Training for Remote Interpreting

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Abstract

The advance of technology has led to changes in many professions, including interpreting. While some forms of computer technology have been successfully integrated, others, in particular remote interpreting, are still highly controversial, with a very low level of acceptance among professional interpreters. The present study seeks to assess, in the form of a literature review, the ways in which the use of remote interpreting affects interpreters' performance and well-being, and how training in remote interpreting could help to overcome or compensate for these difficulties. To this end, it draws upon a selection of twenty-five previous studies, included for their research into the use of remote conference interpreting in current practice and on interpreter training courses, as well as reports on the gradual introduction and acceptance of simultaneous interpreting over the course of the twentieth century. On the basis of these studies, remote interpreting is considered from different angles, allowing projections to be made concerning likely future developments in the field. Since remote interpreting has not advanced at the same speed in all modes of interpreting, it was decided to focus solely on conference interpreting in the main study, though examples of its use particularly in legal and healthcare interpreting are also cited. The conclusion drawn was that, though interpreters still have reservations about remote interpreting, and experience physical and psychological difficulties when working in this condition, it is highly likely that remote interpreting will become increasingly widespread. Furthermore, training students to work in this mode will help both with overcoming prejudices and creating strategies for dealing with the unique challenges posed by remote interpreting.

CONTENTS

1. Introduction

The profession of interpreting is one of the most ancient in existence, having been around for as long as people belonging to different cultures and speaking different languages have needed to communicate. The role of the interpreter has changed drastically, however, since these earliest forms of language mediation. Early interpreters were simply gifted linguists or skilled mediators, and were often diplomats as much as they were language professionals (Baigorri-Jalón, 1999). It is only in the last century that interpreting as we understand the term today became an established profession. In the early twentieth century, it was consecutive interpreting that took centre stage in international diplomacy, largely between English and French, the latter having hitherto been the dominant language in international relations. It was after the First World War, in particular at the Paris Peace Conference in 1919, that English was first used at an important international event, and consequently went on to gain equal status with and eventually overtake French as the main global language. From the Peace Conference until the Second World War, then, it was common practice for both English and French to be spoken at international events, thus setting a precedent for further developments in interpreting (Baigorri-Jalón, 2004a). For a long time, however, consecutive interpreting was the only form used. It was the aftermath of the Second World War which led to the shift from consecutive to simultaneous interpreting, which had been invented and used to a limited extent in the 1920s and 30s. However, the Nuremberg Trials, which were to be held in four languages (English, French, Russian and German), were the first event at which simultaneous interpreting was used on a large scale, and also the first time this process and the technology involved received much attention (Gaiba, 1998). Since it was necessary for the Trials to be conducted in the four languages of Germany and the Allied Forces, and yet the proceedings also needed to be brought to a successful conclusion in as short a time as possible, it was essential that a more expedient means of providing interpretation should be used than consecutive, which would have meant quadrupling the time needed for any one intervention. The decision to use simultaneous interpretation equipment was met with scepticism on many sides, from both participants and organisers of the Trials. However, time was pressing, and the proponents of simultaneous interpreting prevailed (Gaiba, 1998).

Given the key role they played in promoting simultaneous interpretation, the Nuremberg Trials are often referred to as the birth or origin of conference interpreting as we now know it (Gaiba, 1998). However, simultaneous interpreting had a long way still to go before it began to eclipse consecutive interpreting as the standard modus operandi for international conferences. A number of obstacles stood in its way, among them the quality of the technology used, but more importantly still, resistance from professional consecutive interpreters, who were unwilling to relinquish their position in the

spotlight, and feared being relegated to the anonymity of dark, airless booths (Baigorri-Jalón, 2004b). And in some ways these same two issues are once again at play, as interpreters today face the emerging challenge of remote interpreting (RI). The field of interpreting has not been left untouched by the development of new technologies which are revolutionising the world of work in almost every area (Mouzourakis, 2008). On the contrary, some of these technologies are already firmly established within the interpreting profession: interpreters generally arrive equipped with laptops or tablets, and with information readily and speedily accessible via the internet or sent by email, the ways in which interpreters prepare for conferences have changed substantially over the past few years (Sandrelli, 2015). While these changes have been largely accepted and these transitions have occurred relatively smoothly, other ways in which technology is encroaching on the profession are less acceptable to those working in it. Thus, the appearance and spread of technologies that would allow for remote interpreting have been hampered largely by interpreters' resistance to its use (Braun, 2015).

The introduction of RI would constitute yet another drastic change in the way interpreters work, and it has been suggested that it could become a "Nuremberg moment for our time" (Constable, 2015). From the point of view of the international organisations, the largest employers of interpreters, RI could have a number of advantages. On the one hand, it would allow them to economise considerably on costs for free-lance interpreters' travel, as well as providing a way around the problem of interpreter availability (Mouzourakis, 2006). The consideration of reducing travel times is also connected to concerns for the environment; if interpreters no longer had to travel to be physically present at every meeting, that would reduce the carbon footprint of that event (Donovan, 2006). The EU has its own particular concerns due to the large number of languages that are used there. The expansion of the EU and the concomitantly growing number of languages means that rooms built in past decades may not be suitably equipped for modern-day use – it is simply not always possible to provide a meeting room with over twenty interpreting booths, and it is still more difficult to ensure that every interpreter has an adequate view of the room. Additionally, when meetings take place in historic buildings it may be more difficult to obtain permission to install booths in the meeting rooms (Mouzourakis, 2006).

All of these considerations have led to the international organisations showing a great deal of interest in trials with RI, and the atmosphere today in many ways resembles the feeling around the time simultaneous conference interpreting was being introduced: there are a large number of established professional interpreters, who have become used to working in a certain way and do not want to be told to change in order to accommodate new technology, of which they are in any case sceptical, as being likely inadequate to the complex task of interpreting (Mouzourakis, 2006). Furthermore, as mentioned previously, there is a fear among interpreters that the introduction of new technology could lead to a worsening of their working conditions, including an increased number of health issues

in the workplace due to working from a screen in a dark room and to the sense of alienation and difficulty concentrating (Mouzourakis, 2003). In order to address the viability of these issues, and mitigate these difficulties as far as possible, a number of studies have been carried out on the use of RI, many of which focus on the difficulties that appear to be an intrinsic part of interpreting remotely, and in some cases present possible solutions to these problems, which could perhaps make RI more acceptable to interpreting professionals (Moser-Mercer, 2003, 2005a; Mouzourakis, 2003; Roziner & Shlesinger, 2010).

Research on remote conference interpreting has been carried out on the technical requirements (Mouzourakis, 2006), interpreters' physical and psychological response to working in this mode (Moser-Mercer, 2003), training for RI (Sandrelli, 2005) and more. However, technology is continuing to develop at such a pace that these studies often lose relevance after only a few years. The diverse forms interpreting can take mean, too, that all research is not applicable to all areas. For example, in conference interpreting, the International Association of Conference Interpreters (AIIC) has issued a *Code for the Use of New Technologies in Conference Interpreting* which aims to regulate the use of technology in conferences, and in particular bans telephone interpreting as being "unacceptable" (AIIC, 1998). This *Code for the Use of New Technologies in Conference Interpreting* was previously available on AIIC's website but cannot currently be accessed, as the page is being edited. However, there has been a great deal of research on telephone interpreting, which is prevalent particularly in medical interpreting and well established in countries such as Australia, which has a large remote population for which it must be able to provide interpreting services when needed (Ko, 2006a; Locatis et al., 2010). This disparity means that research into the use of RI has often been disjointed, with different researchers focusing on particular aspects or settings in which RI is used. Given the limited scope of the present study, it was not feasible to take all of these aspects into account, and so this review will be focusing exclusively on RI in a conference setting.

As mentioned above, much research into remote conference interpreting has centred on the difficulties interpreters experience in working remotely (Braun, 2003; Drechsel, 2013; Moser-Mercer, 2003; Roziner & Shlesinger, 2010). It has been suggested by multiple researchers, however, that these problems may be simply part of an adaptation process that training could help to overcome (Braun, 2004; Ko, 2008; Mouzourakis, 2008). Training could be helpful both for novices and expert interpreters, as it has been shown that while the use of RI can prove highly challenging initially, these difficulties can be overcome fairly easily after only a few weeks of training with these technologies, allowing interpreters to gain an awareness of what the challenges are and the best approach to adopt in overcoming them (Ko, 2006a; Skaaden, 2016). However, the present study will consider training for interpreting students who are still at university, where a module on the use of remote technologies could quite easily be incorporated into the curriculum. The aim of the present study is, therefore, to attempt to establish, based on existing literature on the subject, how training could help

with the difficulties of RI, and what kind of training would be most effective in combating them. This question will be investigated in the form of a systematic literature review, drawing data from past studies which, though numerous, are often disparate.

1.1 Research Questions

Given the headway that has already been made in implementing RI in certain sectors, such as healthcare and court interpreting (Braun, 2013; Locatis et al., 2010), as well as the interest international organisations have expressed in experimenting with RI (European Parliament, 2001a, 2001b; United Nations, 2001a, 2001b), it seems reasonable to assume that RI will become increasingly common in all forms of interpreting. This being the case, interpreter training courses, which generally prepare their students to work on a particular market, should be looking to provide training in RI, in order to ensure their graduates are as employable as possible. Studies have repeatedly shown that experienced interpreters have great difficulty adjusting to the conditions of RI, however, it has been suggested that novice interpreters could find these conditions less taxing, since they have not yet acquired the automatic processes that make novelty more difficult to deal with (Moser-Mercer, 2008; Tipton, 2014). It is therefore of the utmost importance that training programmes be devised in such a way as to produce future generations of interpreters who will be equipped to deal both with RI in its current stage of infancy, but also with any further technological developments that we may be currently unable to foresee.

Thus, the present study will focus on the training of interpreters for remote interpreting, based on the hypothesis that training can help to overcome many of the difficulties currently identified with the use of RI. This hypothesis leads us to pose the following research question: What training is necessary to overcome difficulties identified in the use of RI? In order more precisely to define the direction research was to take, this research question was then subdivided into three sub-questions. Our three sub-questions are the following:

- Is stress and fatigue associated with RI related to a lack of training with technological devices?
- Is training with RI technology a means to reduce stress and fatigue when using RI?
- Are attitudes towards RI related to exposure to RI in training?

These three questions are based on the hypotheses that (i) training will allow interpreters to fully master the technology they use for RI; (ii) training interpreting skills in simulated and real RI conditions will improve interpreters' professional experiences using RI; (iii) experiencing RI in training will influence interpreters' attitudes towards its use in their professional work.

1.2. Definitions

A number of these concepts require definition before we can move on to discuss the results of the research. The first and most important concept to be defined is that of remote interpreting itself. There are many definitions of RI, which differ slightly depending on the context in which the term is being applied. Given that we will be focusing on the conference setting, we will be using Mouzourakis' definition of RI: "*remote interpreting* (RI) will be used to refer to situations in which interpreters are no longer present in the meeting room, but work from a screen and earphones **without a direct view of the meeting room or the speaker**." (Mouzourakis, 2006, p. 64) This tends to be the accepted definition of RI in the conference setting, i.e. as opposed to videoconferencing, where the interpreter's audience is divided between two separate locations. In remote conference interpreting the conference attendees will generally be gathered in one place, just as they would be for ordinary simultaneous interpreting, and the only difference is that the interpreters, instead of being able to follow the conference from their position in the booth, are in a separate location, watching on screens.

Beyond RI itself, there are a number of other important concepts that will be addressed over the course of the study and for which a definition should be provided. Two of the most important are those of "stress" and "fatigue", which have been shown to plague interpreters particularly while working in the remote condition. Thus, **stress** is defined as follows in this study: "A stressful event is a consequence of the imbalance between environmental requirements and reaction capacity of the individual in a situation in which it is subjectively important to give a positive answer. Stress level will depend on the perception of the consequences of failure to fulfil a request." (Riccardi, Marinuzzi, & Zecchin, 1998, p. 96). Interpreters work in a field where it is imperative that they produce a "positive answer", and where they are often working at the very limits of their mental capacity. The introduction of a novel element, such as the use of RI, leads to the disruption of many automatic processes, leaving interpreters feeling less able to meet the high demands placed upon them and thus more susceptible to experiencing stress. The increased level of stress can in turn lead to greater **fatigue**: "Meijman and Schaufeli (1996) describe fatigue at work as a change in the psycho-physiological control mechanism that regulates task behavior, resulting from mental and/or physical efforts, which have become burdensome to such an extent that the individual is barely able to adequately meet the mental demands of the job; or else the individual is able to meet these demands only at the cost of increased mental effort and the need to cope with increased task resistance." (Roziner & Shlesinger, 2010, p. 233). This is the definition of fatigue that shall be used in this study. Stress and fatigue together can be highly detrimental both to the interpreters' motivation and their performance (Moser-Mercer, 2003; Mouzourakis, 2003; Roziner & Shlesinger, 2010).

These two aspects lead us to the more general concept of difficulties facing interpreters working in RI. The term itself is very vague, however, in this context it refers to a number of very specific issues that arise in RI. Thus, in this setting, **difficulties** may refer to: “the combined effect of several phenomena: the message is stripped of its non-verbal content; the other participants' verbal and non-verbal reactions to the speaker and among themselves are not perceived; the screens glitter; there is no way of assessing how the interpreted message has been received; there is a sense of alienation; and there is no daylight.” (AIIC, 1998, p. 1). AIIC is understandably sceptical of the condition, and correspondingly negative in their assessment of the difficulties facing interpreters. A slightly more nuanced perspective is provided by Moser-Mercer, who describes the situation thus: “The remote interpreting situation appears to represent not only a novel environment for interpreters in which they need to invoke more effortful problem-solving strategies, but seems to cause more than the usual physiological and psychological strain in that the coordination of image and sound, the piecing together of a reality far away and the concomitant feeling of lack of control all draw on mental resources already overcommitted in this highly complex skill.” (Moser-Mercer, 2003, p. 15). Whereas the first definition focuses mainly on technological issues, Moser-Mercer addresses the psychological and mental efforts required of the interpreters working under these conditions.

