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ASPECTS OF ONLINE MONITORING AND CONTROL DURING A CONSECUTIVE INTERPRETING TASK: EVIDENCE FROM A RETROSPECTIVE PROCESS TRACING STUDY

This paper reports on analysis of data gathered in a multi-site, multi-researcher retrospective process tracing (RPT) study first described in Gumul and Herring (2022). A group of student interpreters in Poland and a group of experienced medical interpreters in the USA carried out a consecutive interpreting task followed by RPT. The RPT sessions were analyzed for evidence of online-self regulation, following the definition and analytical framework employed by Herring (2018). The paper discusses evidence of online monitoring of affect, behavior—note-taking technique, cognition—comprehension, and cognition—language transfer, and of online employment of control mechanisms—linguistic/interpreting strategies. It also discusses individual differences in retrospection style and the presence of introspective/evaluative comments in RPT data.

Keywords: retrospective process tracing, online monitoring, online control, online self-regulation, consecutive interpreting

1. Introduction

This paper examines evidence of online (that is, during task performance) monitoring and control in data collected as part of an exploratory multi-site, multi-researcher retrospective process tracing (RPT) study first described in Gumul and Herring (2022). The previous publication is methodologically focused and reports in detail on the design and procedure of the study, as well as on some preliminary analysis of the data. In this paper, we focus on evidence from the RPT data with regard to participants' online self-regulation, including evidence of foci of monitoring and of control mechanisms; differences in evidence of online self-regulation across different stages of the retrospections (uncued, cued, verbal probes); and differences in the retrospections provided by novices and experienced interpreters. We also discuss considerations related to portions of the RPT data that are evaluative or introspective, rather than process tracing in the strict sense.

The principal aim of retrospective processing (RPT) studies is to gain insight into the cognitive processes involved in interpreting—to get a better look into what goes on in the 'black box' as the interpreter performs. However, information gathered through RPT does not provide a full accounting of an individual's online cognition. Among the reasons for this is the fact that automated processes are understood to be unavailable for post-task retrospection (Ivanova 2000; Herring 2018; Herring and Tiselius 2020). While processes requiring cognitive control (that is, attention-demanding processes) are expected to potentially be available for retrospection, there is also no guarantee that all attended processes will be reflected in RPT data or that all reports accurately or fully reflect actual processes (Henderson and Tallman 2006; Englund Dimitrova and Tiselius 2009, 2014; Herring and Tiselius 2020). Analysis and interpretation (in the non-linguistic sense) of the traces of online cognition in RPT benefit from an understanding of these issues.

The manner in which online processes are conceptualized and analyzed can vary depending on the theoretical frameworks drawn on and the research questions posed in a given study. For our analysis of the retrospection data gathered in this study, we have drawn on Herring's (2018: 247) definition of online self-regulation as "online monitoring of affect, behavior, cognition, and context, and the online employment of affectual, behavioral, or cognitive control mechanisms in order to maintain or increase alignment between the current state of the interactional system and the interpreter's performance goals." This definition is rooted in theoretical conceptualizations of online self-regulation which model it as a feedback loop comprised of two distinct but closely connected processes: *monitoring* and *control* (Carver 2004; Carver and Scheier 2011; Zimmerman 2002, 2008; Nelson and Narens 1990). Monitoring is understood as a process of comparison between a current state of affairs (i.e. what is happening as one performs a task), and a goal state, which is

a mental representation of the 'ideal' or 'desired' state of affairs. Control mechanisms, whether overt or covert, are employed in response to actual or potential lack of alignment between the current and goal states, with the aim of maintaining or achieving alignment between the two. Thus, online monitoring and online control act in concert to achieve self-regulation of performance.

Within the literature on self-regulation, online monitoring does not only refer to monitoring of cognition, nor does online control refer only to cognitive control. Pintrich and Zusho (2002) identify four broad areas or foci of self-regulated learning: affect, behavior, cognition and context. Herring (2018, 2019) adopts this framework, using the definition of online self-regulation quoted above as the lens through which she analyzes aspects of dialogue interpreters' online monitoring and online employment of control mechanisms. In her study, eight interpreters interpreted a simulated dialogue and completed a 3-stage RPT session immediately thereafter. She reports on evidence from the RPT sessions of interpreters' online monitoring of their own and others' affect, their own and others' behavior, cognition, and situational context (i.e. the setting, situation, and purpose of the interaction). In categorizing the evidence of control mechanisms in the RPT, she focuses on the mechanism by which an (attempt at) control is exerted and identifies affectual/intrapersonal, behavioral, and cognitive control mechanisms. Just as the RPT procedure used in this study (Gumul and Herring 2022) was modeled on that used by Herring (2018, 2019), we have drawn on Herring's definition of online self-regulation and her analytical approach in order to analyze the retrospection data.

