Context-independent information in English-Chinese simultaneous interpreting: A corpus-assisted study

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In neurocognitive and physiological studies, context-independent (CI) and context-dependent (CD) properties have long been dichotomized in terms of their detecting, searching, retrieval and attention management. CI properties are always activated by the respective words on all occasions and is unaffected by contextual relevance. CD properties are the source of semantic encoding variability. Assisted by a small-sized corpus and with neurolinguistic theory of simultaneous translation, this paper investigated how CI information is processed in English-Chinese simultaneous interpretation. With naturalistic data pattern generated from the corpus, it argues that CI information in SI serves as one of the cognitive problem triggers as higher omission rate in seasoned interpreter's recording, indicating possible cognitive overload. It is thus assumed that because CI information does not interfere with the meaning-based interpretation of the source language utterance, if it fails to be detected, no direct or obvious contextual connection can further facilitate its decoding and encoding. Thus, CI information in SL utterance may share higher rate of omissions or other kinds of delivering failures where cognitive overload appears.

Keywords: context-independent information, simultaneous interpreting, cognitive problem trigger, neurolinguistic theory of SI, structure-routed transfer

1. Introduction

Simultaneous interpreting (SI) is widely acknowledged as an extremely complex cognitive process during which source language and target language are processed

simultaneously, while listening and comprehending the source utterance and outputting the target utterance, within a very limited time span, on average about two to three seconds or four to five words (Christoffels and De Groot 2004; Gerver 1976). Many cognitive, social and linguistic factors intertwiningly shaping the interpreting process, and they have been widely discussed in the past decade or so. Some factors have been identified as cognitive problem triggers (Gile 2009: 192) leading to cognitive overload when unnatural pauses, inversions or even the rendition of omissions may thus appear. And when the interpreter is working under pressure, compressed by time and cornered by space, their cognitive mechanisms have always been exaggerated and made them easier to detect (Bertone 2006: 11). Once the interpreter fails to overcome these barriers, the degree of fluency and natural pace of delivery may thus be destroyed. Previous SI studies across language pairs provided empirical evidences on how the interpreter deal with linguistic and extra-linguistic barriers, syntactic complexity, accent-specific pronunciation of the speaker, and the degree of familiarity of a domain-specific topic alike (Fiddick, Cosmides and Tooby 2000; Shlesinger, 1994; Wang and Li 2015). Some general and reviewed studies also widely discuss problems in the comprehension and production during the SI process (Ahrens 2005; Liu, Schallert and Carroll 2004; McAllister 2000).

Amongst them, Gile (2009) once highlights proper names appear during SI may pose potential problems for the interpreter, especially if the interpreter is not familiar with a proper name or its pronunciation in the source language. Partly because most proper names are deeply rooted in the source culture and even have a “symbolic identification” of the named object, place, people and so on. Proper names alike, associated with context-independent (CI) properties, form the core meanings of words which are always activated by the respective words on all occasions, they should be unaffected by contextual relevance and have always been available in an irrelevant context as in a relevant context. Contrastively, context-dependent (CD) properties are the source of semantic encoding variability (Barsalou 1982: 83).

According to Frauenfelder and Schriefers (1997: 75), the process of translation

and interpreting is decomposable if we start by investigating the clearly isolatable and testable aspects of SI. CI information embedded concepts (CIIECs) is isolatable from other linguistic items in both source and target language. In that case, if the activation of CIIECs fails in their embedded incoming source utterance, it is assumed that a higher possibility of rendition failure may occur in SI than in other type of incoming information. Such concepts that do not interfere with the meaning-based interpretation of the source language utterance may experience decoding failure, followed with further failures in encoding into target language since no direct contextual connection can be generated. Thus, CIIECs in SI may share higher rate of delivering failures triggered out caused by cognitive overloading. With naturalistic English-Chinese SI data (two recorded sound tracks and their transcriptions) heavily embedded with CIIECs, this paper aims at providing empirical evidence on how seasoned interpreters tackle with CIIECs and further generate pedagogical value in this regard.

