-verbal cue can also help pre-activate morpho-syntactic information during listening (Frost et al. 2015; Kutas & Federmeier 2011). This means that prediction is a domain general phenomenon in addition to relying on language-specific morphosyntactic and lexical information processing. Therefore, an investigation of prediction in the context of SI will help raise awareness on some of the component processes of this otherwise highly complex cognitive task (de Groot, 2000). This can be particularly informative for interpreter training, making trainees aware of the specific skill or component that is being practiced at any given moment during the task and the specific method or technique used to practice it.

4. RESEARCH ENVIRONMENT
(A detailed description of the infrastructure or the research environment to be established and its contributions to the Department/Institute)

Due to its interdisciplinary nature, this project will be highly collaborative and the below outlined collaborations will be reflected and acknowledged in the project outcomes.

I hope that this project will contribute towards further strengthening the research profile of the Department of Translation and Interpreting Studies by contributing to its cognitive research strand, already established and developed by Prof. Ebru Diriker. I intend to collaborate with Prof. Diriker on this project, which is why I have invited her as guest researcher. This will allow me to learn from the theoretical insight that she will bring to the investigation of the interpreting process and rely on her expertise in the selection and recruitment of professional interpreters from the pool of accredited interpreters within the Conference Interpreters Association of Turkey (TKTD), where Prof. Diriker holds an active membership.

I will also work together with Ms. Nesrin Conker, who is a research assistant and PhD student in Interpreting Studies at my department. As project team member, Ms. Conker will help me recruit trainee interpreters and run interpreting experiments at the department. Her contribution will be of great help to this study, but I hope that she will also be able to benefit from the experimental research conducting experience gained through this study and apply this to her own PhD research on interpreting. In addition, I intend to collaborate with Kate Ferguson, who is an instructor in conference interpreting from Turkish into English and from English into Turkish, and together with Prof. Diriker,

coordinates the interpreting programs at my department. Finally, the help of part-time interpreter trainers at our department, who are top accredited professional interpreters, such as Hande Güner, for example, will be invaluable.

I have also started to collaborate with Ms. Deniz Özkan from the Language and Communication Development Lab in the Psychology Department at Koç University, whose ongoing doctoral research focuses on predictive processing in Turkish. Her research has already informed the literature survey of this proposal by providing an insight into the mechanisms underlying predictive sentence processing in Turkish. Ms. Özkan's study is monolingual, looking at prediction during sentence processing in Turkish only, but she has also already established links with Prof. Ebru Diriker and started preliminary data collection from interpreter trainees at my department. The next step in this collaboration is to collect data from three cohorts, bilinguals, interpreter trainees, and professional interpreters, with the help of our joint efforts, the trained participants, testing equipment, and research infrastructure of both the Language and Communication Development Lab at Koç University and the Department of Translation and Interpreting Studies at Boğaziçi. Consequently, this project has the potential to strengthen the already forged links between the Department of Translation and Interpreting Studies at Boğaziçi and the Language and Communication Development Lab at Koç and increase our universities' research collaboration.

I also hope to contribute to the research environment at my department, more generally, by integrating experimental corpus research into our Interpreting Studies research. By working with Zargan Ltd. (Zargan Yayıncılık ve Dil Hizmetleri Ltd. Şti.) on this project, we will gain access to large corpus datasets on Turkish that have already been morphologically analyzed and assembled into a lexical database (the Zargan Lexical Database). In addition, Zargan Ltd. will provide an online platform (JSPsych - a JavaScript library) for recruiting experimental participants and running experiments for the purpose of this project, which our Department does not currently have at its disposal. The preliminary work that Zargan Ltd. has already carried out for the purpose of this proposal, and its further contribution towards the data collection and analysis stages of the project, if approved, is explained in detail in the Methodology section of this proposal.

Finally, because the proposed study employs psycholinguistic methodology, I also expect to collaborate with Dr. Pavel Logačev from the Linguistics Department at Boğaziçi, who is working on a BAP-funded project on sentence processing in Turkish. Although his research focuses on a very different topic, i.e. ambiguity resolution during sentence processing, and uses a different theoretical framework from the one I propose, his on-line investigations of sentence processing in Turkish using an eye tracking paradigm can be very informative to my own work with respect to the general mechanisms underlying Turkish sentence processing. In addition, I hope to also collaborate with Dr. Mine Nakipoğlu from the same Department, who is an expert on Turkish syntax and Turkish language processing, and who has already given me valuable advice on obtaining frequency data on morpho-syntactic information when working with Turkish corpora.

5. IF THERE WILL BE ANY RESEARCH PERSONNEL EMPLOYED ON THE PROJECT, THE NAME, QUALIFICATIONS AND CONTRIBUTIONS OF THE RESEARCHER.
(Name of the research personnel, his/her qualifications and contributions)

I would like to employ Ms. Semra Özdemir as research personnel in the project. Ms. Özdemir is a graduate student currently undergoing an MA in Linguistics at Boğaziçi University. She completed her BA degree at the Translation and Interpreting Studies department at Boğaziçi, specifically being part of our Interpreting program. The combination of Interpreting training and graduate level linguistics knowledge that she can bring to the project is of crucial importance. Being interested in how linguistics applies to interpreting herself, her work on the project will be directly applicable to her MA studies and possibly thesis research.

Ms. Özdemir also has experience in simultaneous interpreting through her work as freelance interpreter at a variety of events and on a wide range of topics. In addition, she is candidate member (Aday adayı) of the Conference Interpreters Association of Turkey (TKTD), and as such, has established important links with the sector and professionals working within it. This will be of great help in the data collection process of the proposed study.

The contributions that Ms. Özdemir will be expected to make during the two-year period within which she is to work on the project apply to every stage envisaged in the project (see 'Project timeline' below). This is why I have requested that she is employed for the total two-year duration of the project. Her tasks will be as follows:
- helping create and record speech sequences as experimental materials based on a list of collocations and non-collocates obtained from a Turkish corpus (Zargan Ltd.)
- helping recruit trainee and professional interpreters for the experiments run throughout the project
- collecting data
- analyzing data
- writing up results
- gaining access to the BAP portal and helping maintain and regularly update the project's online platform

6. METHODOLOGY
(A detailed description of methods and techniques to be used)

This project will employ an experimental study investigating the effects of two factors on predictive processes during simultaneous interpreting from Turkish into English: contextual constraint and TP. The method is based on Hodzik & Williams (2017), who adapted Frisson et al.'s (2005) experimental design investigating the effects of contextual constraint and TP during reading in English to an investigation of the same effects during SI from German into English. The rationale behind this design and its application to a study of SI from Turkish into English will be explained next.