Another key aspect to RI is the use of **technology**. Again, though the term itself is in no way problematic, it is broad enough that it is useful to determine what is meant by it in this specific context. Here, again, we will turn to Mouzourakis, who speaks of “the proper technical framework for transmitting audio and video to the remote interpreters and also sending the interpretation audio stream back to the meeting room.” (Mouzourakis, 2006, p. 47) This is to say, remote booths, screens, headphones and microphones, a sufficiently good internet connection, audio and visual standards that meet AIIC requirements and so on. AIIC itself refers to the use of RI at “any multilingual conference at which new technologies are part of a video/teleconference using cabled or non-cabled networks, the Internet, etc.” (AIIC, 1998, p. 2). The technology involved is, of course, not restricted to the technology required to make RI possible, for in many other ways technology is already fully integrated into simultaneous interpreting, for example in the ways interpreters are able to prepare: “the Internet represents an indispensable tool for professionals to conduct research on those topics that are likely to feature prominently in upcoming interpreting assignments. But the impact of the ever-pervasive ICT is not restricted to this preparatory work. It also allows effective management of customized laptop-held resources – including specialized dictionaries, electronic glossaries and reference documents – whilst the interpreter is in the booth (Esteban Causo 2003; Lasorsa 2002; Sandrelli 2003b; Valentini 2001).”(Sandrelli & de Manuel Jerez, 2007, p. 270). Technology is, therefore, used to refer to a very broad spectrum of devices and installations, all of which are used ostensibly to facilitate the interpreter’s task, though they may not invariably be able to achieve that aim.

From the technology and the difficulties surrounding it, we can now turn to that which may well prove to be the key to interpreters finally accepting RI: **training**. Here too, it is largely the context that must be defined, since the term itself should not prove too hard to understand. Since we are looking at RI and its uses in a conference setting, we will be focusing on courses that train conference interpreters, and in particular those that prepare interpreters for international organisations such as the EU and the UN. This means that much of the data we are drawing from will be looking at courses provided by EMCI universities. We will therefore use their definition of training as a programme "designed to equip young graduates with the professional skills and knowledge required for conference interpreting" (EMCI, 2017). In the present study, of course, the emphasis will be on the skills and knowledge required for remote conference interpreting, and whether and how these are provided on interpreting courses. Training for RI is likely to involve **exposure** to the technologies and methods involved. Exposure simply means allowing students to experience RI in an educational context in order to sensitise them to potential difficulties before they have to work with it in real life, thus allowing them to learn adequate coping strategies. Apart from the use of videoconferences, for example, which allow students an insight into what it means to interpret remotely, "interpreting exercises must resemble real-life events as much as possible, in order to promote situated learning: "for learning to be authentic and productive, learning tasks need to be embedded in their larger, natural complex of human activity" (Kiraly 2000: 43). Since it is not always possible to allow trainees to practise in real communicative events (e.g. in dummy booths during a real multilingual conference), other methods involving simulations (mock conferences), authentic recordings and class practice with live speakers are normally used in interpreter training institutions." (Sandrelli, 2015, p. 114). Thus, if RI is to be included in the curriculum for interpreting courses, simulations must not be limited to mock conferences with interpreters present in the booths, but also include those that allow students to experience the feeling of working remotely.

In the field of RI in particular, there is an emphasis less on the ways in which professional interpreters can adapt to the new condition, and more on the way students can be prepared for this new condition. Though RI may feasibly become commonplace in just a few years, those already working in the profession, and more particularly those interpreters who are nearing retirement age, may have little interest in attempting to acquire a new set of skills to deal with this phenomenon which is currently still in its infancy. However, for interpreting students the situation is very different, as it is highly probably they may be required to use it a great deal over the course of their careers, and so "interpreters must learn to use the relevant tools and develop the skills they need to work in these new environments. This is especially important for the new generations of interpreters. So, […] one of the reasons for current developments in CAIT is that interpreter trainers are trying to ensure that the new interpreting graduates are equipped with market-relevant technological skills." (Sandrelli, 2015, p. 120). This equipment is particularly relevant as it may well play an important role in determining interpreters' **attitude**. Since no definition of attitude could be found in past studies on

interpreting, for the purposes of this study, attitude is defined as an opinion or view on something that influences a person's behaviour. As mentioned above, "many interpreters seem reluctant to the idea [of RI], arguing that not being present in the same room with conference delegates and various other psychological and physiological factors have a negative impact on their well being and performance" (Diriker, 2010, p. 330). We are speaking here specifically of the (mostly negative) attitudes evinced by interpreters towards RI being used and potentially replacing or coming to co-exist alongside conventional simultaneous conference interpreting. Attitude is likely to play an important role at least in the psychological effects of RI on interpreters, as a negative attitude affects an individual's motivation for a task, which in turn influences their ability to cope with challenges and can lead to greater and more rapid-onset fatigue (Roziner & Shlesinger, 2010).

From this short introduction, it is evident that the issues surrounding RI are manifold and highly complex in nature, and every aspect will require attention if interpreters' qualms are to be allayed. There have already been a number of studies on the use of RI and on possibilities for providing training, many of which have been concerned with forms of RI that fall outside the limits of the present review, but which can nevertheless provide some insight for RI in conference interpreting. We shall therefore now turn to an examination of some of these studies, before moving on to research on remote conference interpreting more specifically.

2. Related Work

As described in the previous section, RI exists in diverse forms in many different areas, all of which are not relevant to this review. However, it is useful to have an idea of the ways RI is applied throughout the field of interpreting, since this will provide a context and allow us to draw comparisons between the advances made in conference remote interpreting and other forms of RI. RI affects every area of professional interpreting, from interpreter training, to the way interpreters do their job and their experience of being in the booth, to the space provided by the institution for which they are working, and it is advancing in every mode of interpreting: legal, medical, conference etc. Conference interpreters have to some extent been shielded from its full effect thanks to the efforts of organisations such as AIIC, which will fight for their right to be present in booths around the conference room until such a time as the working conditions for RI are deemed satisfactory (AIIC, 1998). What research has been done on RI in conference settings has focused largely on the problems it raises, which include the sense of alienation caused by a lack of presence (Moser-Mercer, 2005b), as well as the various psychological factors at play that can lead to a drop in motivation and consequently in concentration and performance (Moser-Mercer, 2003). Others have studied the technological factors and the way they impact interpreter performance in RI (Mouzourakis, 2006). However, as a rule these studies simply point out these deficiencies, in some cases providing an assessment of changes that would be necessary for RI to be more acceptable or more manageable for interpreters. They do not tend to suggest ways in which interpreters could overcome these difficulties.

This is quite different for other forms of RI, which is far more widely used in community interpreting than conference interpreting. It is quite common in medical interpreting, for example, where telephone interpreting is frequently used (Braun, 2015). Medical interpreters working in this mode have reported experiencing similar difficulties to those described by conference interpreters using RI, however, studies conducted by Ko and Braun on RI using either telephone or videoconference interpreting in medical and legal settings have found that interpreters were able to adapt and overcome many of these difficulties (Braun, 2003, 2007; Ko, 2006a, 2008). Such differences in research on conference and community interpreting make it worthwhile to take into account findings from the latter, which may possibly lead to new insights for the former. Thus, in this chapter we will be focusing on studies that highlight difficulties with RI in modes other than conference interpreting, which may be highly specific to the setting in which it is used, but which may be of relevance to remote conference interpreting as well.

2.1. Telephone Interpreting

Telephone interpreting is widespread in a number of countries, and particularly well-established in Australia, which was the first country to set up a dedicated telephone interpreting service, established in 1973 by the Australian immigration services (Braun, 2015). Ko, an interpreter and researcher based in Australia, has done extensive research on remote telephone interpreting (Ko, 2006a, 2006b, 2008). He has, in particular, noted the striking lack of long-term studies on RI, which would help to determine how long-lasting the effects of RI on the interpreter are, and whether these can be overcome over the course of an experiment lasting longer than a few days (Ko, 2006a). He himself conducted a four-week experiment on the use of sound-only telephone interpreting, over the course of which participants interpreted remotely for eight three-hour sessions, making twenty-four hours of remote interpreting practice overall (Ko, 2006a). As mentioned previously, using telephone interpreting is a long-standing practice in Australia, and there are various agencies that provide interpretation and translation services. Two of these, Victoria Interpreting and Translation Services of Australia and On-call Interpreters and Translators Agency of Australia, had expressed concern about the effects of remote interpreting, and recommended that a single session should last no more than 20 minutes, as it is more taxing for the interpreter. Ko's study was therefore also designed to test the assumption that 20 minutes was as much as interpreters would be able to manage per session (Ko, 2006a).

The six interpreters in the experiment had been selected randomly, based solely on the criterion that they had not used telephone interpreting before. The results of the experiment showed that in the first session, five of the six were tired after just 15 minutes, whereas by the seventh session, all but one were able to interpret comfortably for either 45 or 60 minutes (Ko, 2006a). It was also shown that the first three sessions were particularly difficult, and interpreters did find them more tiring. This suggests that while interpreters certainly do experience greater difficulty when they first work remotely, these challenges can be overcome with time. The same study also showed a marked improvement in the interpreters' response to interpreting with no visual cues. The lack of a direct view of the speaker is commonly mentioned as one of the greatest challenges in RI, and this is also the reason AIIC has outlawed the use of telephone interpreting in conference interpreting (AIIC, 1998). In Ko's experiment, however, none of the participating interpreters reported any increased sense of difficulty due to the lack of visual support at the start, and by the end almost all agreed that the lack of visual contact with the client did not affect their interpretation in any way (Ko, 2006a). Ko himself reports finding working without visual contact less stressful than meeting the clients face-to-face, for though on the one hand the interpreter loses many valuable visual cues, in return they have the benefit of not being visible to their audience, meaning that they can be freer in their behaviour. In the case of interpreting over the phone from a separate room, the interpreter can even walk around

and stretch their legs, though this would, of course, not be an option for interpreters in a booth (Ko, 2006a). Ko also remarks on the interpreters' positive attitude towards the experiment: while they were aware that sound-only interpreting is often more difficult, they perceived it as a new challenge, and were able to rise to it. He concludes that interpreting remotely is initially more taxing, but that around 18 hours of practice (in the case of this experiment, six out of eight sessions) can do much to alleviate feelings of stress and fatigue. This study was not, however, concerned with simultaneous interpreting, and any change in modality could well affect the amount of time required for adaptation (Ko, 2006a). Nevertheless, his results are interesting as far as they may be applicable to conference interpreting, where most studies have been limited to no more than a few days (European Parliament, 2001a, 2001b; United Nations, 2001a, 2001b); it is not impossible that a longer-term study would discover the effects of RI in conference interpreting to be similarly temporary.

2.2. Legal Remote Interpreting

Legal interpreting (like medical and most other kinds of community interpreting) differs from conference interpreting in that it usually requires the interpreter to work in both directions and engage in more of a dialogue with the two speakers, sometimes even taking on the role of moderator to ensure communication proceeds smoothly (Braun, 2003). Remote interpreting is sometimes used in this context as well, and Braun has written a great deal on the subject of RI in legal contexts. One study, in which interpreters worked remotely in simulated police interviews, uncovered some interesting side effects in interpreters' adjustment to working remotely. This study investigates the "motives for additions and expansions in RI" (Braun, 2017, p. 166). An earlier study by Braun had revealed a tendency among interpreters to produce more additions and expansions when working remotely (with visual support via videoconferencing), in spite of these being generally perceived as a deficiency in an interpretation. What was more surprising, however, was that the number of additions and expansions increased still further after the interpreters received more training and became more accustomed to working in RI. This fact was surprising enough to warrant further study.

This follow-up study revealed a number of different causes for these additions and expansions. Some were directly related to the remote situation, for instance if an interpreter had to ask one of the speakers to turn towards the camera when the interpreter was having trouble seeing them (Braun, 2017). They could also be an explanation of non-verbal actions performed by the police officer, which needed to be stated aloud for the benefit of the tape, as is customary in police interviews. The interpreter would sometimes add the relevant explanation before the police officer did so, since it was clear that this would be said next. Other additions, however, were not related to RI, such as explanations of cultural differences for the benefit of the interviewee for whom interpretation was

being provided. This included explaining the way dates are given in Britain, for example. There were also a number of expansions where interpreters added synonymous expressions (Braun, 2017).

The reasoning behind these additions and expansions proved hard to discover, for though some of them could be classified according to existing frameworks, some seemed to have no specific reason, while others seemed to be based on a number of reasons. In order to gain a better understanding of the underlying processes, a micro-analytical framework was used to study these various utterances, which revealed the basis for additions and expansions in video RI to be highly complex. In general, however, additions and expansions can be broadly divided into two categories: on the one hand they can be the result of an attempt on the interpreter's part to make the meaning clearer or more explicit for the listener, however, they can also indicate that the interpreter is having difficulties "that can be linked to cognitive overload, fatigue, stress or physical distance to the primary participants" (Braun, 2017, p. 175). These two motivations can also overlap, for example if the interpreter attempts to provide a more explicit explanation but actually blurs their own message due to a number of reformulations, as the result of trouble expressing the idea.