Taking Barsalou (1982)'s definition of CI and CD information as a starting point in section 2, followed by how CI and CD properties are identified in bilingualism and physiological studies, a general distinction between CI and CD is also provided in section 2 whereas section 3 introduces methodological design of the study, of which a small-sized corpus is built containing naturalistic English-Chinese SI transcriptions of a five-hour artistic event. Based on neurolinguistic theory of SI (Paradis 1994), section 4 discusses how CIIECs are processed neurocognitively, if they serve as one of the cognitive problem triggers. The possible reasons for the delivering failure of CIIECs are also discussed in section 4 and section 5 is the conclusion.

2. The dual information processing model

Many cognitive and psychological studies support the idea that there are two fundamentally different ways of processing information. The central idea that one of the routes of speech information processing demands explicit allocation of attention

which requires intentional commitment and have been termed conscious, controlled, or effortful (Kahneman, 1973; Posner and Snyder, 1975; Pribram and McGuinness, 1975). Requiring mental capacity or resources, controlled processes are greatly influenced by subject characteristics and conscious strategies. They are contrasted with a second type of mental operations that relies solely on automatic allocation of attention. In the literature of cognitive psychology, even though under different theoretical frameworks, the dual processing model were widely discussed, like automatic vis-à-vis controlled (Schneider and Shiffrin 1977; Shiffrin and Schneider 1977), automatic and non-automatic (Logan 1988), routine vis-à-vis non-routine (Frith et al. 1991), or well-learned vis-à-vis novel (Passingham, 1996).

Schneider and Shiffrin (1977) propose two kinds of processing route, automatic process and controlled process and apply to three stages of the process: detection, search, and attention phenomena. It explains how information perception happens through accessing long-term memory (LTM) and short-term memory (STM). And memory itself is described as a collection of nodes interrelated through learning. Each node consists of many information elements. When one element of a node is activated, all associated elements are activated as well. The LTM stores inactive nodes while the STM store consists of activated nodes. The processing routes for automatic and controlled processes are thus determined their allocation of attention. Automatic processes are the learned, sequential activation of nodes in which the same sequence is always activated by a particular input and run with little or no attention required. Once learned, an automatic sequence is difficult to suppress, ignore, or modify. Because automatic processes make minimal demands on the attention of the STM store capacity, they can run in a parallel manner. Controlled processes including decisions, rehearsal, coding, searching of stores, manipulate the input and output of information from the STM. A controlled process is a sequence of nodes activated by attention to accomplish a specific task. Such a process is flexible, temporary, and limited by the capacity of the STM store. And that capacity limitation requires the execution of controlled processes must be in a serial way. Like Schneider and Shiffrin (1977), many other studies also try to formulate information-processing routes based on the CI vis-à-vis CD dichotomy principle.

Posner and Synder (1975) suggest three criteria that the uncontrolled, routine, or well-learned features in automatic processing fit into. The three are (1) without attention, (2) without giving rise to conscious awareness, and (3) without producing interference with other ongoing mental activity. In other words, no additional resources demanded in automatic processes. Hasher and Zachs (1979) also carry out several experiments and introduce six stringent criteria for automatic processing.

Even though there hasn't been a consistent literature in terms of how CI and CD properties are processed, retrieved, even experience recognition failure, most studies have reached consensus that there are indeed two types of information whose governing principles of processing may go through different routes (Bratman 1992; Duncker 1945; Tulving 1972). Researches have moved forward to the nature of information in both automatic and controlled what kind of information will be processed via automatic route, Barsalou and Bower (1980) further designate that there are particular properties of information in an individual concept may easier be automatically activated if they have been frequently paired and associated when an automatic relation between them is established. The very existence of the dichotomy of the nature of properties, CI and CD, has been frequently observed in numerous experiment settings in both behavioural and physiological studies therefore enough attention has been drawn on how CI and CD properties are activated as lexical inputs and on what occasions these two properties are identified (Hasher and Zacks 1979; Humphreys 1978; Kalisch et al. 2006; Tulving and Thompson 1973). Experiments cover the accessibility and verification of CI and CD properties found that the verification time of CI information input does not vary across sentence contexts. When the sentence context related to the property, the verification time is no less than when unrelated. In other words, no matter in monolingual or bilingual information processing, it is not the identification or verification to CIIECs making any difference in their processing route, but the stage of retrieval to these concepts may be different. If they are not stored in LTM, more attention needs to be given in processing them thus no other task can be processed in a parallel manner.