2. Method

As the study design and method are described in detail in Gumul and Herring (2022), we provide here only a brief overview. Sixteen interpreters (9 Polish interpreting students, 7 experienced medical interpreters in the USA) participated in the study, which had previously received ethics approval from both institutions with which the authors are affiliated. Participants were provided with the topic of the speech, then given a period of time in which to prepare (unobserved by the researcher) for the interpretation. The interpreting task consisted of consecutive interpretation with notes of a 3'50" monologue on the subject of bowel management routines after spinal cord injury. Immediately after interpreting, participants participated in a RPT session consisting of three contiguous stages—uncued retrospection, retrospection cued by a source text transcript, and a series of pre-prepared verbal probes. The recorded RPT sessions were later transcribed and, in the case of utterances produced in Polish, translated. Pseudonyms were assigned to each participant, with names beginning in "M" corresponding to the Polish group and names beginning in "A" corresponding to the US group.

3. Results and discussion

3.1. First round of analysis

In the first round of data analysis, the retrospection data was coded for evidence of online self-regulation using the coding categories listed in Figure 1. These categories are drawn and slightly adapted from those used by Herring (2018). The first round of this analysis was initially carried out separately by the two researchers. Their individual coding documents were then compared to identify points in common and differences between them. Differences in coding were reconciled by discussion between the two researchers in order to reach a final version of the coding.

Figure 1: Categories for first round of data analysis

- **Online Monitoring** *(monitoring only, no associated control)*—portions of the retrospections providing evidence of online monitoring but not of an associated control mechanism (e.g. "She was talking very fast.") (*NB: This does not necessarily indicate a lack of online control, but that the interpreter's retrospection does not mention online control.*)
- **Monitoring with Online Control**—portions of the retrospections providing evidence of online monitoring with an associated online control mechanism (e.g. "She was talking very fast so I had to stop taking notes to focus on understanding the ideas.")
- **Introspection**—portions of the retrospections containing general introspective comments about performance, but not referring to this specific interaction (e.g. "In my experience, when people talk very fast....")
- **Evaluation**—portions of the retrospections in which the interpreter evaluates/judges their performance

We carried out a basic quantitative analysis of the results of this round of coding. When we compare the four major categories coded in this analysis (online monitoring, monitoring with online control, introspection, and evaluation) across all stages of RPT, we see that evidence of online monitoring was coded for most frequently, followed by general introspection (see Table 1). In contrast, the remaining two categories were coded considerably less frequently. The distribution of frequency of coding of the categories varies across different stages. Frequency of coding of evidence of online monitoring is comparable across the three stages of retrospection, while the remaining categories show some variation. For example, Stage 2 (cued retrospection) has generated significantly more evaluative comments than the remaining stages in both groups

($H = 23.5796$, $p < 0.05$ in Kruskal-Wallis test). This might be due to the influence of the cueing in the form of a transcript. Cued retrospection involving a source text transcript appears to give rise to more general introspective comments (as opposed to retrospective process tracing, strictly defined) than does uncued retrospection or verbal probes. At the same time, evidence of monitoring along with online control was also coded more frequently in Stage 2, which provides important evidence of the value of cued retrospection, despite the greater frequency of non-RPT utterances coded in this stage. A last pattern to note in this analysis is the fact that very few (Polish group) or no (US group) utterances were coded as "evaluation" in Stage 3 (verbal probes).