Transitional probability
TP will be computed between the sentence-final verb and the noun preceding it based on word co-occurrence information obtained from the TS corpus V2 - a CPQ web interface (Sezer & Sezer, 2013) and the Zargan lexical database (Bilgin, 2016), both based on a 423M web BOUN corpus composed of four subcorpora, three of which are based on major newspapers in Turkish (NewsCor) and one on a general sampling of Turkish web pages (GenCor) (Sak et al., 2008). The noun and verb constitute a TP pair. Each TP pair will be chosen based on its forward and backward TP following McDonald and Shillcock (2003b). Forward TP represents the statistical likelihood with which the verb follows the noun in Turkish and it is computed using the following equation: $p[verb|noun] = frequency[noun, verb] / frequency[noun]$, where 'p' stands for the probability with which the noun follows the verb and 'frequency' is the number of times the verb and/or the noun occur in the corpus (McDonald & Shillcock, 2003b; Perruchet & Peereman, 2004). In descriptive terms, the probability that the verb will follow the noun is equal to the frequency of co-occurrence of the noun and the verb in the corpus divided by the frequency of occurrence of the noun in the corpus.

Backward TP constitutes the statistical likelihood with which the noun precedes the verb in the Turkish language and this is computed with the following equation: $p[noun|verb] = frequency[noun, verb] / frequency[verb]$. In descriptive terms, the probability that the noun will precede the verb is equal to the frequency of co-occurrence of the noun and the verb in the corpus divided by the frequency of occurrence of the verb in the corpus. In order to compute TP based on these equations, three types of information need to be obtained from the corpus: noun frequency, verb frequency, and noun-verb co-occurrence. A step-by-step approach towards obtaining this data will be provided next.

Preliminary work carried out by Zargan Ltd. based on token frequency data obtained from the TS corpus V2 and the Zargan lexical database resulted in a set of typical mid-range frequency Turkish nouns. Only those nouns that occur more than 1,000 times in the nominative case were selected, which excludes low frequency nouns. Very highly frequent nouns were also excluded in an attempt to control for noun frequency. A noun was selected from this set (e.g. 'baraj') and its bigram frequency information (i.e. its collocations with other words) was obtained from the corpus. Out of this information, only the noun collocating with verb forms in Turkish were extracted along with the noun-verb co-occurrence frequency data and the verb frequency data.

All three types of information - noun frequency, verb frequency, and noun-verb co-occurrence - were used to compute the forward and backward TP between the noun and verb in Turkish using the above explained equations, resulting in a high forward and backward TP noun-verb pair and a low forward and backward TP noun verb pair.

Importantly, the noun *baraj* can be used in multiple senses in Turkish (for example, in construction it means (water) dam; in football, it is used to denote a (free kick) wall; and in a social context (education or politics) it refers to a (performance/voting) threshold), and this of course affects the verbs the noun can be paired with, as well as the meaning of the resulting noun-verb pair (e.g. *barajı kaldır-* means 'remove the threshold', but *barajı yık-* means 'demolish the dam'). Therefore, the corpus data had to be filtered based on word sense, maintaining the same sense between the high and low TP pairs and excluding any noun-verb collocations with multiple senses. The sense of the noun-verb TP pair was further controlled by the sentence context it was integrated into, which will be explained as the following step in constructing the experimental design.

The choice to represent the verb in lemma form, i.e. *düşür-,* rather than in its finite forms (e.g. *düşürür, düşürdü, etc.*) is to encompass all inflected forms of the verb. Only inflectional morphemes, and the infinitive form, were taken into account for the verb frequency and noun-verb co-occurrence data for the purpose of excluding derivational morphemes, which result in a change of lexical category.

Table 1 provides an overview of the Turkish corpus data obtained for the high TP noun-verb pair *barajı düşür-* and its low TP noun-verb counterparts *barajı kaldır-* and *cezayı düşür-*. As can be seen, the forward and backward TP values are higher for the first noun-verb pair combination, which results in a collocate, than for the second and third, which result in non-collocates.

Table 1. Frequency, co-occurrence and TP data for the noun-verb pair *barajı düşür-*

noun-verb pair combinations	noun frequency	verb lemma frequency	co-occurrence	forward TP	backward TP
noun1-verb1	3190	54643	95	.0298	.0017
noun1-verb2	3190	79760	31	.0097	.0004
noun2-verb1	5907	54643	15	.0025	.0003

This resulted in a high TP noun-verb pair: (i) noun1-verb1 TP pair with high forward and high backward transitional probability ('H' = high TP pair), and its low TP counterparts: (i)' same noun-different verb TP pair with low forward and low backward TP ('L' = low TP pair), and (i)'' same verb-different noun TP pair with low forward and low backward TP ('L' = low TP pair). Varying both the noun and the verb in the TP pair will allow for control of any word frequency effects on the processing of the TP pair (e.g. more frequent words are processed faster than less frequent ones).

(i) barajı düşür- (H)

(i)' barajı kaldır- (L)

(i)'' cezayı düşür- (L)

Since the purpose of the present study is to investigate predictive processes in an SI task from Turkish into English, which is essentially a translation task, the TP of the English translations of the Turkish TP pairs also had to be taken into account when choosing the TP pairs. This was calculated based on frequency information from the British National Corpus (BNC). Each high TP pair in Turkish needed to have a high TP pair as its translation in English (i) and

for each low TP pair in Turkish there had to be a low TP pair as its translation in English (i)' and (i)''. As such, the English translations of the Turkish high TP pairs or Turkish collocations represented high TP pairs or collocations in the English language as well.

(i) [lower] the threshold (H)

(i)' [remove] the threshold (L)

(i)'' [lower]/[reduce] the punishment (L)

The English verb-noun TP pairs were established by consulting bilingual dictionaries, such as the *Redhouse Büyük Sözlük II Türkçe-İngilizce*, the *Adam Büyük Türkçe-İngilizce Sözlük, as well as* online dictionaries, such as *TDK*, *Sesli Sözlük*, and *Tureng*. The first meaning in a dictionary was taken into account. As seen above, the translation of a verb changes depending on the noun it appears next to. Consequently, a norming study will also be carried out to provide more reliable English translations of the Turkish noun-verb TP pairs, which is explained in more detail below (see *Experimental procedure*).

The order of the elements in the English TP pairs is the opposite of Turkish due to the SVO (subject-verb-object) word order rule in English where the (object) noun has to follow the main verb. Consequently, forward TP in English represents the likelihood that the noun will follow the verb and it is computed using the equation p[noun|verb] = frequency[verb, noun] / frequency[verb]. Backward TP in English constitutes the likelihood that the verb will precede the noun and it is computed based on the equation p[verb|noun] = frequency[verb, noun] / frequency[noun] (see Table 2). Again, the forward and backward TP values are higher for the first verb-noun pair combination, which results in a collocate, than for the second and third, which result in non-collocates.