3. Neurolinguistic theory of SI

Derived from Chomskyan linguistic competence-performance dichotomy, and in line with the principle of dual information processing, Paradis (1994) also designates two neurocognitive routes in his seminal paper. They are conceptual mediated route and structural routed transfer entailing various-level linguistic transfer between first language (L1) and second language (L2) systems. Conceptual mediated route is accessed where linguistic decoding of source language (SL) until comprehension of the message (awareness of the meaning), followed by the linguistic encoding of the message. Structure-routed transfer is also known as via translation-specific routes among seasoned interpreters. It is assumed that there are four neuro-functionally independent language-related subsystems in a trained and seasoned interpreter: L1 system, L2 system, underlying connection between L1 and L2 system, and a fourth underlying the connections between L2 and L1. The latter two are the shortcut that links translation-equivalents between themselves.

Usually the baseline of threshold level seasoned interpreters is much lower than that of untrained bilinguals. It is thus possible that the underlying two subsystems or shortcuts are more often taken than consecutive interpreting and written translation under such tight time constraint. When processing takes the shortcut, i.e., via L1-L2 or L2-L1 system, it thus entails a structural route between source input and target output. The shortcut operates by automatic application of rules, from one linguistic element in SL to its structural equivalent in TL and is also known as "translation-specific routes" whereas they may occur at various levels of linguistic representation: SL-TL phonology, SL-TL morphology, SL-TL syntax, and SL-TL lexical semantics (Paradis 1994: 329). When deployed, they provide an additional and alternative route to conceptual mediation. It allows people with such systems to bypass the thought systems and takes place at a specific linguistic level. For the professional interpreter, apart from engaging in conceptual mediation, she also demonstrates more efficient source-target transfers such as structural transcoding and lexical memory pairing attributable to the existence of other neurocognitive processing routes. Conceptual mediation means going the full cycle between source

input and target output. Via sensor-motors, an initial chunk of source input is stored in STM, subject to individual capacity, often about 1 second via hearing, and then channeled to LTM and Grammar-Parser at the same time. What goes in Grammar-Parser is parsed and then interpreted by the thought systems. The interpreted "message" is then conceptually mediated into a target-compatible shape to comply with the target system's conceptualization and contextualization of the world and with the interpreter's communicative intentions as the message-carrier to the target hearer. Then, the mediated message is recoded in the target language via lexicon and Grammar-Parser before verbalization. And the cycle goes on.

Even though Paradis never discussed what kind of information input would go through structural route and which goes to conceptual mediation, borrowing from Schneider and Shiffrin (1977)'s distinction between automatic and controlled processing, as well as the very nature of CI properties (Barsalou 1982; Barsalou and Bower 1980), it is reasonable to expect that in SI, CIIECs are more likely entering into structural routed than being conceptually mediated in language faculty than those concepts with CD information in SI, in particular in their retrieval in L2-L1 system (English-Chinese system in our case). And it remains unknown that how CIIECs are processed neurocognitively and under what circumstances they may experience rendition failure. Based on the definition to CIIEC (Barsalou 1982) and two processing routes in SI (Paradis 1994), concepts with CI properties in SL and their TL translation are identified from a small-sized corpus, followed by discussions attempting to answer the question.

4. Methodological design

A Bakerian approach is adopted to compare the delivery of CIIECs using a small-sized English-Chinese SI corpus triangulate reasons in terms of delivering failure of CIIEC (Baker 1999, 2000). In order to probe whether professional interpreters singled out CI information and how they tackled them, a neurolinguistic approach (Paradis 1994) has been applied to the identification of interpreter's

choices as well as further interpretations to data patterns obtained from the corpus.