Table 1: Quantitative analysis of first round of coding

	Online monitoring			**Monitoring with online control**			**Introspection**			**Evaluation**		
	S1	**S2**	**S3**	**S1**	**S2**	**S3**	**S1**	**S2**	**S3**	**S1**	**S2**	**S3**
US	16	11	15	7	9	5	14	13	20	2	24	0
PL	20	26	27	8	25	11	13	24	26	11	35	4
Both groups	36	37	42	15	34	16	27	37	46	13	59	4
Total	115			65			110			76		

In comparing the numbers we also noted clear inter-group differences. For example, in stages 2 and 3 we obtained considerably more reports from the Polish group than from the US group about online monitoring (OM) and monitoring with online control (MWOC). This finding is consistent with Ivanova's (2000) results, in which novices reported twice as many instances of monitoring as did experts. This finding may be related to differences in automated vs controlled processing across the two groups: the experienced interpreters were likely able to rely more on automated (unattended) processes developed through time and practice, while the student group were likely relying more on attended (conscious) processing, due to their lack of experience. Inasmuch as automated processing is not expected to be available for post-task recall, it is not surprising that prevalence of reports of OM and MWOC would be lower in RPTs produced by the US participants, who had between 4 and 30 years of experience as interpreters. In stage 2, the Polish group demonstrates a tendency toward more frequent introspective and evaluative reports, which may also be due to their greater reliance on attended processing, leading to greater availability of memory traces during RPT.

Inter-individual comparison of the coding also reveals considerable differences in retrospecting style/content across individual participants, who clearly exhibit divergent retrospective styles not only in terms of the amount of

verbalized information (see specific data in Gumul and Herring, 2022; see also Gumul, 2021), but also in terms of their reports of self-regulatory activity. For example, some participants' retrospections (e.g. Alondra's) include a number of introspective and evaluative comments, but very few traces of OM or MWOC. In addition, the ratios between OM and MWOC tend to differ, even for participants within the same group. For instance, Marcelina's retrospection contains twice as many cases of MWOC as of OM, while Mira's retrospection contains only one instance of MWOC. An additional noteworthy finding is that the frequency of coding of instances of OM and MWOC does not appear to be related to the overall length of the retrospection—for example, OM is coded 12 times in Magda's retrospection and 3 times in Marcelina's retrospection, although the lengths of the two retrospections are similar across stages. To date, there is limited coverage of individual differences in retrospection styles in the literature, although they have been addressed by Gumul (2019, 2021) and are mentioned in Englund Dimitrova and Tiselius (2009) and Tiselius and Herring (2020). In our opinion, they are an area ripe for further investigation.

3.2. Second round of analysis

The second round of coding focused on identifying categories of targets for monitoring and control mechanisms in the retrospection data. The coding for this analysis used the categories described by Herring (2018) as a starting point. Herring (2018)'s categories were adapted to reflect task-related differences between the two studies—for example, Herring's categories related to interaction management were not relevant for this study, as the stimulus was a monologue. As we coded the data, we identified additional categories arising from the type of interpreting task set for these interpreters (i.e. a pre-recorded nearly-4 minute monologue interpreted consecutively with notes). Tables 2 and 3 list the targets for online monitoring and the online control mechanisms for which there is evidence in both groups of participants, with the number of retrospections (total N = 16) in which each category was identified.[1]

We then identified categories for further analysis, focusing on those that were most-frequently identified in the data set and those which presented potentially interesting differences between the two groups, as identified in the preliminary qualitative analysis described in Gumul and Herring (2022). The following categories were flagged for further analysis:

[1] Note that the numbers do not identify how many times a given category was coded, but rather the number of retrospections in which the category was identified.

Table 2: Targets for online monitoring identified in retrospections

Targets for Online Monitoring Identified in Retrospections	
Affect:	• Interpreter's emotional state—coded in 13 retrospections
Behavior:	• Interpreter's behavior ○ Note-taking technique—coded in 11 retrospections ○ Delivery from notes—coded in 8 retrospections • Speaker's behavior (e.g. pace, style)—coded in 8 retrospections
Cognition:	• Cognitive processes of interpreting ○ Comprehension—coded in 12 retrospections ○ Retention—coded in 7 retrospections ○ Language transfer—coded in 11 retrospections ○ Production—coded in 7 retrospections ○ Match between source language and target language utterances (accuracy)—coded in 9 retrospections
Context:	• Situational context—coded in 3 retrospections • Physical context—coded in 9 retrospections