The significant increase in additions and expansions in RI, and particularly the further increase after a period of familiarisation, suggested that these additions and expansions were related to the virtual state. On the one hand, this reduces the sense of social presence: in attempting to re-establish this sense, interpreters may have been driven to try to make utterances more explicit. Those additions or expansions that indicated interpreting difficulties were generally also ascribed to the increased difficulty of working remotely (Braun, 2017). At the same time, all of the additions and expansions were connected to the interpreter's adaptation to RI, since they had increased as interpreters became more familiar with working in this mode. While this demonstrates a generally positive will and ability to adjust, the appropriateness of these additions and expansions remains questionable and requires further study (Braun, 2017). There is a danger that slight changes of meaning, resulting from inaccuracies in the interpretation, could have far-reaching consequences in a delicate situation such as a police interview, for example by interfering with the police officer's interview strategy, which could lead to the suspect giving a response unlike the one the police officer intended to elicit, and potentially even making the interviewee seem uncooperative (Braun, 2013). An approximate interpretation also risks giving a slightly different shade to a description of events leading up to a criminal offence, for example, which can further affect the process of interrogation cast the suspect in a different light. Braun further suggests providing training for the primary interlocutors, thus allowing them to better understand and accommodate the processes involved in video RI, which could prove beneficial for the interpretation process overall (Braun, 2017).

Remote interpreting in the courts raises still more questions, among them, crucially, the consideration that interpreting quality must not be affected by external factors such as RI to the

extent that it could conceivably constitute an obstruction of justice (Braun, 2013). Braun's study on RI in court interpreting showed that while problems were not limited to RI, they appeared to be magnified in that setting. The problems analysed included inaccuracies, omissions, additions, coherence problems, as well as linguistic problems, paralinguistic problems (i.e. hesitations, repetitions etc.) and coordination problems (turn-taking) (Braun, 2013). It is notable that many of these distortions or mistakes passed unnoticed, that is, the interpreter was not aware of them, suggesting that they were working at almost full mental capacity, and that they did not have the additional resources necessary to foresee and avoid potential difficulties. This study concluded, therefore, that it would be preferable to limit the use of RI in the courts as far as possible, since both this and the previous studies had suggested that "the use of videoconferencing in legal proceedings reduces the meaningfulness of the proceedings" (Braun, 2013, p. 20). Braun indicates, however that training for interpreters could go some way towards resolving issues connected to turn-taking at least, and notes the need for further studies in this field.

2.3. Medical Remote Interpreting

As mentioned previously, RI is also commonly used in medical interpreting, and studies have been carried out on the effects of various kinds of interpreting in this setting. Remote interpreting can be preferable in medical interpreting, as it affords the patient greater privacy, and this tendency has been confirmed by various studies, indicating that both patients and doctors preferred remote simultaneous interpretation to consecutive interpretation with the interpreter present, while interpreters favoured the latter approach (Locatis et al., 2010). However, a study comparing telephone, videoconference and in-person interpretation revealed a strong preference for the in-person setting among interpreters and providers, who were exposed to all three methods, while patients, who experienced only one form of interpretation, showed a similar if less pronounced tendency to favour in-person interpreting (Locatis et al., 2010). This finding is particularly interesting in that it contradicts the findings of earlier studies; the different effect that the use of consecutive or simultaneous interpretation could have on patients' preferences was not commented on. However, since this study was conducted for the medical community rather than for interpreters specifically, it is perhaps understandable that less attention was paid to issues specific to the interpretation.

Drawing on studies by various researchers, Braun reports that a number of problems did arise in telephone interpreting, and that the interpreter played an important role in ensuring coordination throughout the conversation, though some believe that the main difficulties lie in the "lack of a shared frame of reference" (Braun, 2015, p. 354). As demand for medical telephone interpreting has increased since its introduction in the 1970s, there have been studies conducted on user satisfaction, but, like the study mentioned above, they tend to neglect issues in the interpretation, though some

have concluded that the accuracy of the interpretation did not suffer due to the remote state, though the interpreters preferred to be physically present (Braun, 2015). However, as demonstrated by the study by Locatis, research into medical interpreting is often focused on the patients' needs and impressions rather than the particular difficulties encountered by interpreters.

2.4. Teaching Interpreting Remotely

Thus far, we have seen the ways RI impacts different areas of interpreting, and why it can sometimes even be preferred by clients for reasons of privacy, for example. From the provision of remote interpreting services, it is only a small step to that of providing interpreter training itself as a distance course. Ko has carried out a study on teaching interpreting as a distance course (Ko, 2008). Training was offered over a thirteen-week course, with three hours of teaching and one hour of homework per week. The period of time was determined based on the findings of the study mentioned above, which suggested that six weeks at least were necessary for interpreters to adapt to remote interpreting. The aim of the study was to compare distance with on-campus learning, with two groups of seven students, one taking the course on-campus and one by distance mode (Ko, 2008). The students in the remote course were taught over the phone and had no face-to-face contact to their trainers throughout the course, including the pre-training and final exams, although there was one final test in person to see how the students' paralinguistic skills had developed, since there was no other way to test this aspect.

The results of the study highlighted a number of interesting aspects of remote interpreting. Though many of the findings were specific to sound-only interpreting, some were potentially relevant to remote conference interpreting. The outcome of the experiment was, on the whole, positive, since the students from the off-campus group did similarly well to the on-campus group, indeed their results were overall slightly better in the final exam, demonstrating that it is possible to achieve good results teaching interpreting as a distance course (Ko, 2008). However, in the pre-training test the remote group's results were slightly lower than those of the on-campus students. This was shown retrospectively to have been due to a lack of familiarity with the technologies used rather than necessarily reflective of the interpreters' ability. It was also shown, however, that the course highlighted issues that might not have occurred to either students or trainers in advance. These related mainly to communication when the participants in the multi-person call were unable to see each other. The course was taught by means of teleconferencing, with all students and the teacher connecting for the duration of the class, which proved problematic in a number of ways. For example, when it came to the teacher monitoring students' work, it was impossible for them to do so unobtrusively. In a language laboratory, the trainer can listen to whichever student he or she chooses without the student knowing, which allows the instructor to get a fairly realistic impression of the level

of the student's work. In the distance scenario, however, all those participating in the call were able to hear one another, making it impossible for them all to interpret at the same time without disturbing one another's practice. They therefore pressed the mute button before beginning their interpretation. If the trainer wanted to listen to an individual student work, they would need to let them know in advance, which would generally increase the student's nervousness, which could interfere with their interpretation (Ko, 2008).

There were also a number of issues with the kind of phone used: not all students had a hands-free system at the outset, which proved to be problematic for note-taking in particular, and over the course of the programme those students all acquired some kind of hands-free setup (Ko, 2008). These are the kinds of technical hitches which are not necessarily predictable, and which need to be ironed out over the course of training or professional use of new technologies. The distance mode proved advantageous in some ways, for example in students' practice in pairs outside of class hours. Those taught entirely remotely found this the second most useful part of the course after the classes with a teacher. This practice too was completed over the phone, with students arranging a suitable time for them to work together. For the on-campus group, however, this part proved more difficult. They, too opted to work over the phone, as the most practical solution to finding a time and place to suit both students. However, their lack of experience working over the phone made this far more difficult for them than for the other group, as they experienced many of the difficulties that often hamper interpreters working remotely. This reflects, again, the time it takes to adjust to the remote condition (Ko, 2008). On a separate note, the report also observes that the off-campus course ended up costing more than the on-campus one, due to the costs of phone calls and the postage for sending recordings to and from trainers for evaluation. However, it would be interesting to see whether these same costs would be incurred if communication could take place over the internet, either via email or a dedicated forum. The question of costs is occasionally also raised in conference remote interpreting, though the cause is quite different in this context.

There have been other experiments for teaching interpreting as a distance course or combining face-to-face classes with distance learning. One such course was offered in Norway at Oslo and Akershus University (Skaaden, 2016). This course aimed to teach remote interpreting specifically, and it was, furthermore, conducted remotely via distance learning, with students taking part from across Norway and in other countries. There was one initial meeting on campus at the beginning of the course. After this, only Skype and the platform *Fronter* were used for both communication and interpreting exercises (Skaaden, 2016). The course was not aimed at interpreting novices, and all those taking part in the course were professional interpreters working in the public sector and the courts in Norway. Most had some experience with telephone interpreting, though they had not previously interpreted over a screen using videoconferencing. In this case, the use of Skype creates a very specific situation that is unlike the kind of RI used in conference interpreting. The experience of

working via Skype made students aware of the potential problems of the use of technology; for one thing, the students were able to see themselves on the screen, which proved distracting, and by the end of the course they were even planning more carefully how they should dress before beginning the call, in order to minimise distractions of this kind. However, much of what the students learned had to do simply with becoming accustomed to working remotely, to becoming aware of technical difficulties that could arise and learning how to overcome them (Skaaden, 2016).

2.5. Adaptation Strategies

Thus far, we have mainly seen ways in which RI can differ depending on the setting, as can the technology used. The one common feature in all these settings seems to be that a certain period of time is required before the interpreters become accustomed to the technologies used, thus allowing them to fully understand, predict and avoid difficulties that could arise. Most of the studies also demonstrated that as a general rule, interpreters were able to make the necessary adjustments. In this final section we shall look at various adaptation strategies for RI. Braun has studied adaptation processes in particular, looking at optimisation processes in RI (Braun, 2003). In the case she studied, the interpreter and the two interlocutors were each located in a separate place, connected via videoconferencing, with the interpreter able to see and hear both others at all times. Particular problems in this situation included a slight lag in sound, which made communication harder, and speakers ended up either having to leave longer pauses or end up speaking over each other. This issue was further complicated by the lower sound quality that is almost invariably a problem in RI, since it is almost impossible to reproduce sound as clearly as if the speaker were physically present. The sense of social presence between interlocutors is harder to establish, as mentioned previously, and this tends to lead to reduced confidence in one's own ability to communicate as well as greater difficulty concentrating (Braun, 2003). Thus, the interpreters working in this setting were faced with the initially complex problem of overcoming these difficulties. Braun identifies three stages in the process of adaptation: first, the interpreter must become aware that their usual strategies fail in the novel situation. In the second phase, interpreters began to make spontaneous attempts at solving the problems during interpretation, which finally led to the third step and the creation of long-term optimisation strategies. These included the interpreter beginning to speak slightly early, before either of the interlocutors continued speaking, to ensure there would be no overlapping speech and thus prevent any issues with turn-taking. They also began indicating that their turn had begun more clearly, for example by raising their voice. Another interpreter strategy involved occasionally sacrificing elements from the source speech in the aims of clarification, in order to prevent any misunderstandings, which would necessitate further explanations (Braun, 2003).

This study demonstrates the interpreters' capacity for monitoring their own output, thinking about how to deal with the various problems both while interpreting and after the fact, experimenting with strategies to solve these issues, and finally implementing global strategies that allow them not merely to overcome difficulties but to prevent problems from arising at all. The two examples given above belong to this last category, as the interpreters foresee and forestall potential problems with turn-taking or comprehension. This ability to adapt also suggests promising possibilities for training, which could help to prepare interpreters for these interpreting situations, allowing them to acquire strategies before they face RI in a professional situation (Braun, 2003).

One important aspect in the adaptation process is monitoring, which can be anticipatory, simultaneous or retrospective. These different types of monitoring allow interpreters respectively to anticipate and avoid potential problems, to cope with comprehension problems in the moment, and to detect problems after the event that they had not noticed during their interpretation. It is important throughout the adaptation process that interpreters remain flexible, and prepared to abandon familiar strategies that appear not to be effective in RI (Braun, 2007). While expressing mild optimism for interpreters' ability to adapt, Braun emphasises the fact that these results are specific to dialogue interpreting via videoconferencing, and that it should not be taken for granted that these strategies, which have much to do with the interpreter's role as moderator, would be of much use in conference interpreting, which is unidirectional and where the interpreter has little to no interaction with their clients (Braun, 2007). Nevertheless, research on the precise way adaptation takes place, with reference to the different stages of the process, could be of considerable importance for interpreter training courses. Braun also notes that the lack of presence, which has been identified as a key factor in interpreters' lower motivation and concentration in RI, did not seem to cause as much of a problem in this case, possibly because all participants were located in separate, remote locations, and it was not merely the interpreter who was banished from the meeting room where all other participants were assembled (Braun, 2007).

This chapter has given a brief overview of the current situation as regards RI in interpreting research in fields other than conference interpreting. We have seen that each mode presents unique challenges, all of which prove problematic to the interpreter unfamiliar with this setting. In telephone interpreting it is the lack of visual contact that is most disconcerting, in both legal and medical interpreting it was shown that while it is possible to provide interpretation remotely, it may be preferable (for both the interpreter and the client) to use in-person interpretation as far as possible, in order to avoid inaccuracies which could have far-reaching consequences. Issues also arise with sound lag, which can be problematic when coordination between multiple speakers is necessary, as the interpreter is then usually called upon to play the part of moderator. We have seen, too, the strong preference interpreters expressed for working on-site in medical interpreting at least. However, it has also been shown that interpreters are able to overcome many of the difficulties they

face, and that some purely technological issues can be fairly easily remedied. Furthermore, teaching remote interpreting as a distance course is quite feasible, and may even be preferable for preparing interpreters to work in this mode, since it draws their attention to the particular issues that may arise, in particular technical hitches or problems due to the greater perceived distance from the client. Each of these studies clearly demonstrates, however, that, even when the problems caused by RI can be overcome, and when the adaptation process does not create new issues, a certain period of time is always necessary for interpreters to become accustomed to working in this new mode. Training could therefore go a long way in allowing interpreters to become more comfortable in RI.