4.1. Data collection

In corpus-based interpreting studies, the difficulty to access to recordings is accompanied by several methodological obstacles including the preparation of a rigorous research design and the suitability of the material for analysis. In any empirical study, real-life evidence is obviously required to confirm the theoretical constructs. And in it is believed that practiseachers may have the key to accessing real life data (Bendazzoli and Sandrelli 2009). Similar to any other empirical research, "to establish ecological validity and to arrive at meaningful findings, one must control as many of the independent variables as possible, so as to ensure that measurements in terms of the chosen dependent variable(s) are indeed reliable indicators of whatever one wishes to measure" (Shlesinger 1998a: 3-4).

But it has been widely admitted that "it is virtually impossible to reproduce all the characteristics of speech in writing, as there are several levels (i.e. linguistic, paralinguistic and extra-linguistic) comprising an infinite number of features, such as pauses, repetitions, prosody, body language, and many more" (Monti et al. 2005: 1082). These different levels of speech are not what we're going to look at in this paper but rather a very specific type of information, i.e., context independent one. Two synchronized recordings about three hours fifty-five minutes were word by word transcribed into parallel SL-TL text, details as shown in Figure 1:

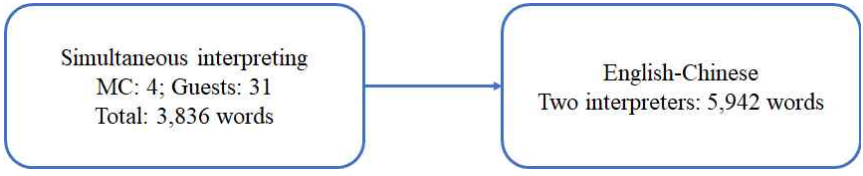

Figure 1. Features of the transcript

Two interpreters of the transcribed event are both professional freelance interpreters with 8-10 years' experience in conference interpreting. Both of them have Chinese

as their first language and English as their second language.

4.2. Data description

Given the fact that the interpreting process is a matter of complexity, variables must be controlled as many as possible to make sure the reliability of the result. These variables concern speakers' public speaking experience, their language skills, their accent, style and so on, as well as elements of speeches, including topic, length, speed, degree of technicality, position along the written-to-spoken continuum, use of accompanying visual information and so on (Bendazzoli and Sandrelli 2009). And again, given that the cognitive choices and strategies interpreters applied to tackle CIIECs in the source utterance would not be influenced by the above paralinguistic elements, thus they can be safely ignored.

Just as then any developments towards a full-fledged paradigm of corpus-based interpreting studies will depend on our success in overcoming two main obstacles, namely transcription and paralinguistic dimensions (Shlesinger 1998b: 486). Thanks to two stenographers of the event, the full transcript of the Chinese translation is available and thus only the source speech (four MCs, two native English speakers, one Korean and one Chinese; 33 speakers most deliver their speech in English) was transcribed manually. There are no punctuation signs in the transcripts, as they could be misleading and create problems in automatic analysis. Transcribed texts are segmented in units of meaning, based on the speaker's intonation and syntactic information in the sentence involved. The double bar sign "//" is used to indicate the end of each segment. This segmentation is also functional to the alignment process between the source and target texts.

The naturalistic data recorded from the 10th Asian Film Festival was heavily rooted with CI information, like names of films, directors, actors and actresses. As a typical type of CI information, proper names are independent from the working context. They have been testified in Meyer (2008) and thus we adopted it in this study, as "isolatable and testable" items. In order to avoid being subjective, four independent raters were employed in the categorization of the TL rendition and a

discussion afterwards to achieve consensus on controversy annotations. All CIIECs have been screened out in three levels for further discussion: phonology, morphology and syntax.

The interpreted CIIECs have also been identified and categorized based on the following procedures:

1. If the SL CIIEC matches its standard and established translation in Chinese, it is annotated as structural routed (SR);
   e.g. Xian Xinghai: 冼星海
   Ivana Wong: 王菀之
   Ms. Sophie Marceau: 苏菲玛索女士
   Sungkyunkwan Scandal: 《成均馆绯闻》
2. If the SL CIEI fails to match the standard and established translation, it is annotated as conceptual mediation (CM);
   e.g. Director Choi and Gigi Leung: 两位 (the two)
   James Bond: 零零七 (Double O Seven)
   Thank you Giddens Ko and Vivian Sung: 谢谢我们的颁奖嘉宾 (presenters)
3. If the inputted CIIEC in SL doesn't appear in TL, it is annotated as omission (OM).