Table 2. Frequency, co-occurrence and TP data for the noun-verb pair *[lower] (the) threshold*

noun-verb pair combinations	verb lemma frequency	noun frequency	co-occurrence	forward TP	backward TP
verb1-noun1	1061	970	57	.0537	.0588
verb2-noun1	3863	970	1	.0002	.0010
verb1-noun2	3863	2191	4	.0010	.0018

In a following step, the Turkish high TP noun-verb pairs and their counterparts are incorporated into two types of contexts, varying according to the degree of semantic and syntactic constraint.

Contextual constraint
Contextual constraint refers to the degree to which syntactic and semantic cues in the preceding context constrain (or are constrained by) the to-be-predicted word (i.e. sentence-final verb). For example, the context leading up to the TP pair in (5) is considered as *constraining*, whereas the one in (6) as *neutral*.

(5) Constraining context (C)

Toplum çok fazla tepki verdiği için hükümet **barajı *düşürdü/kaldırdı***.
society too much reaction give because government threshold lowered/removed

'Because the government caused too much reaction, the government **lowered/removed** the **threshold**.'

(6) Neutral context (N)
Uzun süren toplantılar sonucunda kurul **barajı *düşürdü/kaldırdı***.
long lasting meetings at the end of committee threshold lowered/removed.

'At the end of the long meetings the committee **lowered/removed** the **threshold'**.

Semantic cues include words or expressions which are semantically similar or related to the to-be-predicted word *düşürdü/kaldırdı* ('lowered'), such as *toplum* ('society'), *tepki* ('reaction'), hükümet ('government'), etc. (see 5), and linguistic by nature since they were part of the linguistic context. These are mapped onto extralinguistic cues related to our background or situational knowledge; in this case, our knowledge/awareness about the socio-political context surrounding the information provided by this sentence. In the present study both extralinguistic and linguistic cues will be treated as an integral part of contextual constraint as a cue to prediction because they act in parallel to constrain the context.

At the same time, semantic cues act in conjunction with syntactic cues. For instance, in 5 above, the pre-posing[3] of the adverbial clause containing the causal adverbial *için* ('because') helps build a causal relationship, where the *reaction of society* is the cause and the *government lowering* or *removing the threshold* its effect. This is not the case in 6, where the time adverbial *sonucunda* ('at the end of') is used to connect two events (a *long meeting being carried out* followed by a *committee lowering or removing the threshold*), where one follows the other without there necessarily being a cause-effect relationship between the two, as in 5. Syntactic and semantic cues cannot be distinguished, rather they interact to contribute to the degree of contextual constraint. The full experimental design rationale, integrating both TP and contextual constraint, will be provided next.

Design rationale
A 2x3 design was used to combine the two types of TP pairs (high and low) and the two types of contexts (constraining and neutral) into six experimental conditions, two baseline conditions: (i) Constraining context, high transitional probability (5); (ii) Neutral context, high transitional probability (6), which are further subdivided into two conditions each: (i)' Constraining context, low transitional probability (5' and 5''); (ii)' Neutral context, low transitional probability (6' and 6'').

5 Toplum çok fazla tepki verdiği için hükümet **barajı *düşürdü***. (C-H)
6 Uzun süren toplantılar sonucunda kurul **barajı *düşürdü***. (N-H)

5' Toplum çok fazla tepki verdiği için hükümet **barajı *kaldırdı***. (C-L)
6'. Uzun süren toplantılar sonucunda kurul **barajı *kaldırdı***. (N-L)

5'' Toplum çok fazla tepki verdiği için hükümet **cezayı *düşürdü***. (C-L)'
6'' Uzun süren toplantılar sonucunda kurul **cezayı *düşürdü***. (N-L)'

---

[3] The word order in the same sentence in Turkish could very well be *Hükümet barajı **düşürdü/kaldırdı** toplum çok fazla tepki verdiği için*, among other options, where stress/emphasis varies.

Forty-eight experimental items like the one above will be created. Each of the variations (i.e. (i)' and (i)'') within an item will be compared against its baseline condition (i), in order to investigate the effects of TP and contextual constraint on prediction. To this end, the above six-condition item will be further divided into two sub-items with four conditions each: sub-item 1 consisting of (i) and (i)' and sub-item 2 consisting of (i) and (i)'', resulting in 2 groups of forty-eight sub-items. Within the two groups of forty-eight sub-items, four groups (of 12 items each) will be created in a randomized order so that each experimental participant only receives one condition per sub-item. If, in addition to main effects of both cues on prediction, an interaction is observed between them, then there is reason to suggest that TP operates on a different level from semantic and syntactic cues offered by the context as a whole, i.e. contextual constraint. Importantly, this experimental design is an improvement from the previously used 2x2 design (Frisson et al. 2005; Hodzik & Williams 2017) because it allows for a more fine-grained analysis of the effect of TP, varying either element of the TP pair (i.e. noun or verb), thus attempting to further separate its effect from the effect of the rest of the context, which it nevertheless constitutes an integral part of.

Experimental procedure

The procedure used to investigate prediction of the sentence-final verb in the proposed study employs a measurement of latency which was previously used by Marslen-Wilson (1973, 1975, 1985, 1987) in a shadowing task. Latency will be measured between the onset of the sentence-final verb in the input and the onset of its equivalent in the output. The aim is to see whether latency will decrease as an effect of the linguistic cues to prediction under investigation: contextual constraint and TP. As such, latency will be used to measure the *prediction* of the sentence-final verb or rather the 'facilitation' of the processing of the sentence-final verb as a result of a constraining context and high TP. However, should the latency between the sentence-final verb in the input and the sentence-final verb in the output be negative, i.e. if the verb is uttered in the output before its identity is revealed in the input, this will be considered as an instance of *anticipation,* as defined in SI studies.

Three different tasks will be used to investigate predictive processes:

1) Pilot study:
- Once all experimental items are created in Turkish, an online norming study will be carried out with around 20 Turkish-English bilinguals providing translations of the noun-verb pairs from Turkish into English. This data paired with the dictionary translations will provide for more reliable English data on which to base the BNC corpus queries.
- A cloze test involving a gating technique (Taylor, 1953) will be conducted with fifty native speakers of Turkish, who will be shown the above sentences on a computer screen up until the noun in the noun-verb TP pair. The participants will be asked to guess, by typing their answer, the missing word (i.e. the to-be-predicted sentence-final verb) which will be revealed letter by letter, at the press of a button (see 7). The number of correct responses at each stage of gating will be analyzed. Since prediction essentially constitutes forming expectations or guesses about the identity of words based on cues preceding those words, this task will help test the use of the two cues under investigation, contextual constraint and TP, as cues to prediction in Turkish.