3. Method

Since it was beyond the range of a master's thesis to carry out a full-scale experiment on the use of remote conference interpreting, which would require the participation of a number of qualified interpreters as well as the cooperation of an institution that provides simultaneous interpretation, not to mention the technical equipment and support necessary for such an experiment, and since it was felt that to interview interpreters concerning their own experiences and views on RI would not contribute much to the current body of research available, it seemed that the most suitable approach would be to study the results of past experiments on the use of RI, and to conduct a systematic literature review on this research. RI has been the subject of theoretical research and experimental study for a number of years now, meaning that a considerable body of literature is available for analysis.

3.1. Database searches

The first step, therefore, was to search databases for relevant studies. The main database used was the Translation Studies Bibliography, though Google Scholar was also referred to, to ensure that no potentially interesting articles were being overlooked. However, one issue with Google Scholar was precisely the breadth of results generated, as it is not a subject-specific search engine, and the inclusion of the word "interpretation" or "interpreting" often led to a large number of entirely unrelated results being generated. To begin the search, the research question had to be broken down into its key concepts, which were identified as follows: firstly, of course, "remote interpreting" – this was to obtain a general overview of the field and of the advances made so far in the use of RI, experimental conditions and interpreters' experience of the mode. The next key concept was "interpreter training", and "remote interpreting + training". This provided the bulk of articles concerning the central question of how best to provide interpreter training that will ensure future graduates have the necessary skills to be able to work remotely. However, in order to obtain a fuller picture, and to have some background against which to place the results of these studies, a number of other search terms were used, including "history of interpreting", "interpreting + stress", "remote interpreting + stress", "future + interpreting". These combinations were included in order to obtain a more comprehensive understanding of the various aspects at play in the use of RI, which would in turn mean that the question of training for RI could be considered from a number of different angles.

Initial searches of databases brought up 98 studies that passed preliminary screening and appeared initially relevant, with a further 14 articles identified as relevant over the course of time from reading

the bibliographies of previously selected articles (Figure 1). However, this selection proved too extensive for the scope of the present review, and a decision had to be made to exclude a number of texts. In advance of this search, the possibility had not yet been excluded that remote interpreting in the area of community interpreting, including medical and legal interpreting, in which fields extensive research has been carried out on the use and effects of RI. This would have allowed for a more nuanced comparison of methods in the related but clearly differentiated fields of community and conference interpreting in the main discussion section in this paper. However, this would have produced too many results to include in the present review, and it was decided that the focus should be solely on conference interpreting for the main discussion in this review. A number of studies identified as relevant but concerned with community rather than conference interpreting were, however, discussed in the chapter on related work.

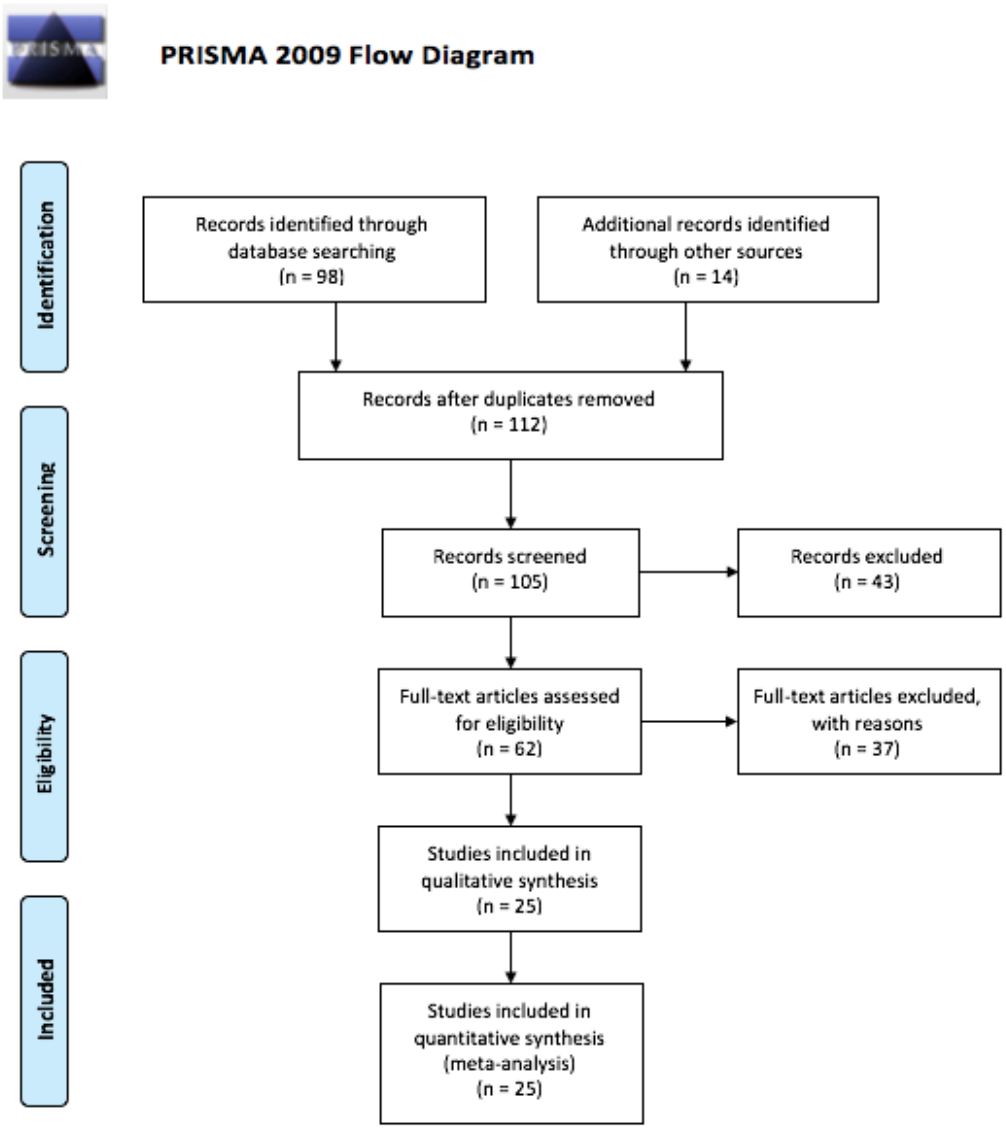

Fig.1: Study Selection Process

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

3.2. Inclusion and exclusion criteria

Thus, this became the first and main criterion to be introduced for the exclusion of studies. This first criterion, excluding any studies that were not concerned with conference interpreting, was established naturally, as the result of a need to narrow the focus of the present study, to avoid it becoming too bloated. Slightly over a third of all studies identified were excluded on this basis, that is to say, any studies on the use of RI in forms of interpreting other than conference interpreting were excluded, for example those examining the use of RI in healthcare and court interpreting, or else concerning the use of RI in the business world, for small videoconferences. This same criterion was extended from experimental studies on the use of RI to reports on interpreter training with RI either using technology that would not be applicable in a conference setting (i.e. telephone interpreting or RI using programmes such as Skype), or else that prepared students for a specific setting such as healthcare or court interpreting or any other form of dialogue interpreting. By extension, this same criterion also led to the exclusion of a number of studies that were concerned with RI in specific regions. Australia, for example, has a long-established tradition of providing telephone interpreting services, and, naturally, there are a number of studies on RI in Australia. However, the situation there is peculiar to that country, as it has a large remote population which it must be able to reach and to whom such services must be provided. Quite apart from the fact that telephone interpreting was not intended to be included in the present review, RI is used and therefore studied under very different conditions and pursues a different end from the kind of RI that is used for conferences in international organisations. Since these organisations are largely concentrated in Europe and Northern America, it is these two continents that we will largely be drawing from for studies in this review.

Whereas grounds for exclusion of studies could be reduced simply to an article being concerned with any form of interpreting other than conference interpreting, criteria for inclusion were slightly more nuanced. The intention was, after all, to consider RI from a variety of angles, in order then to be able to identify best practices in training, and draw conclusions about the cause of problems faced by interpreters working remotely. Thus, studies that were included fall into three distinct categories, which can be roughly be grouped together as concerning the past, present and future of remote interpreting. The grouping of articles into these different categories is shown in the appendices. For the purposes of the present chapter and the review as a whole, however, we shall not be looking at these criteria chronologically. Instead, let us begin with the present, before moving on to the prospects for the future, and finally turning to the past, to see what lessons can be learned from history.

Thus, the first group of articles, representing the present, is concerned with the current use of RI in international conferences (Appendix 1). This includes experimental studies on RI and its possible introduction in international organisations, articles regulating the technological requirements for RI, reports on the effects of RI on interpreters' well-being and the quality of their work, as well as studies on the reasons why RI seems to constitute the complication it apparently does in the process of simultaneous interpretation. Since RI has so far faced much resistance from conference interpreters, and has thus far made little headway towards replacing or even co-existing with ordinary simultaneous conference interpreting, this section is largely concerned with the reasons for this resistance and for the difficulties that interpreters have reported in using RI. These studies provide an overview of the obstacles which will need to be overcome if RI is ever to be introduced on a large scale in the international organisations. These hurdles include both the objective and largely technical issues, such as the cost of acquiring the necessary equipment and fulfilling technological requirements, as well as problems that are less concrete, such as the increased strain on interpreters' capacities, and their resistance to working under circumstances they consider inadequate for the provision of interpreting of a sufficient standard.

The second and largest category is that of studies on interpreter training, which does in some ways constitute the future of interpreting, since it is preparing the next generation of interpreters (Appendix 2). This consists of quite a varied selection of articles, providing an insight into the prevailing philosophies in interpreting pedagogy, and show various theories concerning the future of RI and how best to prepare students for a world in which long-distance communication is likely to become ever more the norm. However, the studies concern not only the forms of RI that can be used or simulated for students' use on a university course, but also examine the importance of computer technologies and students' computer skills in other, related areas, and demonstrate how the increased use and spread of computer technologies allows for new strategies in training which can help students to acquire skills that will stand them in good stead not only as they learn to deal with RI, but will also allow them to continue to progress and develop throughout their career. These articles provide the material that allows for comparisons between the approaches adopted by existing interpreting courses, and also make proposals for how to improve training in the future. These studies are key, as they show how other researchers have approached the problem of training interpreters for the future, and the extent to which their methods have proved successful or otherwise.

And finally, the last category, described above as the past of RI, consists of articles on the history of conference interpreting (Appendix 3). In fact, it is less RI itself that is presented, but rather a brief history of conference interpreting, with a particular emphasis on the introduction of simultaneous conference interpreting. This period is of interest as current developments around the introduction and spread of RI are often compared to the introduction of simultaneous interpretation over the

course of the twentieth century. This comparison is particularly pertinent where it concerns resistance from interpreters and the kinds of concerns that were put forward by established practitioners who saw the dominant mode of interpreting, to which they were accustomed and within which they enjoyed considerable prestige, threatened by early uses of simultaneous interpreting. These articles allow us to draw parallels with the current situation with RI, particularly as far as interpreters' resistance to the introduction of new technology, and changing working conditions are concerned. This category is further helpful in that it provides a comparative timescale, showing the length of time it took for SI to become fully established in international organisations, as well as the further time required for it to actually replace consecutive interpreting as the dominant mode.

Given this diverging, three-pronged approach, all the articles could not be required to meet all inclusion criteria, which were similarly subdivided according to the three groups. To be included in the first group (the present) articles had to be directly concerned with the use of RI in a conference setting (including experiments in RI and theoretical explorations of the results of such experiments). For the group of studies and articles on interpreter training (the future), the criterion was that they must relate to conference interpreter training either specifically for or using RI technologies, or else that helps to build up skills that will support students in acquiring the skills necessary for successful use of RI. And finally, in the section concerned with the history of interpretation, the texts provided information on the struggle between consecutive and simultaneous interpretation for supremacy within the conference interpreting world, and preferably also draw attention to parallels with the current period of transition towards more widespread use of RI. These three criteria will allow us to establish the precedents for conference interpreting and interpreter adaptation, the current situation, and how training can help both interpreting students and established professionals to face this new reality.

4. Results

As described in the previous chapter, the studies included in the present review fall roughly into three categories, concerning RI in its current form, training that could help to determine its future uses, and the comparable events in the history of conference interpreting in connection with the introduction of simultaneous interpreting. The first of these three concerns the current use of RI and experiments with this mode in conference interpreting. This research provides background information on interpreters' response to working in RI, and the various reasons for the difficulties they experience, some of which have already been touched upon in the chapter on related work. In this chapter, however, we will look more closely at the reasons why interpreters find RI to be so much harder. This will then form the basis for answering the first part of our research question: is stress and fatigue associated with RI related to a lack of training with technological devices?