Table 3: Categories for online control mechanisms identified in retrospections

Categories of Online Control Mechanisms Identified in Retrospections ***(NB: Refers to mechanisms by which control is exerted)***	
Affect:	• Control/redirect emotional reaction (including positive self-talk)—coded in 2 retrospections
Behavior:	• Note-taking strategy—coded in 6 retrospections • Make use of preparation material—coded in 2 retrospections
Cognition:	• Linguistic/interpreting strategies (visualization, strategic omission, calque, circumlocution, etc.)—coded in 14 retrospections • Increase/redirect focus or effort—coded in 4 retrospections

- Targets for monitoring:
  - Own affect
  - Own behavior—note-taking technique
  - Cognition—comprehension
  - Cognition—language transfer
- Control mechanisms:
  - Cognitive—linguistic/interpreting strategies

The following subsections report on the analysis of each of these categories.

3.2.1. Monitoring affect

The retrospection data offers plentiful evidence of interpreters' online monitoring of their own emotional state. *Monitoring—(own) affect* was coded in 7 of the 9 Polish retrospections and in 6 of the 7 US retrospections. This target of monitoring is frequently identified in stage 3 of the retrospections, appearing in stage 3 (verbal probes) of all 13 retrospections in which this category was coded. This is likely connected with the fact that one of the verbal probes asked the participants about their mood or state of mind while interpreting. However, reports indicating monitoring of affect also appear in stages 1 and 2 of the retrospections, particularly in the US group. Indications of monitoring of affect elicited via verbal probe confirm that interpreters actively attended to this aspect of performance; in addition, for some respondents, their own affect was a salient enough aspect of task performance to be mentioned spontaneously (that is, without being prompted via verbal probe).

Table 4: Coding for monitoring of (own) affect

Number of times Monitoring—(own) affect was coded	Participants	Stages of the retrospection in which the category was coded
0	Marta Matyda Alondra	n/a n/a n/a
1	Maria	Stage 3
2	Maja Adrian Anahí	Stage 3 Stage 3 Stage 1 & 3
3	Marcelina Mira Antonia	Stage 3 Stages 2 & 3 Stages 2 & 3
4	Magda	Stages 1 & 3
5	Marek Adela Amaris	Stages 2 & 3 Stages 1, 2, & 3 Stages 1, 2, & 3
6	Monika Abigail	Stages 1, 2, & 3 Stages 1 & 3

Both groups used words with a negative valence, such as stress, worry, anxiety, nervousness, discouraged, or dissatisfied. The feelings are primarily related to three specific characteristics of the task: the length and/or pace of the source stimulus, note-taking technique/ability, and the possibility of omission of information, often due to one or both of the just-mentioned factors.

(1)

a. I was stressing about how much I was going to be able to take good notes and keep track of them and ummm whether I was going to be able to say it in a way that made sense. – *Maria (Stage 3)*
b. I was also thinking, as I said, about the pace. There was a moment when I felt a little bit discouraged [laughter] but I tried to keep… I tried to go on and note the next part down. – *Marek (Stage 3)*
c. And then as it kept getting longer, I was a little nervous about the… I started to get a little bit nervous about the length, you know, by how long it was going. But al.. but also was able to… was able to quash that because of my… because of my background. – *Abigail (Stage 3)*
d. I was more worried because maybe I was not… I was realizing that maybe I did not take enough notes or good notes I guess to be able to convey all this information. – *Amaris (Stage 2)*

Affect-related words with a positive valence also appear in the retrospections of both groups, as illustrated by the following examples:

(2)

a. The moment she started talking about the diet and these schedules I felt a little bit satisfied because I managed to read just a little bit.[2] – *Magda (Stage 3)*
b. I was quite impressed I was able to make sense of [laughter] my notes afterwards. – *Adela (Stage 3)*

In recent years, there has been an increase in scholarly interest in psychoaffective aspects of interpreting (Walczyński 2019; Herring and Walczyński 2024), including stress and anxiety experienced by interpreters during performance (e.g. Korpal 2016; Rojo López et al. 2021). While this study was not primarily focused on psychoaffective aspects of self-regulation, these findings are suggestive in terms of the potential for the use of RPT as a qualitative methodological tool to investigate the online self-regulation of affect.