(7) <u>Gating technique:</u>
Toplum çok fazla tepki verdiği için hükümet barajı
Toplum çok fazla tepki verdiği için hükümet barajı *d*
Toplum çok fazla tepki verdiği için hükümet barajı *dü*
Toplum çok fazla tepki verdiği için hükümet barajı *düş*
Toplum çok fazla tepki verdiği için hükümet barajı *düşü*
Etc.

This technique was previously employed by Van Petten et al. (1999) who looked at the effect of semantic processing, i.e. the processing of meaning in the context preceding the target word, and the extent to which semantic processing can help integrate a word within the context preceding it before that word is actually made available in the input. Van Petten et al. established that semantic processing occurs with only partial and insufficient information on word

identity. This means that the semantic cues provided by the context preceding the target word are used prior to being able to determine the word identity. Van Petten et al. provide evidence for the top-down matching of higher-order information, i.e. semantic and syntactic information available in the preceding context, to guess words during online language processing before their identity is revealed by the sensory input. Based on this, by using a gating technique in the present study it will be possible to determine how much information on word identity, i.e. how many letters of the missing word, are required in the sensory input in order for people to be able to guess the missing word based on the two cues under investigation, contextual constraint and TP.

2) Experiment I will employ a shadowing task in Turkish, which involves repetition of speech at a close latency to the original. The experimental items will be audio recorded with a native Turkish speaker and presented with E-prime 3.0 - a software used to run psychology experiments, which has been requested as part of this project application. Thirty Turkish-English bilinguals will be asked to shadow the sentences. Bilingual participants will be used in order to make the data comparable to that of Experiment II involving both bilinguals and interpreters. Only students of Language and Literature programs at Boğaziçi University will be recruited based on their responses to a previously administered standardized Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian et al. 2007).

The original input and shadowed output will be recorded on a parallel dual channel with a TASCAM DR44-WL audio recorder, which has been requested with this project application, or with the recording equipment in the simultaneous interpreting lab (Sim Lab, JF 401), if available. Latency will be measured between the onset of the sentence-final verb in the input and its repetition in the output. This will be designed as a task of on-line spoken language processing, i.e. the type of processing involved during SI. There are very important differences between shadowing and SI which need to be underlined first. Shadowing constitutes monolingual language use where words are repeated as soon as they are recognized in continuous speech. By contrast, SI, in addition to involving on-line spoken language processing and employing all the above mentioned Efforts (Gile, 2009), constitutes a bilingual task where words have to be decoded from the source language and encoded into the target language. Based on this, there are very important differences between the two tasks in the level of analysis of the input. Furthermore, by looking at pupil dilation, Hyönä et al. (1995) found the processing load during shadowing to be smaller than during SI. Rinne et al. (2000) have shown that interpreting, unlike shadowing, involves selective activation of brain areas associated with lexical retrieval, verbal working memory, and semantic processing. Taken together, these studies show that interpreting is a more demanding and more complex task than shadowing.

Nonetheless, shadowing, like SI, involves simultaneous listening and analysis and production of language. Moreover, coordination between these efforts is also required during shadowing as listening and production occur at a very close latency. Finally, shadowing is also characterized by continuity and dynamics of speech and anticipation can occur only on-line. Based on this, a shadowing task could reveal something about the processes underlying prediction during SI. The purpose of the shadowing task is to see what types of cues lead to predictive processes in a task where spoken language processing and production have to occur simultaneously. When discussing the results obtained during shadowing some implications for the investigation of predictive processes during simultaneous interpreting will be considered as well. This should help reveal some of the mechanisms underlying predictive processing in Turkish.

3) Experiment II will employ a set of simultaneous interpreting tasks from Turkish into English. This involves oral translation from one language (the source language) into another (the target language) at a very close latency to the original. Thirty Turkish-English bilinguals with no previous experience in conference interpreting, twenty interpreting trainees, and twenty professional interpreters will be asked to simultaneously interpret the same experimental items. A different cohort of bilinguals will be recruited for this experiment so that results can be compared to shadowing. The same criteria, i.e. language and literature studies and questionnaire responses on language background, will nevertheless apply in the recruitment process. The Turkish input and interpreted output (into English) will be recorded on a parallel dual channel with the Sim Lab facilities and/or TASCAM DR44-WL audio recorder and latency will be measured between the onset of the sentence-final verb in the input and its interpretation/version in the output. The results of the Turkish-English bilinguals with no previous experience in SI will be compared with the

results obtained in the shadowing task taking into consideration the previously mentioned important differences between shadowing and SI. Moreover, the results of the two interpreter groups in Experiment II - trainee and professional interpreters - will also be compared taking into account very important differences between the two groups, such as SI experience. The SI results will help address the question of <u>what types of cues trigger predictive processes during SI</u>, and at the same time, consider possible task or experience related factors that affect the use of these cues to prediction.

7. PERFORMANCE CRITERIA AND PLAN B
(A detailed discussion of the criteria required for a successful project implementation and details of the contingency plans)

Table 3 provides an overview of the project stages corresponding to the project calendar on the online application system. For each stage, the tasks that will be carried out, the people and facilities needed to carry out said tasks, and the estimated time needed are provided.

Table 3. Tasks, people, facilities, and time needed for each project stage

Project stage	Tasks	People and facilities needed	Estimated time
1. Creating experimental materials	- filtering corpus data - conducting norming study on Turkish-English translations - creating sentences - recording materials in audio format	- Research personnel: room in JF building with desk - Laptop - Company services: Zargan Ltd.	4 months
2. Pilot study: - online cloze test using a gating technique	- recruiting participants (Boğaziçi university students of Languages and Literatures) - running experiments - analysing data - writing up results	- Research personnel: room in JF building with desk - Laptop - Company services: Zargan Ltd.	2 months
3. Experiment I: shadowing	- recruiting participants (Boğaziçi university students of Languages and Literatures) - running experiments - analysing data - writing up results	- Research personnel: room in JF building with desk - Guest researcher - 30 participants/surveyors - Laptop - E-prime - Tascam DR44-WL - Sim Lab (JF401) - Toner - Photocopy	2 months
4. Experiment II: simultaneous interpreting	<u>Cohort 1: bilinguals</u> (Boğaziçi university students of Languages and Literatures) - recruiting participants - running experiments - analysing data - writing up results	- Research personnel: room in JF building with desk - Guest researcher - 50 participants/surveyors - Laptop - E-prime - Tascam DR44-WL	9 months