4.1. Technology in RI

The earliest experiments with RI were carried out in the 1970s (Moser-Mercer, 2003). Since then there have been a number of further studies on RI in conference settings and the effects it has on interpreters, which have been mostly negative (Moser-Mercer, 2003; Mouzourakis, 2003; Roziner & Shlesinger, 2010). After working in the remote condition, interpreters reported a number of physical complaints, including eye strain and back and neck pain, as well as trouble concentrating, higher levels of stress and fatigue and a sense of alienation and lack of participation in the meeting they were working at. When experiments in remote interpreting first began to be carried out, there were still many technical problems to be taken into consideration. The quality of audio and visual transmission was considerably lower than modern technology allows, and connections were less secure than they are now (Mouzourakis, 2003). It was, therefore, quite natural to assume that problems with RI were related to the technology involved, since this constituted the main difference between working on-site and remotely. It was believed that it was this that made the interpreters' task harder, for example because they could not see or hear enough to be able to work as well as usual. However, if this were indeed the case, then these issues would have been ironed out over time with the help of technological improvements, and yet improved sound and picture quality have not led to a more favourable response to RI from interpreters.

It was during this same early stage of experimentation with RI that interpreters' discomfort and dislike of working in this mode led to the introduction by AIIC of the aforementioned set of regulations for the use of RI in conference interpreting, in the form of their *Code for the Use of New Technologies*,

which included the condition that interpreters be consulted before any further experimentation with RI (AIIC, 1998). Further, the Secretary-General of the European Parliament wrote a letter reassuring interpreters that they would not be forced to work with RI against their will, and that interpreters' health would be taken into consideration in any further experiments (Mouzourakis, 2003). AIIC's *Code* also includes ISO standards for various aspects of both RI and ordinary simultaneous interpreting. The latter include standards for booths, equipment, the interpreters' view of the room etc., while the requirements for RI are spelled out in rather more detail, including standards for the digitalisation of audio and video signals, for audio-visual data and ITU standards for video-conferences (AIIC, 1998). This has provided any later studies with a set of standards to refer to in setting up their experimental conditions.

These later experiments are of the greatest interest to us for the purposes of this review, in that they provide evidence that it is not, in fact, the technological setup that causes problems for interpreters. In spite of improved conditions, interpreters continued to experience problems with concentration, fatigue and stress, as well as the physical complaints described above (Moser-Mercer, 2003; Mouzourakis, 2003; Roziner & Shlesinger, 2010), and as Mouzourakis writes, in the light of these developments "the alibi of poor technical conditions as an explanation for recurrent interpreter health complaints is becoming increasingly untenable." (Mouzourakis, 2003, p. 2). High quality sound and image transmission have not made the remote condition any easier for interpreters, as should have been the case if the technology had been the only problem. The obvious conclusion, therefore, is that there must be other factors at play that prevent interpreters from working to their usual standards.

We must, therefore, turn our attention from the technical setup used for RI to the human response to having to work in it. Both Mouzourakis and Moser-Mercer have conducted extensive research on this question over the course of a number of studies (Moser-Mercer, 2003, 2005a, 2005b, 2008; Mouzourakis, 2003, 2006). Mouzourakis locates one issue in our perception of vision as passive. If interpreters' needs for quality in screens and monitors were no different than those required for watching films, as had been previously assumed, then with improved technology and higher quality screens, any difficulties should have disappeared. However it has been shown that vision is an active process, particularly during an activity such as interpreting (Mouzourakis, 2003), and "[b]elieving that the problems faced by interpreters will go away just by throwing more megapixels at them, or by 'ergonomically' rearranging screens and monitors, amounts to mere wishful thinking" (Mouzourakis, 2003, p. 3). . Moser-Mercer also refers to the 2001 experiment in the European Parliament, during which interpreters reported a lack of agency, saying that they ended up passively watching the screen, losing any sense of participation in the meeting (European Parliament, 2001a; Moser-Mercer, 2005a). Interpreters use visual information to help them construct a more comprehensive understanding of what is going on in a meeting; of the speaker's meaning and the audience's

response to it, as well as picking up on feedback to their own interpretation. In experiments with RI, where it is not possible to provide a comparable view of the meeting room, attempts have been made to compensate for this lack by increasing the number of cameras, for example, and even providing interpreters with a choice of views (Roziner & Shlesinger, 2010).

However, even with the help of multiple cameras and camera operators, interpreters may not be given all the information they need, since in most other situations, filming serves a different purpose, and cutting between shots or changing angles has more to do with producing a result that is aesthetically pleasing than with providing the kind of information that interpreters require (Mouzourakis, 2003). Research in this field could provide useful insights into the ways interpreters collect information, which could in turn help in training camera operators and technical support staff to know which shots will be most helpful for interpreters working remotely (Moser-Mercer, 2003). One main issue seems to be that while cameras could conceivably compensate for the lack of a direct view of the meeting room, the inability of the interpreters to choose for themselves which view they need at any given time proved problematic, in that having a view selected for them by a cameraman at the wrong moment, or simply unexpectedly, was destabilising and entailed a loss of concentration (Moser-Mercer, 2005a; United Nations, 2001a). Whether it will be feasible for cameramen ever to function as interpreters' eyes remains to be seen.

However, beyond even these objective problems with views and screens, Roziner and Shlesinger found in their study on remote interpreting at the European Parliament that there was an "overriding role of attitudinal and psychological factors in interpreters' acceptance of RI, in their perceptions of its physical effects and in its real or imagined influence of the quality of their performance." (Roziner & Shlesinger, 2010, p. 217). They draw attention to the 2001 UN report, which points out that those interpreters who were more positive about the audio and visual information provided in remote interpreting were also better able to cope with the condition, while the opposite was true for those with less positive views (United Nations, 2001b). They further note that the remote condition actually favours better posture by providing all interpreters with a view of the speaker on a screen in their direct line of sight, which is not usually available in on-site interpreting, meaning that some interpreters will have to crane their necks to obtain an adequate view of the speaker. Being in a separate room from their audience and thus feeling less under scrutiny, the interpreters were also able to adopt a more relaxed posture, leaning back in their chairs, which is better for the spine (Roziner & Shlesinger, 2010). This reflects Ko's report of feeling more relaxed in RI, free from the observation of his clients (Ko, 2006a). However, while objective measurements suggested that RI could prove advantageous in these ways, the interpreters' subjective assessment showed that they felt their physical comfort to be reduced in RI. This led to the conclusion that "[s]ince the ergonomic analysis does not point to any physiological basis for these differences, it appears that the

interpreters' responses were influenced by psychological factors, such as a dislike for the novel RI task." (Roziner & Shlesinger, 2010, p. 227).

4.2. Presence in RI

Interpreters' dislike for working with RI has been widely acknowledged and discussed, however, the effect such a negative attitude could have on an interpreter working remotely has been less carefully explored. In the above quotation, Roziner and Shlesinger refer to the "psychological factors" and mention the novelty that RI is to most interpreters. Could this mean that interpreters' aversion to working with the increased amount of technology necessary for RI stems not simply from any actual difficulty they have working with the technology itself, but also from a fear of these technologies and of the novel situation, which affects their ability to adapt to new working conditions? This is one avenue to explore, and we shall return to it in a later section. However, on the reverse side, the use of technology for purposes of communication can have an impact on the individual's mental well-being.

One of the issues identified in working in a virtual environment such as the one used for RI, is that it is far harder for the participants situated in the virtual environment to feel fully present at the real event. As mentioned in the previous section, the interpreter feels a sense of alienation, which makes it harder to maintain the high levels of concentration and motivation necessary for good quality interpretation. Moser-Mercer and others have drawn attention to the recurring issues of alienation, of lack of control and lack of any sense of presence in the booth. The question of presence in particular has been raised by multiple researchers over the course of experimentation with RI (Moser-Mercer, 2005b; Mouzourakis, 2003; Roziner & Shlesinger, 2010), and is a familiar problem in the study of virtual environments in other settings as well (Moser-Mercer, 2005a). Moser-Mercer considers the question of presence in RI in her study on multi-sensory integration (Moser-Mercer, 2005a). This study is very useful for the present review, as it not only describes the need for and effect of presence or lack thereof on the interpreter at work, but also explains the notion of presence, and breaks it down into its component parts. This allows us to distinguish the various elements at work in creating a sense of presence, and conversely, what is lacking for interpreters working in RI, which may in turn suggest directions training should take in helping interpreters to learn to compensate for this lack.

Moser-Mercer adopts Witmer and Singer's definition of presence as "the subjective experience of being in one place or environment, even when one is physically situated in another" (Moser-Mercer, 2005a, p. 729). It is this sense of "being there" that is so often lacking in RI. Four of the most important factors involved in creating a sense of presence are those of control, distraction, realism, and

sensory factors (Moser-Mercer, 2005a). The control factor includes both the interpreters' awareness of being physically distant from the hall and sense that they are not or less involved in the proceedings (Moser-Mercer, 2003), but also the ability to anticipate and predict what will happen next, an aspect that is crucial in simultaneous interpreting (Moser-Mercer, 2005a). Distraction refers to elements from outside that can interfere with the interpreter's attempts to immerse themselves in the virtual environment. In this case, it could be the empty conference room in which the booths are located – the booths are not isolated from the "real world", and this in itself could prove to be a distraction. Realism describes the extent to which the virtual environment resembles the "real world", greater realism naturally leading to improved immersion in the virtual world. This can, however, have a negative side-effect, in that those leaving a virtual world in which they were fully immersed may experience a sense of disorientation (Moser-Mercer, 2005a). The sensory factors concern those senses that are stimulated to create a sense of presence. This includes aspects such as multisensory stimulation, which improves the sense of presence, although visual information alone already has a strong influence on presence (Moser-Mercer, 2005a). Evidently, there is a certain amount of interplay between these factors, and a combination of them creates an immersive environment in which the interpreter needs to deploy fewer resources in order to achieve a sense of presence, and thus can devote more mental energy to the task of interpreting (Moser-Mercer, 2005a). Mouzourakis suggests that increasing the field of view and allowing for the use of peripheral vision could contribute to interpreters' sense of presence, as could computer-generated images based on head tracking, which would look more realistic (Mouzourakis, 2003). Clearly, such a contribution could lead to an improvement in sensory, distraction and realism factors.

4.3. Novelty of RI

Thus, we can consider that the psychological factors of stress, lack of concentration, sense of alienation, lack of motivation and fatigue can all be at least partially attributed to the lack of a sense of presence in working remotely. However, the very novelty of working in RI can also contribute to the burden of working remotely. Simultaneous interpreting entails a high cognitive load, and of necessity many of the processes will become automated (Moser-Mercer, 2008). This can, however, lead to the development of so-called routine expertise, meaning that an individual can be highly competent within certain familiar contexts and patterns, but that any change to the task environment can cause them serious problems (Moser-Mercer, 2005a). The extent to which novelty affects interpreters was tested by Riccardi et al. in their study on interpretation and stress. In this study, they compared the physiological and psychological responses of interpreting students before and after a conference to those of professional interpreters. They found that the students showed far higher levels of anxiety before the conference, whereas there was no change in anxiety levels in the professional interpreters before or after the conference. Students found the conference more

stressful than the professional interpreters did because interpreting was still a novelty to them, and as such still highly unpredictable, whereas experienced interpreters feel less stressed, since the situation is familiar to them (Riccardi et al., 1998).

The researchers concluded, therefore, that interpreting in RI could be almost as stressful for an expert as an ordinary conference is for a novice, since the level of the stress is related to the degree to which the individual feels able to predict or influence the event. Expert practitioners have a number of strategies in place that will help them deal with certain expected outcomes, including potential difficulties, which novices have not yet acquired. The expert is also more likely to have foreseen difficulties, as they are familiar with the situation. However, in a novel situation such as the remote mode, experts are faced with an environment which is more unpredictable than usual, and which may require new strategies. People find those events less stressful where they have a sense of control and of being able to predict what will happen, and are more able to adjust to a stressful event under these circumstances (Riccardi et al., 1998). This allowed the researchers to make the assumption in theory that has also been demonstrated in experiments: that interpreters find working in the remote mode more stressful than ordinary interpreting.

Thus, we can determine two important aspects that contribute to stress and fatigue in RI: the novelty of it and the lack of presence. To return to the sub-question for this section: is stress and fatigue due to lack of training with technological devices? Initially, the emphasis in this question was on the technology; as was the assumption in early experiments, it seemed plausible that the increased amount of technology alone could be affecting interpreters' ability to work as usual in RI. However, the studies discussed above show that technology alone cannot be at fault, since improved technologies have not led to improvements in interpreters' response to RI. This suggests that it is not the quality of the technology that most influences interpreters' ability to work remotely, but simply the fact that technology is used at all. As demonstrated by the examples of telephone and videoconference interpreting, it is possible for interpreters to walk even with little or no visual connection to their client and with sometimes low quality of sound. However, working under these conditions means either making sacrifices in the quality of the interpretation, or else compromising the interpreter's well-being, due to the considerably greater effort required to produce interpretation of a sufficient standard (Braun, 2003).

In spite of these apparently inherent issues in the use of technology, the question of training has emerged as potentially of key importance in allowing interpreters to adapt. Training could allow interpreters to develop strategies to deal with situations that are currently still unfamiliar and unexpected before they are required to face them in the professional world. Familiarising students with the kind of technology involved could also help to improve at least some of the factors involved in creating a sense of presence. Familiarity could help overcome the feeling of being out of control,

which has been mentioned as a factor both in creating stress and reducing presence. Further, if students could become accustomed to working from a screen in an otherwise empty room, this should go some way towards dispelling the distraction posed by an empty meeting room during RI. We can conclude, therefore, that training in the use of RI should be highly beneficial to interpreting students currently in training who will, after all, almost certainly have to work in this mode in the future.

4.4. Training as a solution

As seen in the previous section, the issues surrounding presence and stress are highly complex. Nevertheless, as discussed above, training could prove to be helpful in both areas. This brings us to the second part of our question, which we shall examine in this section: how can training effectively help to reduce stress and fatigue in RI?