In the case of interpreted CIIECs, their Chinese interpreted utterances have also been annotated into three categories considering interpreter's underlined cognitive decisions (Paradis 1994) and their translating strategies (Chou et al. 2015), as the examples above demonstrated. Three types of renditions have been identified, each indicating interpreters' different underlining cognitive decisions. Their distribution patterns will be discussed in the next section.

5. Discussion

Based on Paradis' (1994) model and previous attempts linking translator's decisions to their neurocognitive choices (Chou et al., 2015; Chou, 2016; Chou, 2017; Liu, 2017), data from the parallel bilingual corpus has been generated in terms of how English CIIECs were delivered into Chinese and what they may

indicate interpreters' neurocognitive choices. We attempt to see what data patterns may appear and how are they shedding light on our understanding to CI information in SI process and corpus-based interpreting studies at a large. There is a total of 537 items embedded with CI information in the source utterance embedded in the small-sized corpus. All CIIECs were annotated by three textual levels, i.e., phonological, morphological and syntactical. And their Chinese counterparts are also sorted out, based on two neurolinguistics routes and one TL output: structural route (SR), conceptual mediation (CM) and omission (OM). Their distribution patters are shown in Table 1:

Table 1. The rendition to CI information

ST	TL			Total
	SR	CM	OM	
Phonology	19/3.54%	N/A	N/A	266/49.53%
Morphology	368/68.53%	21/3.91%	47/8.75%	270/50.28%
Syntax	1/0.19%	18/3.35%	63/11.73%	1/0.19%
Total	388/72.25%	39/7.26%	110/20.48%	537/100.00%

As observed in Table 1, amongst 537 CIIECs of different levels, the structural route is the most frequently taken, out rating conceptual mediation as another information accessing route, and it also ranks higher than omission. And no matter which linguistic level the SL information falls into, over 70% of them have been delivered into their established TL equivalences, referring to their underlying L2-L1 translation-specific routes and the allocation of their attention is rather unconscious and effortless. It is also shown in the corpus data that about 7% of SL CIIECs are failed to be verified at the first place therefore they undergo the conceptual-mediated route and are rendered according to their meaning rather than their established Chinese translations. 388 out of 537 items are observed as being accessed via structure route, meaning the majority of CIIECs have been rendered into their established counterparts in Chinese stored in interpreters' LTM. As stated earlier, the L2-L1 and L1-L2 subsystems are also known as translation-specific routes where incoming SL chunks are searched and matched with their equivalent

TL chunks in an automatic way. Example 1 shows a SL cluster of 14 CIIECs were successfully interpreted into Chinese with only 1 omission found:

Example 1

1. He has worked with major Chinese stars, often with Ge You//
   他曾經多次和中國知名的演員合作//比如說葛優
2. and also Andy Lau and with Hollywood leading men such as Donald Sutherland and Adrien Brody //
   還有劉德華//以及好萊塢的當紅影星當努修達南和艾哲倫寶迪合作
3. His popular works and serious films have resonated with Chinese and international audiences //
   他的拍攝能夠吸引國內和國外的觀眾的商業電影和體裁相對嚴肅的電影
4. Demonstrating impressive range, Feng has directed touching hits like *If You Are the One*: 1 and 2 //
   他作為一個多面手的導演, 馮小剛指導了《非誠勿擾》1和2
5. and period dramas including Aftershock (2010 AFA's Top Grossing Asian Film) and //
   以及時代劇《唐山大地震》//這部電影獲得了2010年最高票房亞洲電影
6. Back to 1942 (2012) which were China's nominations for the Academy Awards //
   以及在2012年拍攝的電影《1942》//這兩部電影都代表了中國競逐奧斯卡最佳外語片
7. He has won Best Director from the Golden Rooster Awards //
   馮小剛導演曾獲得金雞獎最佳導演
8. Outstanding Director from the Huabiao Film Awards for two times //
   兩屆華表獎的優秀導演
9. Best Director from the Hundred Flowers Awards for three times //
   三屆大眾電影百花獎的最佳導演
10. Best Leading Actor from the Taipei Golden Horse and many awards from other prestigious international film festivals //
    臺北金馬獎最佳男主角及多個重要影展的獎項