	Cohort 2: interpreter trainees (Boğaziçi university and possibly Bilkent university interpreter trainees) - recruiting participants - running experiments - analysing data - writing up results Cohort 3: interpreter trainers/instructors and professional interpreters (TKTD members) - recruiting participants - running experiments - analysing data - writing up results	- Sim Lab (JF401) - Toner - Photocopy - Fieldwork (Ankara)	
5. Follow-up analyses and experiments - shadowing - simultaneous interpreting	Cohorts 1-3 - recruiting additional participants - running experiments - analysing data - writing up results - discussing findings	- Research personnel: room in JF building with desk - Laptop - E-prime - Tascam DR44-WL - Sim Lab (JF401) - Toner - Photocopy	3 months
6. Study outcomes	- presenting findings at national and international conferences - preparing manuscripts for publication (3 journal papers expected)	- Research personnel: room in JF building with desk - Laptop - Toner - Photocopy	4 months

In order for this project to be successful, experimental materials need to be created based on the above explained design (see Methodology) and the reliability of these needs to be checked with native speakers of Turkish and Turkish-English bilinguals before they can be tested in shadowing and interpreting tasks in Experiments I and II, respectively. For this purpose, I have envisaged a long enough time period (of approximately four months), within which the materials can be created and recorded, followed by a shorter period of approximately two months to integrate the recordings into an online experimental set-up. Running the pilot phase online will allow for more efficient and less time-consuming tests of reliability. This will be carried out with the help of Zargan Ltd., which already has its own online platform for recruiting participants and running experiments.

In addition, the corpus that will be used to create stimuli in Turkish (TS corpus) has an important shortcoming that must be accounted for. The part-of-speech analyzer of the corpus is not yet sufficiently developed to distinguish between an object noun in accusative and a third person possessive noun in nominative, which have the same form when the noun ends in a consonant in Turkish (e.g. *barajı* can mean 'the threshold' as a direct object or 'his/her threshold' as a possessive, which can be used in subject or object position). This can be problematic when extracting frequency and co-occurrence information from the corpus for the purpose of computing TP. In order to cope with this shortcoming, Zargan Ltd. is using Python (a programming language) to write a program that distinguishes between the two forms based on their use in context in the corpus. This further underlines the indispensable role of Zargan Ltd.'s role in this project.

A further criterion for the successful implementation of this project is the recruitment of participants. The 80 student participants in Experiments I and II, who will mainly be drawn from a cohort of Boğaziçi university undergraduate and graduate students, will be compensated with 12 TL for their participation, as surveyors on the project. I have made a request for this within the project budget items request tab of the online application.

The project will also require the help of professional interpreters, who constitute a very limited cohort across countries. This is precisely why a large enough research environment is required (outlined above) comprising both interpreter educators/trainers and practitioners who have already established contacts with professionals in the field through training and membership in professional organizations, such as the Conference Interpreters Association of Turkey (TKTD).

Finally, should the results obtained in Experiments I and II show confounds in the created materials at a later stage, despite the reliability measures obtained at the early stages of the project, the project timeline allows for follow-up experiments and analyses. No additional budget will be requested for these.

8. AVAILABLE FACILITIES FOR THE PROJECT:
(Equipment or other relevant resources that will be available to the project, such as: laboratory and office space, library resources, computer services or equipment)

SPACE   : Due to the need of dual channel recording equipment, the interpreting experiments will be run in the simultaneous interpreting lab (JF 401 Sim Lab) of the Department of Translation and Interpreting Studies in times that do not conflict with the teaching schedule of the Department. Given that the teaching schedule of the Department relies heavily on the use of this room, both for undergraduate and graduate interpreting courses, I have also requested a voice recorder that allows for the same type of recording outside the lab. However, this still requires a quiet room for testing purposes. Moreover, given that testing will mainly be carried out by the research personnel employed for this study throughout the project, I would like to request a small room with a desk in the John Freely building, where the rooms of the Department of Translation and Interpreting Studies are.

EQUIPMENT   : Same as 'Space'.

COMPUTERS   : The two laptops currently available at the Department of Translation and Interpreting Studies are outdated and do not meet the requirements of E-prime 3.0 (the software required for the experiments); thus, it would be impossible to run experiments in E-prime 3.0 on them. This is why, I have requested two new laptops, with the required specifications, as part of the budget items for this project, which will be used by myself and the research personnel employed in this study.

PERSONNEL   : In addition to the research personnel employed on the project, Nesrin Conker, a research assistant at the Department of Translation and Interpreting Studies doing her PhD in Interpreting Studies will act as project team member, helping with the recording of speech sequences, data collection, and data analysis, as well as with administrative tasks.

9. PUBLICATIONS OF THE PROJECT DIRECTOR ON RELATED SUBJECTS:
(Give relevant figures for each item. Papers, theses, etc. have to be listed in the form used in scholar publications. Specify if BAP grant is acknowledged with reference to the project code.)

JOURNAL PAPER
National:
International:
Hodzik, E. & Williams, J.N. (2017), "Predictive processes during simultaneous interpreting from German into English, " *Interpreting*, *19.1*, John Benjamins Publishing, pp. 1-20.

PUBLISHED PRESENTATION
National:
International:

Hodzik, E. (2014), "The effect of word order on predictive processes during simultaneous interpreting from German into English." In W. Baur, B. Eichner, S. Kalina, N. Kessler, F. Mayer and Jeannette Oersted (eds.) Man versus Machine, Vol. II: The future of translators, interpreters and terminologists, Proceedings of the XXth FIT World Congress, Berlin, pp. 1065-1073.

CHAPTER IN BOOK
National:
International:
Hodzik, E. (2013), "Anticipation during simultaneous interpreting from German into English: an experimental approach." Quality in Interpreting: Widening the Scope, *Interlingua*, Olalla García Becerra, E. Macarena Pradas Macías and Rafael Barranco- Droege (eds.) Granada (Spain): Comares, pp. 87-110.

UNPUBLISHED PRESENTATION
National:
International:
Hodzik, E. 'Transitional probability effects on prediction during simultaneous interpreting from German into English', paper presented to TT3 (Translation and Interpreting in Transition), University of Ghent, Belgium, 13-14 July 2017.

Hodzik, E. 'Contextual constraint and transitional probability effects on prediction during SI from German into English', paper presented to LICTRA, Leipzig, 12-16 March 2017.

Hodzik, E. 'Predictive processes during shadowing and simultaneous interpreting'; presentation at: Second International symposium for Young Researchers in Translation, Interpreting, Intercultural studies and East Asian Studies, Autonomous University of Barcelona, Spain, 29 June 2012.