Since the international organisations tend to be in favour of using RI, or at least are keen to have interpreters who would be capable of interpreting in this mode, and as it seems inevitable that it will eventually become widely used, institutions such as the EU, which supports interpreter training courses internationally, push for these courses to include a module on RI (Mullender, 2010). There have already been occasions when RI was necessary at important international meetings, such as the Hampton Court Summit of EU leaders in 2005, at which it was simply not possible to install enough interpreting booths in the meeting rooms, and the interpreters worked from a marquis in the grounds. Considering that such opportunities for RI are likely to increase in the future, as well as the fact that RI is already common practice on many national markets (in Portugal for example), many interpreting courses are beginning to introduce such modules (Mullender, 2010).

This is true in particular of the schools belonging to the EMCI Consortium (European Master's in Conference Interpreting), which is supported by the European Union. The EMCI itself works in favour both of the participating schools and of the EU, which hopes to employ their graduates, since the schools have the benefit of the EU's support, while the EU can request certain standards and the introduction of training in areas such as RI. Outside of this group, standards can vary widely between different schools, as can the markets on which their students hope to find employment as professionals (Donovan, 2006). Within the EMCI, certain standards are put into place, which means that the EU can be certain its graduates will meet their requirements, while students at these schools can have a measure of certainty for their future. Another of the advantages of this Consortium is that it allows the participating schools to organise videoconferences between universities or with interpreters at the European Parliament or the European Commission. This provides an excellent means of introducing students to the sensation of interpreting remotely, while also allowing them to

benefit from speeches by trainers or students from other schools, and also to receive feedback from other sources, which can provide a different perspective (Mullender, 2010). In general, students are used to making video calls via Skype or other programmes, and are not disconcerted by interpreting a speaker who appears on a screen. However, the added pressure of being listened to by an unknown audience and, in the cases of conferences with interpreters at DG Interpretation, potential future employers, gives students a taste of the stress of interpreting remotely at a real conference (Mullender, 2010). Furthermore, these technologies give students access to trainers at different institutions, which both allows them to receive more varied feedback, and could provide a possible solution in regions where trainers are scarce (Donovan, 2006). She further insists on the need for training institutions and interpreting trainers to maintain contact, in order to share information and resources.

Although these conferences are an excellent way of introducing students to RI, they naturally entail a considerable expense on the part of the universities which must acquire the necessary equipment, and of course these conferences take a good deal of organisation and coordination ahead of time, with setting up and testing video-links on the technical side, and coordinating between universities as to who will speak and interpret from which location and in what order. The long-term benefits are significant enough, however, to make such an investment worthwhile, as the students should be well prepared to work in the remote mode once their training is complete (Mullender, 2010). In spite of reluctance about RI among interpreting professionals, they must be open to the introduction of RI modules on courses, in order to ensure that students are equipped to face these challenges in their professional lives. (Donovan, 2006). This is all the more important, as interpreter trainers are most often practising interpreters themselves, and a dislike of working in RI could translate into a disinclination to include it in a training course. It has been suggested that the ubiquitous presence of consecutive interpreting on interpreter training courses is a relic of the bitter feud between simultaneous and consecutive interpreters when simultaneous interpreting was just being introduced – though consecutive interpreting was eventually replaced in international organisations, its practitioners still held important posts in interpreting schools, and so it maintained its position there at least (Baigorri-Jalón, 2004b). This demonstrates the extent to which interpreters can influence training for future generations. Another important aspect of training, highlighted by Donovan, is that of providing students with an introduction to RI during training, allowing them to attain a fuller understanding of the technologies involved and of the conditions in which they would be working to ensure they will be able, as professionals, to judge whether requests for interpretation using RI are appropriate (Donovan, 2006).

Other courses have already gone one step beyond simply occasionally using RI technologies in classes and have actually implemented distance learning for conference interpreting courses. One such example is Glendon College, York University, in Canada. There, interpreting is taught as a two-

year postgraduate course, the first year of which is taught entirely remotely (Glendon College School of Translation). However, no studies were found to show the results of this approach. Another partially online course is offered at the Middlebury Institute of International Studies at Monterey. Barry Slaughter Olsen, associate professor at the Institute, describes his experiences of teaching remotely in an online video (Olsen, 2017). Over the course of a year, he taught simultaneous and consecutive interpretation and some sight translation to students via a distance course. Many of his findings coincide with the results of other experiments with distance learning for telephone and Skype interpreting described in the chapter on related work, in particular concerning the need for more preparation in advance at the trainer's end, as well as the need for greater discipline during synchronous teaching time, in order to maximise the usefulness of the few hours of direct contact between students and instructors. This course, too, thought it was largely online, ensured direct contact between the students and their instructor at the very beginning of the course, as well as for two to three classes over the course of the year. Nevertheless, around eighty percent of these classes are taught remotely. It is unclear from the video what percentage of the course overall was taught remotely, nor is this information included in the course description on the Institute's website, however, Olsen finds that it is certainly feasible to teach interpretation remotely, and though there were disadvantages, such as students becoming disconcerted by the use of unfamiliar technologies or by disruptions due to technical difficulties, the benefits overall outweighed any inconveniences (Olsen, 2017). This approach combines blended learning with Computer Assisted Interpreter Training, both of which will be considered in the following sections.

4.5. Adaptive expertise

Thus far, we have primarily looked at direct means of teaching remote interpreting. However, there are other approaches, which favour a more holistic view of the situation, which is to say that they aim to teach not merely the skill itself, but all the component parts that will eventually allow the student not only to acquire the skill, but also to understand how they acquired it. This will then be helpful when they find themselves in a situation where they need to adapt that skill in the face of new or unfamiliar problems. One such approach, which is being introduced by many universities, is blended learning. This approach combines classroom learning with the use of online resources, sometimes in a dedicated forum, which may provide a means for interaction between students and trainers, space for student journals in which they can record their progress, as well as links to online dictionaries and databases (Mullender, 2010). The University of Geneva's Virtual Institute is an example of such an online forum for students (Donovan, 2006). Both Mullender and Moser-Mercer emphasise the advantage of blended learning as placing the emphasis on the student, in a move away from traditional classroom methods, where a teacher imparts information to students who remain largely passive (Moser-Mercer, 2008; Mullender, 2010). Moser-Mercer highlights this

student-centred approach as an important component in creating “adaptive expertise”, which we will consider next.

While adaptive expertise does not deal directly with any of the issues we have identified as causing problems for interpreters in RI, as the name suggests, it enables an individual to develop a skill in such a way that they can adapt to novel situations without too much difficulty. Adaptive expertise stands in opposition to so-called routine expertise, which describes an ability, which may be very highly developed, but which was learned under very specific parameters, and which is easily derailed if the practitioner is required to work outside those parameters (Moser-Mercer, 2008). This kind of expertise can be acquired by repetition of the same or similar exercises over and over again, without much reflection on the process of learning itself. In interpreting, this could be simply interpreting a large number of speeches, one after the other, which may produce a highly competent interpreter, but one who is unlikely to cope well with any change to the interpreting situation. Overall, “adaptive experts are better equipped to respond to new and challenging situations by displaying different approaches to problem solving that go beyond the mere application of routine knowledge, irrespective of how vast that routine knowledge might be.” (Moser-Mercer, 2008, pp. 9-10).

In order to develop adaptive expertise, students need a learning environment that stimulates meta-cognition. This means placing the focus on the student in a learner-centred environment, allowing the student to develop skills by learning how to organise knowledge and how to solve problems through a variety of different situations. Traditionally interpreting courses have favoured a master-apprentice approach, in which students were mainly passive learners, receiving information and knowledge from their teachers, and usually with some defined level of “expertise” as the ultimate goal. In general, this favoured the acquisition of routine expertise, often with excellent results. Nowadays, though, it is clear that routine expertise is often no longer adequate to the new tasks interpreters face. The limits of routine expertise are demonstrated by the way that even a well-learned task can be derailed by a new approach if this expertise is based on proceduralised knowledge. This very phenomenon is evident in the difficulties interpreters have in adjusting to RI (Moser-Mercer, 2008).

Another important influence in building adaptive expertise is reflective practice. This means giving the students a space where they can reflect on their own learning process, for example through journaling. In a preliminary study at the University of Manchester, however, it was found that students seemed less to be focusing on their own learning process, but rather chronicling their progress towards what they perceived as the ultimate goal – some level of expertise that they hoped to attain by the end of the programme (Tipton, 2014). While this demonstrates that students may not always be able to apply meta-cognitive skills to their training as fully as Moser-Mercer suggested, the journaling process nevertheless proved helpful in allowing students to receive specific feedback from

their peers and trainers, which helped them to set more realistic short and medium-term goals and figure out how to achieve them (Tipton, 2014).

4.6. Computer Assisted Interpreter Training

Computer technologies have become an integral part of many university courses, and interpreting is no exception (Sandrelli, 2015). These technologies allow to further implement the learner-centred approach required for the acquisition of adaptive expertise. Sandrelli has published a number of studies on the use of information technologies in interpreter training. Compared with other areas of language learning, ICT tools specifically for interpreter training were developed comparatively late. Similarly to Baigorri-Jalón's point about the continued teaching of consecutive interpreting, Sandrelli and de Manuel Jerez emphasise the key role trainers play in the delayed introduction of computer technologies in interpreting, since the comparative lack of computer tools used in interpreter training could be explained by instructors' reluctance to embrace these new technologies (Sandrelli & de Manuel Jerez, 2007). Dedicated tools for other aspects of language learning began to be developed almost three decades before any interpreting programmes were created: "While the first Computer Assisted Language Learning (CALL) software programs were developed in the late 1960s and 1970s, it was not until the mid 1990s that a small number of researchers and trainers in different countries began experimenting with the idea of applying some of the key principles of CALL to interpreter training" (Sandrelli & de Manuel Jerez, 2007, p. 270).

Over time, CALL evolved from programmes that aimed to teach language by repetition to more interactive programmes, including programmes that can recognise speech and even converse with the student on certain topics (Sandrelli & de Manuel Jerez, 2007). This development is based on the shift to a constructivist view of teaching, which requires students to take a more self-directed approach to learning – developments in both CALL and CAIT have been related not only to technological advances but also to changing pedagogical theory (Sandrelli & de Manuel Jerez, 2007). Much of the theory behind the development of these tools is based in the concept of interpreting as a complex and multi-faceted task, of which every sub-task is important in developing the skills necessary for interpreting. These can be taught at different stages, beginning with simpler exercises and then working up to more complicated tasks. This allows particular difficulties to be identified and focused on in order to eliminate them before moving on to a more advanced stage. Interpreter training courses tend to be fairly intensive, with classes provided on the one hand, but students usually being required to do a considerable amount of work on their own outside of their classes (Sandrelli, 2005). It is estimated that it takes between 3000-5000 hours of deliberate practice for a student to reach a professional level in interpreting. However, all students may not progress at the same rate, and will require different amounts of practice, thus necessitating at least some self-

study (Sandrelli, 2015). This makes interpreting ideally suited to the use of computer-based training programmes, which should not, however, replace face-to-face classes, but be seen as complementary to them (Sandrelli, 2005).

Virtual educational tools can be divided into synchronous and asynchronous tools. Synchronous tools require users to be online at the same time in order to communicate, using online chat tools or communicating via videoconferencing or programmes such as Skype, whereas asynchronous tools include those such as email for communication purposes, but also databases such as speech repositories (Sandrelli, 2015). Evidently these tools need not be limited to allowing students and instructors to communicate outside of class hours, but can also be exploited in order to provide distance learning, and also enables communication between different institutions, and more generally also provide the technological means for situated learning in the form of the virtual classes, mock conferences etc. mentioned previously, allowing students to experience the sensation of working remotely and thus acquire the requisite skills for RI (Sandrelli, 2015; Seresi, 2016). One of the main interests of these courses is, of course, the fact that they provide students with experiential learning on how to handle interpreting in a virtual environment or with greater technological input. Whereas the usefulness of incorporating a module on RI into interpreter training may have seemed questionable only a few years ago, since there was some doubt as to this mode's staying power, it is clear nowadays that RI is certainly here to stay, and therefore in interpreting schools' interest to prepare their trainees to work with it (Seresi, 2016).

There are multiple advantages to a designated platform for interpreter training, foremost among them the aforementioned focus on the student. In more practical terms, though, it also provides a means for collecting and organising resources for student use. Interpreter trainers have a certain measure of control over the speeches students use for practice, and can ensure they do not pick up wrong habits as a result of practising with material that is unsuited or too difficult for their level (Sandrelli & de Manuel Jerez, 2007). Furthermore, it is widely believed "that learning must be situated in real-world contexts to maximize its effectiveness" (Sandrelli & de Manuel Jerez, 2007, p. 276), and using a single platform helps to create a "realistic" learning environment by bringing together audio, visual and textual materials in a single place. It also allows trainers to direct students' study outside of class, as they can suggest speeches to work on or have the students go over speeches used in class (Sandrelli & de Manuel Jerez, 2007). Self-assessment and peer assessment make feedback more useful, and self-assessment is crucial to ensure students develop the kind of expertise that will allow them to continue to develop throughout their professional careers (Moser-Mercer, 2008). This means allowing students time at the end of a classroom session both to critique their own performance, and also to receive feedback from their peers, apart from the feedback they receive from instructors (Sandrelli, 2015). An online forum would also provide a platform where students can receive feedback from either instructors or peers, and also record their own progress.