It is an about one-minute excerpted transcript heavily embedded with 14 CIIECs, most of them are at morphological level like names of directors, actors, movies and

film awards, and 13 items are successfully interpreted expect for “AFA” (Asian Film Award) in line 5, which is obviously deleted in TL. None of them can be inferred from the working memory and the contextualization likely to be failed unless the interpreter stores every incoming item in his LTM and the retrieval was successful. Interpreters’ retrospective interview also confirms that. Those items rendered through structure-route are either within interpreter’s declarative knowledge or a thorough preparation beforehand covered the Chinese equivalents of them. However, in example 2, the rate of omission is much higher.

1. In the early 1990s, Yuen collaborated with Tsui Hark to revive the classic martial arts genre//
   在九十年代的時候袁和平以武俠片導演徐克合作
2. exemplified by Once Upon a Time in China II //
   共同合作《黃飛鴻之男兒當自強》
3. During those years, Yuen redefined Hong Kong action with increasingly elaborate fights by employing wires and imaginative choreography that more closely resembled Peking opera//
   在那段時間進一步深化香港動作電影的設計使其更加多姿多彩以吊威亞的方式創作出更加精巧複雜和貼近中國的京劇打鬥場面
4. *Iron Monkey* (1993) stands as perhaps his best film from this era that shows his kinetically fluid style of action//
   袁和平執導的《黃飛鴻之鐵馬錮》中破舊立新流暢動作與它的靈活性創造力最佳的例子
5. By the late 1990s, he was invited by the Wachowskis to mastermind the action choreography of *The Matrix* (1999) which became a tremendous success//
   九十年代後期袁和平與高兩位導演大力邀請擔任好萊塢巨片的動作指導技驚四座電影票房大收//
6. Further Hollywood engagements followed such as Ang Lee’s *Crouching Tiger, Hidden Dragon*, Quentin Tarantino’s *Kill Bill: Volume 1 and 2* and others, as well as a collaboration with Wong Kar-wai on *The Grandmaster*//
   袁和平其他的好萊塢作品李安的《臥虎藏龍》及塔倫天奴的《標殺令1》其後袁和平擔任由王家衛所執導的《一九四二》動作設計的指導

In Example 2, more CIIECs appear in a constant manner and in Line 5, two CIIECs are omitted, including the name of the director and the name of a film. In the interpreter's retrospective report, he indeed mentioned that the two items are out of the context therefore he failed to contextualize them and had to omit them since the following incoming CIIECs require more attention. This echoes the notion that information with context-independent properties are unaffected by contextual relevance and have always been available in an irrelevant context as in a relevant context. In Example 3, the cognitive route conceptual mediation is well justified.

Example 3

1. Well you know there have been some great movies shot here such as films by our Jury President Johnnie To like *Exiled* and action films like *Pedicab Driver* by Sammo Hung //
   其實有很多由杜琪峰導演拍攝的《放逐》還有由洪金寶導演拍攝的《群龍戲鳳》
2. Film icons like director Orson Welles and super spy James Bond have been inspired by Macau too//
   當然還有一個007的電影也是在澳門拍攝的

In Example 3, two CIIECs are found in Line 2, "Orson Welles" was obviously missing and the super spy "James Bond" was delivered into "Double O Seven", an unquestionable conceptual mediation, rather than referring to its Chinese equivalence "詹姆士邦德", a transliteration. As the data pattern demonstrates, there are more of omissions (20.48%) than conceptual mediations (7.26%) in delivering CIIECs. It is generally believed that no matter under what circumstances, omission should be interpreters' last choice. But when translating CIIEC, omission is sometimes unavoidable if its recognition failed. That is because such CI information can be nowhere found in their neighboring utterance and just as Rabinowitz et al. (1977: 662) claims that most recognition failure accounts for the fact that their retrieval was attempted and failed, instead of an item being recalled but not recognized. Even though some degree of quality in simultaneous interpreting can be indicated by non-omission (Gile 2009), under severe time constraint, conference interpreters