Hodzik, E. 'Anticipation during language processing and simultaneous interpreting'; presentation at International postgraduate conference in translation and interpreting, University of Edinburgh, Scotland, 28-30 September 2011.

Hodzik, E. 'Anticipation during simultaneous interpreting from German into English: an experimental approach', paper presented at Interpreting Quality conference, University of Granada, Almuñecar, Spain, 23-27 March 2011.

THESIS
M.S./M.A. :
PhD :
Hodzik, E. (2013). Predictive processes during simultaneous interpreting from German into English. Unpublished PhD dissertation, University of Cambridge, UK.

10. ONGOING PROJECTS (IF ANY) LED BY THE PROJECT DIRECTOR: no other ongoing projects
TITLE OF PROJECT:
SUPPORTING INSTITUTION:
BUDGET:

CHECKLIST (Please mark.)

1.	Proforma invoice for all expenditures and procurement exceeding TL10,000	yes
2.	Budget plans for the second and third years if the project duration is more than 12 months	yes
3.	"Guest Researcher Visit Support Information Form" if a guest researcher will be invited	yes
4.	CV of the guest researcher if a guest researcher will be invited	yes
5.	Approval Document of the Ethics Committee (if necessary)	pending

6.	Approval of the ÜYK for foreign fieldwork longer than 2 months		N/A
7.	Addition of budget for customs and the like incase international procurement		yes
8.	Inclusion of the VAT in the requested budgets		yes
9.	Based on the decree mentioned in the 1/3-g article of the Law on Value Added Tax (KDV), 18% tax should be included to the costs of laboratory and analysis services provided for scientific projects by the Directorate of Revolving Funds (Döner Sermaye İşletme Müdürlüğü)		N/A

ACCEPTANCE AND COMMITMENT STATEMENT (PROJECT TEAM)

We accept and commit that;

1. All the information except the scientific hypotheses and opinions stated in this "Project Output" and "Project Text" are true and complete;
2. I/We know project evaluation and support rules and procedures that are mentioned in the BAP Handbook..
3. I/We know that, in case it is necessary for the project, the project director is responsible for the presentation of the additional documents mentioned in the "Project Application Control List" to the BAP Committee at the time of application and the project contract may not be made for the projects that are decided to be supported, in the case that these documents are not completed.

PROJECT DIRECTOR		
Name/Surname and Title **Ena Hodjikj**		**E-mail address/Mobile phone** **ena.hodzik@boun.edu.tr / +905433643046**
(Institute/Faculty/Vocational School/Department **Faculty of Arts and Sciences / Department of Translation and Interpreting**		**Date and Signature** **16/07/2018**

References:

Akpınar, S. (2015). Processing genitive-possessive long distance dependencies in Turkish. *Unpublished doctoral dissertation, Boğaziçi University, İstanbul*.

Altmann, G. T., & Kamide, Y. (1999). Incremental interpretation at verbs: Restricting the domain of subsequent reference. *Cognition*, *73*(3), 247-264.

Altmann, G. T., & Mirković, J. (2009). Incrementality and prediction in human sentence processing. *Cognitive science*, *33*(4), 583-609.

Bilgin, O. (2016). *Frequency Effects in the Processing of Morphologically Complex Turkish Words* (Unpublished master's thesis). Boğaziçi University, Istanbul, Turkey. Retrieved from http://st2.zargan.com/public/resources/turkish/frequency_effects_in_turkish.pdf

Chernov, V. M. (1994). Message redundancy and message anticipation in simultaneous interpreting. In S. Lambert & B. Moser-Mercer (Eds.), *Bridging the gap: Empirical research in simultaneous interpretation*. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Clifton, C., & Frazier, L. (1989). Comprehending sentences with long-distance dependencies. In *Linguistic structure in language processing* (pp. 273-317). Springer, Dordrecht.

Cowan, N. (2000). Processing Limits of Selective Attention and Working Memory, Potential Implications for Interpreting. *Interpreting, 5*(2), 117-146.

Darò, V., & Fabbro, F. (1994). Verbal Memory During Simultaneous Interpretation: Effects of Phonological Interference. *Applied Linguistics, 15*(4), 365-381.

De Groot, A. M. (2000). A complex-skill approach to translation. In S. Tirkkonen-Condit and R. Jääskeläinen (eds.), *Tapping and mapping the processes of translation and interpreting*, 53-68.

DeLong, K. A., Urbach, T. P., & Kutas, M. (2005). Probabilistic word pre-activation during language comprehension inferred from electrical brain activity. *Nature neuroscience*, *8*(8), 1117.

De Ruiter, J. P., Mitterer, H., & Enfield, N. J. (2006). Projecting the end of a speaker's turn: A cognitive cornerstone of conversation. *Language*, *82*(3), 515-535.

Diriker, E. (2004). *De-/re-contextualizing conference interpreting: interpreters in the ivory tower?* (Vol. 53). John Benjamins Publishing.

Diriker, E. (2008). Exploring conference interpreting as a social practice. *A. Pym, M. Shlesinger & D, Simeoni (eds). Beyond Descriptive Translation Studies: Investigations in homage to Gideon Toury*, 209-221.

Diriker, E. (2011). Agency in Conference Interpreting: Still a Myth?. *Gramma: Journal of Theory and Criticism*, *19*, 27-36.

Federmeier, K. D., & Kutas, M. (1999). A rose by any other name: Long-term memory structure and sentence processing. *Journal of memory and Language*, *41*(4), 469-495.

Federmeier, K. D., & Kutas, M. (2001). Meaning and modality: Influences of context, semantic memory organization, and perceptual predictability on picture processing. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *27*(1), 202.

Frisson, S., Rayner, K., & Pickering, M. J. (2005). Effects of Contextual Predictability and Transitional Probability on Eye Movements During Reading. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 31*(5), 862-877.

Frost, R., Armstrong, B. C., Siegelman, N., & Christiansen, M. H. (2015). Domain generality versus modality specificity: the paradox of statistical learning. *Trends in cognitive sciences*, *19*(3), 117-125.

Gibson, E. (2000). The dependency locality theory: A distance-based theory of linguistic complexity. *Image, language, brain*, 95-126.

Gile, D. (1992). Predictable Sentence Endings in Japanese and Conference Interpretation. *The Interpreter's Newsletter*(1).

Göksel, A., & Kerslake, C. (2014). *Turkish: An essential grammar*. Routledge.

Hale, J. (2001, June). A probabilistic Earley parser as a psycholinguistic model. In *Proceedings of the second meeting of the North American Chapter of the Association for Computational Linguistics on Language technologies* (pp. 1-8). Association for Computational Linguistics.