Of course, it is only over the course of the last decade or so that technology has really been available as a tool for interpreting students, since previously computers and internet connections were generally too slow, and it could not be expected that every student would have access to the internet or even to a computer at home (Sandrelli, 2015). The earliest CAIT experiments generally focused on the creation of a speech bank for their students' use, rather than what Sandrelli terms "integrative CAIT", where all materials are brought together as described above. A number of universities developed their own databases and repositories, among them the universities of Trieste, Granada, Salamanca, Hull and Geneva (Sandrelli & de Manuel Jerez, 2007). Although all of these systems varied slightly, they were all based on the same principles of providing resources for students, often with features that allowed recordings of student interpretations to be sent to their trainers, or for students to receive feedback and communicate with trainers. Speech banks are useful in that they allow students to practise in their own time, and also to become accustomed to working from a screen. Such speech banks present another great advantage in exposing students to a variety of different accents and a far larger number of native speakers than the trainers at their school could provide. Apart from the speech repositories created at different universities, there is an EU Speech Repository set up by DG Interpretation. This repository contains over 1000 speeches, all categorised according to language, mode for which it is intended (simultaneous or consecutive) and difficulty (Mullender, 2010).

Another development in CAIT was a move from single-user to collaborative learning programmes, in line with the constructivist model of learning (Sandrelli & de Manuel Jerez, 2007). The ETI in Geneva was the first, however, to create a full online portal, the so-called Virtual Institute, which combines means for communication between students and instructors, for student journals and feedback from trainers, as well as providing training materials to be accessed by instructors. However, this platform is used mainly for exchanging information, and less for actual interpreting exercises. (Sandrelli & de Manuel Jerez, 2007). It does, however, present "an effective structured learning environment supporting the communities of trainers and learners" (Sandrelli & de Manuel Jerez, 2007, p. 294).

It is evident from the multiple different and separately designed interpreting programmes available that development in this field is being led by a small number of dedicated researchers and trainers in different places, which explains the rather disjointed approach to the creation of interpreter training tools, and the multiple separate programmes that have been developed in different universities. Clearly, there is a need for cooperation between researchers, software developers specialising in educational training programmes and the universities which provide the necessary infrastructure for experimental platforms (Sandrelli & de Manuel Jerez, 2007).

4.7. Virtual worlds

As interpreting schools increasingly work with computer technologies, the professional world is also pushing for RI, since in more and more settings parties are no longer coming together for meetings, but rather communicating via various forms of technology. These technologies will continue to evolve, and interpreters will have to be trained in order to prepare them to continually adapt to new technological realities (Sandrelli, 2015). The latest developments now concern a move towards research into immersive virtual environments, which we shall look at more closely in the following section.

Virtual worlds make up a very particular type of computer training programmes. These are immersive environments in which users can interact as avatars. As a rule, the use of virtual worlds in training is not frequently discussed in reference to conference interpreting, an area which, we have seen, has historically been wary of introducing too much technology too fast. Sandrelli refers to current possibilities for using virtual reality systems in interpreter training. These include the Interpreting Suite Emulator, which creates a simulated conference interpreting system at a low cost, as it exists digitally and therefore requires no cabling. This system includes features that were designed specifically for interpreter training, such as automatically recording and saving student interpretations and allowing instructors to listen in on any one student and provide them with feedback in writing. This programme is intended for classroom learning, but could also be used for virtual classes (Sandrelli, 2015). Another project known as Interpreting in Virtual Reality or IVY is currently working with a virtual reality programme called Second Life to provide materials suited to interpreter training.

In a recent study, Şahin carried out research on the possibilities for including virtual world technologies in interpreting courses, and particularly refers to the possibility of using Second Life to this end (Şahin, 2013). Such virtual reality programmes are already being used by some universities in fields other than interpreting, either to offer entirely virtual courses or to provide complementary virtual classes in addition to teaching in a traditional classroom setting. Universities that wish to take advantage of the possibilities offered by a system such as Second Life can buy a plot of land on which to set up a campus, to which they can then restrict access, so that classes remain private. Within these worlds, users create an avatar of themselves, which can then move around more or less freely, and the user is also able to communicate with others in that world. Second Life is currently the most popular virtual world, and can be used for many different types of interaction that would normally require a face-to-face meeting; these include conferences and business meetings, job interviews, performances, social interactions and working in virtual offices (Şahin, 2013).

The advantage for interpreter training lies in the possibility of simulating conferences in which to practise different types of interpreting, but without the constraints of a conference (real or simulated) in the real world. In the virtual world interpreters can leave the booth and focus on the speaker or whatever they consider to be most important (Şahin, 2013). Beyond this, the virtual world means that trainers and students need not be physically located in the same place, allowing trainers to be available to teach even if they are currently away from the university. This is quite a likely scenario, given that interpreting courses are usually taught by working interpreters. And, just as suggested by Moser-Mercer and Tipton, this kind of training places the focus on the student, allowing them considerably more agency than under traditional teaching methods. Disadvantages include potential disruptions due to technological difficulties, the dependence on the software provided and the virtual reality potentially distracting learners from their work. Learning to work in a virtual world like Second Life also takes some time, since users need to know how to move around and use the various controls available, to access materials in Second Life for example, and technical support would need to be provided for both instructors and students (Şahin, 2013).

However, as Sandrelli observes, it is currently implausible for most interpreter training course to make use of such an immersive system, since they require highly specialised systems and technological support would need to be provided for instructors and students on how to function within the virtual reality (Sandrelli, 2015). Nevertheless, Sandrelli concludes that, though the use of virtual realities may not yet be an option, interpreter training courses have taken a number of steps forward as far as their technological engagement is concerned, with a growing interest in blending learning, as well as new generations of students, many of whom are quite familiar with the use of technology in their education. She concludes by noting the key role trainers play in the introduction of new methods, and the importance of remaining open-minded in their approach to incorporating modern technologies into training (Sandrelli, 2015).

4.8. Attitudes towards RI

Thus far, we have examined the ways in which improved technology and familiarity with different kinds of technology could improve interpreters' experience of RI. In this final section, we turn to the final sub-question of our research question, concerning interpreters' attitudes towards RI and how this colours their experience of working with it: are attitudes towards RI related to exposure to RI in training? A number of the researchers quoted in this paper have mentioned attitude as an issue not only in acceptance of RI but also in how well interpreters adapt to its use. One important aspect here is that of motivation – if the mere prospect of working in RI is demotivating, this will in turn have an effect if not on the quality of their interpretation then certainly on the effort it requires (Moser-Mercer, 2003). Roziner and Shlesinger also report on "the overriding role of attitudinal and psychological

factors in interpreters' acceptance of RI, in their perceptions of its physical effects and in its real or imagined influence of the quality of their performance" (Roziner & Shlesinger, 2010, p. 217), as well as referring to the "psychological adjustment to the inevitable change" (Roziner & Shlesinger, 2010, p. 218) which will be required of interpreters if they are successfully to work in this mode. We have already commented on Roziner and Shlesinger's finding that interpreters' negative attitude could have an impact on their physical comfort as well; despite objectively better ergonomic conditions in the remote booths, interpreters nevertheless considered them less comfortable than on-site interpreting. With no objective explanation for this increased discomfort, it seems that it must stem from the interpreters' dislike of RI (Roziner & Shlesinger, 2010).

It is difficult to establish the extent to which interpreters' attitudes today are affecting the introduction of RI. However, given the manifold parallels which can and have been drawn between the introduction of RI and the birth of simultaneous conference interpreting, it is worth turning to the history of the profession, to see if any lessons can be learned from that first great intrusion of technology into interpreting. A great deal has been written about early experiments with simultaneous and its subsequent widespread introduction and use. Nowadays, we take it almost for granted, but until the mid-twentieth century it was consecutive interpreting that had the upper hand and was established as the only mode of interpretation for international meetings (Baigorri-Jalón, 2004b). The reasons that led to a change, and to the introduction of simultaneous interpreting, are very similar to those now pushing RI forwards: the new system offered attractive possibilities for financial savings, and the new language regime at the UN, which increased from two working languages to five, which made it practically unthinkable to have consecutive interpretation into all the working languages because of time constraints. Today, it is the growing number of languages used at the EU that is making it difficult to provide enough booths for interpreters. The simultaneous system also allowed for huge savings in time, since there was no repetition of long speeches; the time that RI could save would be in interpreters' travel (Baigorri-Jalón, 2004b).

However, the apparent advantages of simultaneous did not convince UN interpreters, all of whom practiced consecutive interpretation and enjoyed a certain special status within the organisation. At the time, interpreters were considered something of a "marvel" (Baigorri-Jalón, 2004b, p. 53), and they feared that the introduction of simultaneous interpreting would lead to a worsening of their working conditions, and could eventually lead to them losing their jobs, that it would mean a drop in status, and another part of their reaction was simply a reaction against the introduction of new technology (Baigorri-Jalón, 1999). It is clear, therefore, why so many comparisons are being drawn today between that first technological revolution in interpreting and this second one with the introduction of RI. What we see is that interpreters, though initially very hostile to the new system, were able to adapt and overcome these difficulties to be just as comfortable with simultaneous interpreting as they had been with consecutive. Of course, it is true that some of the consecutive

interpreters refused or were unable to make this transition, but most were able to overcome their initial dislike of the simultaneous mode.

Other arguments against the use of RI include the potentially worse working conditions – the disorienting effect of being in a booth in an empty conference hall, the difficulty communicating with conference officers, and the interpreters' invisibility, which leads to fears about a potential drop in status (Donovan, 2006). All of these same arguments were put forward over the introduction of simultaneous interpreting, but over time interpreters adapted to the conditions, and where aspects were concerned which were truly detrimental to their work and health, in particular excessively long working hours, the new generation of simultaneous interpreters fought for their rights, leading to what Baigorri-Jalón describes as a "strike" in inverted commas: in April 1974 forty-five out of seventy-five staff interpreters at the UN headquarters in New York called in sick, meaning that many of the day's meetings would be disrupted. This led to the introduction of limits on the number of hours a week interpreters could work as well as on the number of meetings they could service (Baigorri-Jalón, 2004b). Booths, too, have evolved over time, as technology has improved, and we can expect them to continue to do so to accommodate RI (Mouzourakis, 2000).

We can conclude from this that while interpreters might initially hold justifiably negative attitudes towards the use of new technologies, they can nevertheless firstly come to terms with their use, perhaps with the help of a more accepting new generation of interpreters, and once this method has been established, they can determine which aspects are truly untenable and negotiate for change. With the introduction of simultaneous, "If there was no other choice, then they [consecutive interpreters] became simultaneous interpreters, which was more of a question of psychological adaptation than real adaptation." (Baigorri-Jalón, 2004b, p. 57). Today, too, interpreters seem to have developed a certain mental block about working remotely, but training could indeed help to overcome this, by not only allowing students to familiarise themselves with the technology, but by presenting RI not as some fearful obstacle, but as the natural progression of developments in technology and interpreting.

It is however not only training that may come to change attitudes; the reverse may also be true: since many trainers in interpreting schools are also practising interpreters, it is understandable that they are reluctant to introduce RI as a module if they do not want to work in that mode themselves. Baigorri-Jalón and Sandrelli and de Manuel Jerez have commented on the ways in which practising interpreters have changed the way training courses have developed, ensuring consecutive interpreting is still an integral part of interpreter training, or slowing the introduction of modules that use computer technologies. While it remains to be seen to what extent training can change interpreters' attitude towards RI, then, the mere presence of a module on the curriculum is a concession on the part of trainers, which can be attributed either towards a more optimistic view of

new technologies, or more pessimistically perhaps, to interpreters bowing to the inevitable and to pressure from the International Organisations, many of which, as we have seen, are keen to have interpreters who are equipped to work remotely.

5. Discussion and conclusion

Technology is becoming an integral part of everyday life in all areas, including social, business and educational. This is as true for the profession of interpreting as it is for any other, though we have seen that it has perhaps been a little slower than others at making full use of the technologies available. We have seen a number of possible reasons for this delay in embracing modern technologies, which are mainly related to the high level of mental exertion required for high quality interpretation, and interpreters' concern that the introduction of new forms of technology could compromise their ability to produce interpretation of an acceptable standard without overstretching their mental capacities. The aim of the present study, based on existing literature on the subject, was to examine the reasons behind these fears and the real impact of RI on interpreters at work, in order to establish the extent to which the effects of RI are lasting, and whether it is possible to overcome them by appropriate training methods.

It is particularly interesting to note that interpreting is used in all fields, and is in some cases already very well-established, the most noted example being that of medical interpreting. This shows that interpreters can and do work remotely, and can adapt even to the use of telephone interpreting, which deprives them of any visual connection to their client. We also saw that there can be potential advantages to the lack of visibility, which permits interpreters a greater amount of freedom than they would otherwise enjoy, as noted by Ko (Ko, 2006a). Conference interpreters, too, have already begun to work in the remote mode, as noted by Mullender, with the example of the EU summit at Hampton Court, as well as the national conference interpreting market in Portugal (Mullender, 2010). Clearly, therefore, interpreters are able to work in the remote mode when required. We have also seen, however, that interpreters consistently express a preference for in-person interpreting when asked, not only in conference but also in telephone interpreting, and the increased difficulty of interpreting remotely has made the use of RI questionable in legal contexts (Braun, 2013; Locatis et al., 2010).