may only have to omit CI information even though it leads to the loss of information. It can also be provide empirical evidence to the claim that seasoned interpreters are much more often assisted with translation-specific route in L1-L2 or L2-L1 subsystems where SL-TL equivalences store, but seeks less for conceptual mediation as it consumes more cognitive resources (Paradis 1994). Instead, beginning simultaneous interpreters and occasional translators are used to translating without appealing to the translation-specific underlying system, which means no L1-L2 system nor L2-L1 system are accessed during the language processing procedure which leads to less efficiency and proves the fact that most natural bilinguals are unable to perform SI task.

Paradis (1994: 329) presumes that there are two possible translating strategies to go from the utterance in SL to its translation in TL: (1) linguistic decoding of SL happens until comprehension of the message, followed by the linguistic encoding of the message; (2) the direct transcoding proceeded by automatic application of rules, from one linguistic elements in SL to its structural equivalent in TL. He stresses that seasoned interpreters are tend to take the shortcut which links translation equivalents between themselves. Comparatively, beginning simultaneous interpreters probably incline to strategies of conceptual mediation, as they are not capable of translating appealing to the translation-specific underlying system. However, he doesn't infer whether the two kinds of strategies may work in parallel or in a subsequent manner, nor from the cognitive nature of SL utterance, which kind of information are more likely to be proceeded in structure route or in concept mediation.

Therefore, we further modulate Paradis (1994) two available translation strategies in terms of how and propose the information process of context-independent information in SI as in Figure 2:

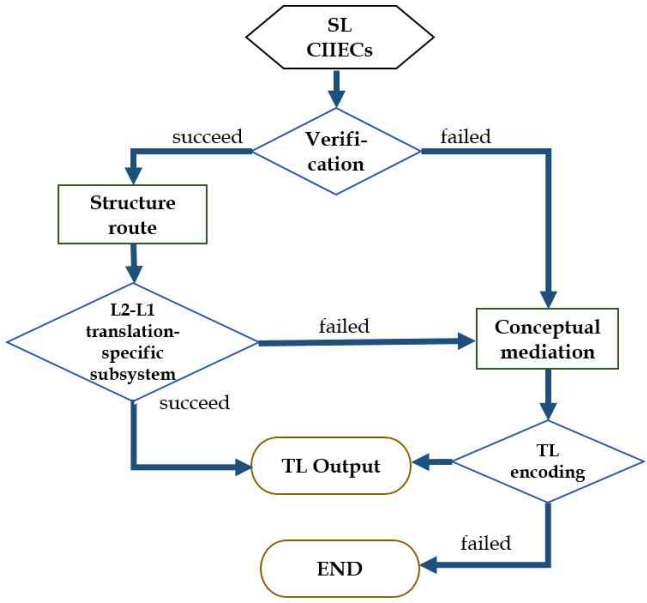

Figure 2. Processing CIIEC in English–Chinese simultaneous interpreting

As shown in Figure 2, the interpreter have access to two processing routes in a subsequent manner, and there are three possible processing results for SL CIIECs during SI: (1) if the concept is detected and verified as contextual independent one, it will go through structure route where the L2-L1 translation-specific subsystem functions for seasoned interpreters or if the SL-TL equivalent is within the declarative knowledge of the interpreter. She will search TL matched counterpart store in his or her LTM, and proceed to TL output if the match is successful; (2) if the matching failed, the SL CIIEC will continue to be processed in a controlled manner. The success of TL output will be determined by interpreter's STM store since the process happens in a serial way and it may also end up in omission if TL encoding fails due to various reasons like the limit of STM capacity, the time restraint, and the allocation of attention; (3) if the input CIIEC fails to be detected at the very first place, it will then be denied to enter the structure route and a more cognitively consuming route will intervene, i.e., conceptual mediation.