Hodzik, E. (2014). The effect of word order on predictive processes during simultaneous interpreting from German into English. In W. Baur, B. Eichner, S. Kalina, N. Kessler, F. Mayer & J. Oersted (Eds.), *Man versus machine*. *Vol. II: The future of translators, interpreters and terminologists*. Proceedings of the XXth FIT World Congress, Berlin.

Hodzik, E., & Williams, J. N. (2017). Predictive processes during simultaneous interpreting from German into English. *Interpreting*, *19*(1), 1-20.

Huettig, F., & Altmann, G. T. (2005). Word meaning and the control of eye fixation: Semantic competitor effects and the visual world paradigm. *Cognition*, *96*(1), B23-B32.

Huettig, F. (2015). Four central questions about prediction in language processing. *Brain Research, 1626*, 118-135.

Hyönä, J., Tommola, J., & Alaja, A. M. (1995). Pupil dilation as a measure of processing load in simultaneous interpretation and other language tasks. *Quarterly journal of experimental psychology, 48A*, 598-612.

Jörg, U. (1995). Bridging the gap: Verb anticipation in German-English simultaneous interpreting. In M. Snell-Hornby, Z. Jettmarová & K. Kaindl (Eds.), *Translation as Intercultural Communication*. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Jurafsky, D. (2003). Probabilistic modeling in psycholinguistics: Linguistic comprehension and production. *Probabilistic linguistics*, *21*.

Kahraman, B., Sato, A., Ono, H., & Sakai, H. (2010). Relative clauses processing before the head noun: Evidence for strong forward prediction in Turkish. In H. Maezawa, & A. Yokogoshi (Eds.), *Proceedings of the 6th workshop on Altaic Formal Linguistics (WAFL6): MIT Working Papers in Linguistics 61* (pp. 155-170). Cambridge, MA: MIT Press.

Kamide, Y., Altmann, G. T., & Haywood, S. L. (2003). The time-course of prediction in incremental sentence processing: Evidence from anticipatory eye movements. *Journal of Memory and language*, *49*(1), 133-156.

Kamide, Y., Scheepers, C., & Altmann, G. T. (2003). Integration of syntactic and semantic information in predictive processing: Cross-linguistic evidence from German and English. *Journal of psycholinguistic research*, *32*(1), 37-55.

Kohn, K., & Kalina, S. (1996). The Strategic Dimension of Interpreting. *Meta: Translators' Journal, 41*(1), 118-138.

Konieczny, L. (2000). Locality and parsing complexity. *Journal of psycholinguistic research*, *29*(6), 627-645.

Konieczny, L., & Döring, P. (2003, July). Anticipation of clause-final heads: Evidence from eye-tracking and SRNs. In *Proceedings of iccs/ascs* (pp. 13-17).

Kutas, M., DeLong, K. A., & Smith, N. J. (2011). A look around at what lies ahead: Prediction and predictability in language processing. *Predictions in the brain: Using our past to generate a future*, *190207*.

Kutas, M., & Federmeier, K. D. (2011). Thirty years and counting: finding meaning in the N400 component of the event-related brain potential (ERP). *Annual review of psychology*, *62*, 621-647.

Lederer, M. (1981). *La traduction simultanée – expérience et théorie*. Paris: Minard Lettres Modernes.

Mani, N., & Huettig, F. (2012). Prediction during language processing is a piece of cake—But only for skilled producers. *Journal of Experimental Psychology: Human Perception and Performance*, *38*(4), 843.

Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech, Language, and Hearing Research*, *50*(4), 940-967.

Marslen-Wilson, W. (1973). Linguistic structure and speech shadowing at very short latencies. *Nature, 244*, 522-523.

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

Marslen-Wilson, W. (1985). Speech Shadowing and Speech Comprehension. *Speech Communication, 4*, 55-73.

Marslen-Wilson, W. (1987). Functional parallelism in spoken word recognition. *Cognition, 25*, 71-102.

Marslen-Wilson, W. (1992). The mental lexicon in language processing. In W. Bright (Ed.), *International Encyclopedia of Linguistics* (pp. 273-276). New York: Oxford University Press.

McDonald, S. A., & Shillcock, R. C. (2003a). Eye movements reveal the online computation of lexical probabilities during reading. *Psychological Science, 14*(6).

McDonald, S. A., & Shillcock, R. C. (2003b). Low-level predictive inference in reading: The influence of transitional probabilities on eye movements. *Vision Research, 43*.

Otten, M., & Van Berkum, J. J. A. (2008). Discourse-Based Word Anticipation During Language Processing: Prediction or Priming? *Discourse Processes, 45*(6), 464-496.

Özge, D., Marinis, T., and Zeyrek, D. (2015). Incremental processing in head-final child language: on-line comprehension of relative clauses in Turkish-speaking children and adults. *Language, Cognition and Neuroscience, 30,* 1230-1243.

Rinne, J. O., Tommola, J., Laine, M., Krause, B. J., Schmidt, D., Kaasinen, V., et al. (2000). The translating brain: cerebral activation patterns during simultaneous interpreting. *Neuroscience Letters, 294*, 85-88.

Sak, H., Tunga, G., Saraçlar, M. (2008) Turkish Language Resources: Morphological Parser, Morphological Disambiguator and Web Corpus. GoTAL, 417-427.

Sezer, B., & Sezer, T. (2013) TS Corpus: Herkes İçin Türkçe Derlem. Proceedings 27th National Linguistics Conference. May, 3-4 Mayıs 2013. Antalya, Kemer: Hacettepe University, English Linguistics Department, 217-225. Retrieved from http://tscorpus.com

Seeber, K. G., & Kerzel, D. (2012). Cognitive load in simultaneous interpreting: Model meets data. *International Journal of Bilingualism*, *16*(2), 228-242.

Seeber, K. G. (2013). Cognitive load in simultaneous interpreting: Measures and methods. *Target. International Journal of Translation Studies*, *25*(1), 18-32.

Seleskovitch, D. (1984). Les anticipations dans la compréhension. In D. Seleskovitch & M. Lederer (Eds.), *Interpréter pour traduire* (pp. 273-283). Paris: Didier.

Smith, N., & Levy, R. (2011, January). Cloze but no cigar: The complex relationship between cloze, corpus, and subjective probabilities in language processing. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 33, No. 33).

Taylor, W. L. (1953). Cloze procedure: A new tool for measuring readability. *Journalism Quarterly, 30*, 415–433.

Trueswell, J. C., & Tanenhaus, M. K. (1994). Toward a lexicalist framework for constraint-based syntactic ambiguity resolution. In C. Clifton, L. Frazier & K. Rayner (Eds.), *Perspectives in Sentence Processing* (pp. 155-179). Hillsdale, NJ: Lawrence Erlbaum Assoc.