This research places RI as a whole in a rather negative light, as clearly constituting an added burden for the interpreter, and in some cases even interfering with the message. Interpreters' self-assessment included greater physical discomfort as well as increased mental strain, particularly of stress and fatigue (Roziner & Shlesinger, 2010). Most of these findings come from experimental settings, since it is hard to collect data on interpreters' work during real conferences, at least collecting physiological while they are in the booth. Even under experimental conditions, in cases where the interpreters were servicing conferences, they were requested to fill in questionnaires after leaving the booth, rather than attempting to observe them while working. This is, once again, related

to the high pressures and concentration necessary for simultaneous interpreting. However, since most of the studies included in this review concentrated on established interpreters with a few years' experience, and who were thus unlikely to have had much exposure to RI during their training, it is hard to assess the extent to which training could help prepare them for RI in the workplace. Conversely, studies on the use of RI on training courses have not yet produced results showing how training in this mode may have helped students in their professional careers. The aim of the present review was to put these two sides of RI together, and attempt to evaluate the effect that training could have for the new generation interpreters, based both on the results of previous experiments and the hypotheses for interpreter training. We will now turn to the findings of this review, divided according to the three sub-questions laid out at the beginning.

5.1. Is stress and fatigue associated with RI related to lack of training with technological devices?

The first two sections of the previous chapter were concerned with past experiments in RI, and the effects that they have shown RI to have on interpreters. This showed that interpreters do indeed regularly suffer from having to interpret in the RI state. In the chapter on related literature we saw that the effects of RI are by no means limited to conference interpreting, but rather are experienced by interpreters working remotely in all different settings and using all different communication technologies. The obvious conclusion would be that it is the technological setup that is at fault, since this is the main aspect that all of these various interpreting situations share. Technology evidently plays a large part in causing interpreters problems, however, a subtler approach might achieve better results; in some cases it is not the direct effect of having to use technology, but the compound effect of the remote situation on the interpreter's mental state that leads to the use of technology proving problematic. Thus, though an interpreter who is unfamiliar with the technologies used would certainly find themselves at a disadvantage, familiarity with technology is not enough to rule out any kind of interpreting issues.

This is because it is the entire state of working remotely that affects the interpreter at work. Beyond the technology itself, there is the stress of the unfamiliar environment, the alienation of being removed from the conference hall, the drop in motivation due to these previous two factors as well, in some cases, as a dislike and disinclination for working in this mode at all, the difficulty concentrating because of all of the previous factors, and so on. The technology itself is not the problem but rather the effect its use has on the interpreter. The issues of alienation and presence, for example, which has been written about and commented on by various researchers, may be difficult to solve by providing interpreters' with higher quality screens or more views of the conference room – both these solutions have been attempted and proved futile. Mouzourakis noted that

improved technology could only go so far in helping interpreters in their task (Mouzourakis, 2003). However, it is worth recalling the four factors identified as crucial in creating a sense of presence, which is to say control, distraction, realism and sensory factors. Though it would be difficult to support the factors realism and sensory stimulation through training and these will probably not improve without technological advances, the issues surrounding the interpreters' feeling of being out of control, as well as the distraction caused by the remote condition (the increased number of screens, the lack of a direct view of the meeting room, interpreting in an empty room etc.) could be mitigated somewhat if they were more prepared for this situation. This suggests that while training can indeed help interpreters to prepare for RI, it is less by introducing them to the technology and more to do with becoming accustomed to a certain setting for work. We will consider the question of just how training can help interpreters to acquire the necessary skills in the next section.

5.2. Is training with RI a means to reduce stress and fatigue when using RI?

From the evidence presented above, the natural conclusion is that training should certainly be able to go some way in overcoming certain difficulties and eventually certain prejudices held by interpreters concerning the use of RI. The question then remains, what kind of training is most appropriate in preparing interpreters to use this technology. There are a number of factors at play here; for one thing, though there is a clear move towards RI becoming more common in all areas, there is little consensus concerning the equipment used (Mouzourakis, 2006). Furthermore, developments in technology are continuing to move at such a rapid pace that there is no guarantee that equipment would remain unchanged between a student beginning an interpreting course and actually having to use RI as a professional. Trainees must thus be equipped to face an evolving workspace, where conditions may well vary.

The question of training presents further complications based upon research in fields other than conference interpreting, which have shown that training does not always solve all problems and may even raise new issues, which will require study in their turn. This is true in the case of the additions and expansions in legal interpreting investigated by Braun, where training and familiarity with the technology had, in fact, led to an increase in their frequency (Braun, 2017). Most research involving experimental uses of RI in conference interpreting revealed no improvement in interpreter well-being over time, which one might have expected as the interpreters settled into their new situation. However, it is questionable whether a few days to two weeks learning on the job can really be considered training. Ko emphasises this point in particular: many experiments last no more than a few days, or in some cases even a single interpreting session (European Parliament, 2001a, 2001b; United Nations, 2001a, 2001b), which falls exactly within the period of acclimatisation, during which the interpreter experiences most difficulty with the new mode (Ko, 2006a).

Bearing all this in mind, we shall now turn to the ways interpreter training courses have begun to include the use of RI technologies in their curriculum. Beginning simply with the time factor, interpreting courses at least offer a sufficient amount of time for interpreting students to become accustomed to RI, according to Ko's suggestion of the time required. By the time they graduate, students should hopefully have been exposed to enough RI sessions to be able to cope if they are required to interpret remotely professionally. The pedagogical tools used to introduce students to RI have already been discussed, and the direct advantages of those, such as videoconferences, that simulate remote interpreting are no doubt clear. However, these entail considerable expense and the organisation of the videoconferences requires a good deal of administrative work and cooperation (Mullender, 2010).

However, as mentioned above, it is not only direct exposure to RI that allows students to acclimatise, and the use of blended learning is becoming more and more customary on interpreting courses (Moser-Mercer, 2008; Sandrelli & de Manuel Jerez, 2007). This is in some ways the antithesis to the problem outlined above: just as problems of presence and lack of control are not directly related to technology, so the skills students need to overcome them are not immediately connected to their technological literacy. The approach currently favoured by the interpreting schools is to tackle the issue of RI from both sides, providing training in RI and also ensuring their graduates will have the necessary tools to recognise problems and also identify ways to deal with them without having to feel overwhelmed. To this end, in addition to videoconferences and the like, they offer opportunities for blended learning via mostly online tools. The blended learning approach highlights the importance of encouraging students to take control of their own learning process, thus building an awareness of the different processes involved in interpreting.

The integration of these technologies into interpreter training programmes also demonstrates a willingness on the trainers' part to engage with RI and to adapt to new market requirements. This is an important point, as it demonstrates working interpreters' decision to accept these technologies, at least as far as teaching the next generation is concerned. After all, this new generation of interpreters will be influenced by their trainers, and if RI is presented to them as something not to be feared but to be embraced, then this, too, may help with some of the issues encountered over interpreters' attitudes, which, some suggest, have a further negative impact on their experiences in RI. The question of attitudes and the extent to which they can affect our experiences is a difficult one, as it is almost impossible to measure this kind of effect, which in any case may be unconscious. However, it can do no harm if students today see RI as simply part of the job, and have no stronger feelings about it. We will look at the role of attitude and the ways in which training can influence it in the following section.

5.3. Are attitudes towards RI related to exposure to RI in training?

The question of interpreters' attitudes to RI is often mentioned as a side issue, but rarely engaged with as a real issue, since it is almost impossible to process any quantifiable data. However, this question is clearly also at the root of the problem. Interpreters' dislike of RI is taken for granted by most researchers, and is usually accounted for by the manifold physical and mental complaints recorded since experiments with RI began. While attitude has been mentioned as possibly playing a part in these complaints, there is little research on this aspect in particular. It is, of course, understandable that researchers should shy away from an area where so much is subjective, and where subconscious prejudices may play an important role. However, it is worth taking those suggestions that have been made seriously, and examining the implications they could have for future generations.

We have seen that interpreters in the early and mid-twentieth century felt similarly about the introduction of simultaneous interpreting to the way their modern counterparts do today about RI. Consecutive interpreters were openly hostile to the use of simultaneous interpretation, and disparaged those who practiced it. Nevertheless, simultaneous has now by far eclipsed consecutive interpretation on the international stage, thanks, largely, to a new generation of interpreters, composed of those who were willing to adapt and take on the challenge of simultaneous interpretation (with the considerable technical difficulties and change to the interpreter's way of working this entailed at the time). This transition took time, particularly in meetings of international importance, such as those of the Security Council, where consecutive interpreting was maintained for years after simultaneous interpretation began to be used in the UN system.

In some ways the task facing simultaneous interpreters today is far less challenging than the one the consecutive interpreters came up against in the twentieth century; after all, the way they deliver their interpretation has not changed as such, and technology has always been a part of simultaneous interpretation – the addition of a few screens instead of a direct view of the speaker (which cannot be guaranteed under ordinary simultaneous conditions in any case) should not present too much of an obstacle. And indeed, as we have seen, interpreters can and do work remotely in a huge range of fields, and using different kinds of technology, with and without any view of the speakers they are interpreting. As was the case with the implementation of simultaneous, those interpreters who are willing to work in the new mode will do so, and as the technology takes over, those who still have reservations will be forced either to overcome their fears and adapt to the new system, or else to find their employment options increasingly limited as the new mode begins to take over. This may sound rather pessimistic, but this is the way whenever changes occur in a profession or a field, and interpreting students should be aware that soon, given the way technology and the profession of

interpreting are going, they will have to work in RI whether they like it or not, and the more positive their attitude, the more likely they are to do well in it, and the more easily they should be able to adapt.

5.4. Conclusion

It has been conclusively demonstrated that conference interpreting is an exceedingly complex process, calling for highly skilled and well-trained individuals, who are aware of the high pressure under which they are working and the importance of providing interpretation of a good standard (Connell, 2006; Moser-Mercer, 2003; Roziner & Shlesinger, 2010). These factors combine to make RI very stressful for interpreters, by increasing the level of mental strain and thus threatening their ability to interpret faithfully according to their own standards. This perfectionist tendency is evidenced by the fact that interpreters invariably described a drop in performance as a result of working remotely, which was rarely noted by clients. Of course, as Braun writes, since "clients' expectations tend to be less rigorous than those of interpreters, this is not surprising; and, as Shlesinger (1997) also warns, clients are not necessarily in a position to assess an interpreter's performance" (Braun, 2013, p. 4). Research into RI and interest in its potential and current uses are still high, as demonstrated at the European Commission event on "Interpretation – sharing knowledge and fostering communities" held from 19-20 April 2018 in Brussels. Though the presentations from this event could not be incorporated into the present review, several were concerned with the future of interpreting and particularly with the use of technology in interpreting, with one that focused entirely on distance interpreting (Seeber, 2018).

Overall, however, we have seen that it is the psychological effects of working remotely that are currently being identified as most strongly impacting interpreters' experience of RI. The problem lies not in the technology itself, but in the effect it has on interpreters, and this could be worth investigating further in future studies. This concerns not only issues such as presence, which affect interpreters in the booth, but should encompass the importance of attitude, which we have touched upon in the present study as a potential approach for solving the problem of RI. One interesting question for the future concerns the effect of training on interpreters' attitudes to RI – as a new generation of interpreting students graduate, many of whom experienced some form of RI during training, or at least were made aware of it as a phenomenon, it will be interesting to see how this coloured their expectations, and whether a more actively positive attitude (as opposed not only to hostility, but also to resignation) could influence the difficulty they experience in working remotely. If this is feasible, it could be helpful to conduct research comparing the experiences of new graduates to those of interpreters who have been in the profession for a number of years already, with an interest in both the technical side, to see their responses to the RI environment, but also with questionnaires to

gauge their views on RI in general. It would be interesting to see if there is a clear correlation between these two, as has been suggested in previous research.

It would also be interesting to see how well interpreting courses are able to provide their students with the necessary RI skills. Since this is an entirely controlled environment, it should be quite possible to investigate the success or failure of different approaches. Work is already being done in this area, of course, as demonstrated by the various programmes implemented in different schools (Sandrelli & de Manuel Jerez, 2007; Tipton, 2014). Longer-term studies on how students adapt to RI would be of considerable interest, as would their assessment of the mode after completing the course. Though there have been studies on courses aimed specifically at teaching remote interpreting (Ko, 2006a; Skaaden, 2016), these were aimed at interpreters in fields other than conference interpreting and therefore using slightly different technology (telephone or Skype), and also with practising interpreters looking to add an extra skill. It would be interesting to see if there are any differences in the ways students approach the problems created by the use of technology between those who already have experience and expertise in interpreting compared with those for whom not only the setting but the task itself is novel.

It has been implied or stated outright by researchers for some time now that a new generation of "tech-savvy" interpreters may lead the way for greater acceptance of RI in the profession as a whole. Given the many interlinked issues surrounding the increased use of technology in conference interpreting, it would be unreasonable to count entirely on the abilities of younger and more computer literate interpreters being able to integrate these abilities into the process of simultaneous interpretation, however, the literature discussed in this review suggests that future interpreters will be given a head-start, as the use of RI in different forms becomes more common on all training courses, and will hopefully have been taught in such a way as to facilitate adaptation to the use of technology of many different kinds, and a flexible and open-minded approach to its use in interpreting. Though this is not enough to guarantee that issues such as the sense of alienation and lack of presence, both of which have been cited as two of the greatest drains on interpreters' resources and thus on their ability to work well in this mode, it nevertheless offers the hope that in the future, with the help of adequate training and ever-improving technology, RI will no longer be as tiring and difficult to interpreters as it currently is. And as the use of technology continues to spread to ever more areas, future interpreters will certainly have to be prepared to work in this mode.

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7. Appendices

7.1. Appendix 1: “Past”

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7.3. Appendix 3: “Future”

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