Failed TL output or omission happens under two circumstances: (1) SL CIIECs are verified as what they are once speech inputs reach STM thus structure route activated but followed by failed LTM matching and thus conceptual mediation introduced during which the TL encoding also fails. (2) SL CIIECs failed to be verified and further failed to be encoded during conceptual mediation as other SL utterance during SI.

Thus, we argue that CIIECs serve as one of the cognitive problem triggers in SI for two reasons. First, it is more likely that concepts with CI properties may experience processing failure than information with CD property with time constraint in SI if their verification failed. As demonstrated in Figure 2 and analyzed above, theoretically there are two possible processing accesses that lead to null-TL-output or the rendition of omission. And one of the accesses is CIIEC-specific. In other words, information with CD properties will not enter structure route at the very first place. And Rabinowitz et al. (1977) find out in monolingual processing, most of the recognition failure of information with CI properties accounts for their failed retrieval attempts rather than their verification. Thus, in processing resource limited bilingual processing like SI, the output of omission of CIIECs in TL may also mainly attribute to failed matching between SL and TL or failed matched TL utterance retrieval. Because once the recognition or matching failed, which must consume some time (even if just one tenth of a second), the processing time and cognitive resources will be highly condensed even if they enter the controlled process follow suit.

Second, in controlled processing, CIIECs may also experience higher rate of delivering failure. Since CI properties form the core meaning regardless of context, the contextualization of CIIECs is much more difficult than that of contextual dependent information. As previously stated, the very nature of CI properties determines that the CIIEC should be just as available as in a relevant context as in an irrelevant text. And the activation of such concepts can only be achieved by the association to CI properties embedded in these concepts but not by that to any given context. That is to say, the usage of CIIECs sometimes assumes a great deal of common knowledge between speaker and listener other than the context itself

(Meyer 2008: 107). Tulving (1972) even suggests that there is a salient distinction of two perceptual or cognitive systems in terms of semantic-episodic distinction, where semantic memory is a necessity for the use of language and related to automatic processing, which is often in an unconscious, effortless and uncontrolled manner. And episodic memory receives and stores information about temporally dated episodes or events, and temporal-spatial relations among these events, which attribute to controlled processing at large. However, for CIIECs, the episodic memory will not be as relevant as for the contextualization of concepts closely related to the context. Under such a circumstance, the current context stored in conference interpreter's working memory may not be relevant, reliable, and cooperative in terms of the contextualization of CIIECs, which in turn are more likely serving as the cognitive problem trigger causing overload. If that happens, the fluency of TL output will be compromised and possible rendition of omission and unnatural pauses is unavoidable. And simultaneous interpreting must be performed within the limits of time, the resources of the working memory and language processing systems are always working in simultaneity. Specifically, interpreters should make sure that the focus of attention is not overloaded even if some cognitive barriers appear. The language processing and retrieval should be completed before the activated memory fades away. And if the retrieval of a CIIEC in TL fails, it is more likely that the TL output will end up with no translation, when SL CIIECs appear with a high frequency.

6. Conclusion

Interpretation has been at the center of cognitive studies, whose neurological mechanisms "are obviously one of the chief known unknowns in translation studies" (Tymoczko 2012: 83). Process studies on interpretation, regardless of language pairs, all attempt to reveal the myth in interpreters' "black box" and further pedagogical values can thus be generated based on these findings. As Chomsky (1995: 1) put, "a naturalistic approach to linguistic and mental aspects of the world seeks to

construct intelligible explanatory theories". Drawing from naturalistic corpus data, this paper argues that during SI, the contextual independent information in SL utterance serves as one of the cognitive problem triggers causing overloading. Interpreters have no time or cognitive resources to process context independent information if such information fails to be matched to their TL equivalences in interpreters' LTM. Under such circumstances, the omission is unavoidable. The reason of such a failure lies in the nature of CI properties that have always been available in an irrelevant context as in a relevant context. This paper proposes a rough sketch of the theoretical framework that has been established on naturalistic grounds attribute to the process model of CI information in simultaneous interpreting. Examples from a small English-Chinese SI corpus are also presented to see how seasoned interpreters fail to render CIIECs when they appear in a highly intense manner. The model proposed needs more specifications and elaboration in several respects in the future.

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