Van Berkum, J. J. A., Brown, C. M., Zwitserlood, P., Kooijman, V., & Hagoort, P. (2005). Anticipating Upcoming Words in Discourse: Evidence From ERPs and Reading Times. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 31*(3), 443-467.

Van Besien, F. (1999). Anticipation in simultaneous interpretation. *Meta: Translators' Journal, 44*(2), 250-259.

Van Petten, C., Coulson, S., Rubin, S., Plante, E., & Parks, M. (1999). Time course of word identification and semantic integration in spoken language. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *25*(2), 394.

Wicha, N. Y., Moreno, E. M., & Kutas, M. (2004). Anticipating words and their gender: An event-related brain potential study of semantic integration, gender expectancy, and gender agreement in Spanish sentence reading. *Journal of cognitive neuroscience*, *16*(7), 1272-1288.

Wilkes-Gibbs, D., & Clark, H. H. (1992). Coordinating beliefs in conversation. *Journal of memory and language*, *31*(2), 183-194.

Wills, W. (1978). Syntactic Anticipation in German-English Simultaneous Interpreting. In D. Gerver & H. W. Sinaiko (Eds.), *Language Interpretation and Communication*. New York/London: Plenum Press.

BOĞAZİÇİ UNIVERSITY

SCIENTIFIC RESEARCH PROJECTS

FIELDWORK INFORMATION FORM

The fieldwork's;	
Country-City/Institution	Bilkent University, Ankara
Dates of travel (To and Fro)	09/02/2020-16/02/2020
The fieldwork's;	
Purpose	The purpose of this trip is to collect data from interpreter trainees at Bilkent University in Ankara for the purpose of providing a large enough sample of interpreter trainee data for the project.
Contribution to the Research	Data obtained from this field work will be used to determine what types of cues trigger prediction during simultaneous interpreting from Turkish into English, which is the central research question of this study. The results obtained will be compared with results from professional interpreters. This comparison is important as it will help establish possible links between simultaneous interpreting experience and the use of particular predictive cues.
Necessity	Important. Given that the interpreting programs at Boğaziçi university, like most high-quality interpreting programs, are very small, with 5 students at undergraduate level and another 4-5 at graduate level, this will provide for only half of the 20 required participant sample. Consequently, data will need to be collected from other trainees and Bilkent university is the only other university in Turkey that offers the European Master in Conference Interpreting program, which is in accordance with European standards and taught by accredited interpreter members of the International Association of Conference

	Interpreters. This makes the program comparable to that of Boğaziçi University.
Quality	Before conducting this data collection at Bilkent University, permission will need to be obtained from the Interpreting program director at the university. The director will be contacted via the Conference Interpreters Association of Turkey (TKTD) that they are member of, which will also be used to recruit professional interpreters for the study. Once permission is obtained, the travel arrangements will be made and a schedule for data collection will be created in agreement with the director at Bilkent, depending on the availabilities of the interpreter trainees. On site, the participants will be asked to read the instructions of the experiment and sign consent forms if they agree to take part in the study. In a quiet testing room, preferably the simultaneous interpreting lab at the university, stimuli created for the purpose of this research will be presented auditorily with E-prime 3.0 (using a laptop) and the participants will be instructed to simultaneously interpret the sentences they hear as quickly and accurately as possible to the original. The interpretations will be recorded on a dual channel with the Tascam DR44-WL multitrack recorder. The participants will be thanked for their time and compensated with 12TL each for their participation.

The appointees';

Title, name and surname	Dr. Ena Hodjikj
The capability of the appointee's (appointees') apart from the project director related to the work	Project director
Travel cost	556 TL (the average cost of a return ticket Istanbul-Ankara booked two months in advance)
Accomodation cost	861 TL (the cost of a seven-night stay in three-star hotel in Ankara)
Daily Allowance cost	583 TL (for a seven-day stay, based on a daily expense of 15 TL)

Whether he/she has ÜYK permit (For foreign appointments longer than 1 month)	NOT APPLICABLE

(APPENDIX 2)

BOĞAZİÇİ UNIVERSITY

SCIENTIFIC RESEARCH PROJECTS

GUEST RESEARCHER VISIT SUPPORT INFORMATION FORM

Project director's;	
Title, name and surname	Dr. Ena Hodjikj
Department	Translation and Interpreting Studies
Project no	N/A at this stage
Project name	BAP start-up project Predictive processes during simultaneous interpreting from Turkish into English
Guest researcher's;	
Title, name and surname	Prof. Ebru Diriker
Institution he is affiliated with	Boğaziçi University / York University
Address	Department of Translation and Interpreting Studies, Boğaziçi University, 34342 Bebek - Istanbul
Country/City	Istanbul – Turkey / Toronto, Ontario - Canada
Visit dates (To and Fro)	Spring semester 2019
Travel cost	Return ticket Istanbul-Toronto, ON is 4000-5000 TL (if Prof. Diriker has to travel from Canada for the visit)
Place of accommodation	Own place in Istanbul, Turkey
Accommodation cost	N/A
Daily Allowance cost	N/A
Honorarium (maximum of TL 1,000)	1000
The relation of the research field and its contribution to the project	
Prof. Ebru Diriker is professor of Interpreting Studies and Interpreting Studies Program director at the Department of Translation and Interpreting Studies at Boğaziçi University. As such, she has established and	

developed the cognitive interpreting studies research strand at the Department of Translation and Interpreting Studies. Importantly for this project, she has also started work on an Interpreting process research project investigating predictive processing and memory in Turkish-English interpreter trainees and professionals Turkish in collaboration with colleagues at Koç University. Prof. Diriker is also course director at Glendon College, York University in Canada, where she established a program in Turkish within the MA in Conference Interpreting. In addition, she is an accredited conference interpreter and an active member of the AIIC (International Association of Conference Interpreters). She is also an active member of the TKTD (the Conference Interpreters Association of Turkey).

Types of activities to be engaged in;

Through her extensive research experience and active involvement in professional organizations like the TKTD, Prof. Diriker will help me with the recruitment process of trainee and professional interpreters working with Turkish and English as participants in the proposed study. This process will involve selecting recruitment criteria (e.g. accreditation, years of experience, training, etc.), establishing contacts and running simultaneous interpreting experiments.

I hope that Prof Diriker will also participate in the presentation of the project's outcomes at scientific meetings and hopefully in published form.

- **The net payment to the beneficiary is made after the legal deductions of 20% to the cover income tax. Utmost care should be given to this issue when the budget is planned.**
- **Please attach the CV of the guest researcher to be invited.**