3.2.2. Monitoring own behavior—note-taking

Eleven of the retrospections contain evidence of interpreters' monitoring of their own behavior with regard to note-taking techniques or strategies. With one exception, interpreters whose retrospections provide evidence of monitoring of note-taking behavior reference it during stage 1 or 2 of their retrospection, as detailed in Table 5.

[2] The interpreter is referring to having read about the subject during the allotted preparatory time before the interpreting task.

Table 5: Coding of monitoring of own behavior – Note taking

Number of times "own behavior—note-taking" was coded	Participants	Stages of the retrospection in which the category was coded
0	Maja Marcelina Alondra Antonia	n/a n/a n/a n/a
1	Marta Maria Amaris	Stage 1 Stage 1 Stage 3
2	Monika Mira Adrian	Stages 1 & 2 Stage 2 Stages 1 & 3
3	Magda Marek Anahí	Stages 1, 2, & 3 Stages 1 & 3 Stages, 1, 2, & 3
4	Adela	Stages 1, 2, & 3
6	Abigail	Stages 1, 2, & 3

The following examples are illustrative of the evidence of monitoring of note-taking strategies identified in the data:

(3)

a. There were lots of numbers, but I think I was trying to do my best to write them down. – *Magda (Stage 1)*

b. I mean, there are not many fillers, so it was quite important for me to write as much as possible so that I wouldn't lose track of what {she} was talking about. – *Mira (Stage 2)*

c. When I just started, I realized I needed to find really quick abbreviations for spinal cord injury and bring out some of my other... the little symbols of things that I've used in the past. – *Adela (Stage 1)*

d. So I remember the first part this first paragraph was kind of like what I started using my paper for [AN: for taking notes] and then remembering like oh no, this is not going to work for me I'm not... just out of practice with using paper [AN: as opposed to taking notes electronically]. – *Anahí (Stage 2)*

Inter-group comparison points to differences in monitoring of note-taking behavior between the student group and the professional group. The student interpreters tend to focus more on the fact that the topic was unfamiliar and the speed was (for some of them) fast; they focus on the need to write down as much as possible and on the notes' role in supporting their memory. The more

experienced interpreters (the US group) rarely comment on pace or on the familiarity of the topic; rather, they are more focused on length of the stimulus and on their overall note-taking approach. Their perspective is a broader one, which aligns with known differences in how novices and experts conceptualize and approach problems. Some interpreters within the US group (e.g. Abigail, Adela, Amaris) also made comments about the need to adapt their note-taking technique to the demands of a longer monologue, as opposed to the shorter dialogue chunks they more commonly encounter, or to the fact that they were not taking notes with their usual note-taking materials or setup (e.g. Alondra, Anahí). As far as the inter-stage comparison is concerned, the fact that the majority of comments referring to monitoring note-taking appears in Stage 1 (not cued by any memory trigger) indicates that note-taking was a highly salient aspect of task performance, across groups.

3.2.3. Monitoring cognition—comprehension

Evidence of monitoring of comprehension is present in retrospections provided by both the Polish and US groups. However, there is a notable difference between the groups in terms of the frequency and content of their retrospections related to monitoring of comprehension. This difference is likely related to differences in the groups' language profiles and professional status. The Polish participants were all L2 speakers of English, enrolled in a Polish university, while the US participants had a range of backgrounds in terms of which language they identified as L1 vs L2, but were all living and working in the United States. Additionally, as experienced medical interpreters, the US participants had more familiarity with medical contexts in general[3] and the genre of the text (patient education material).

Only 3 US participants made remarks which provide evidence of monitoring of comprehension, all in the negative sense in terms of difficulty with comprehension. That is, they suggest that while monitoring of comprehension occurred, comprehension did not present a particular challenge or difficulty for these interpreters:

(4) …. the content wasn't particularly difficult. – *Adela (Stage 3)*

In contrast, evidence of monitoring of comprehension is found in all 9 of the Polish retrospections, and frequently appears multiple times and in multiple stages of the same retrospection. The mentions are also generally related to specific vocabulary items/concepts, rather than being general in nature. The

[3] Note that this refers to medial contexts in the general sense; the US participants reported not being specifically familiar with the topic covered in the stimulus text (see Gumul and Herring, 2022, for details).

category was coded in all 3 stages of 5 of the 9 Polish retrospections, in 2 stages in 3 of the retrospections, and in 1 stage in 1 retrospection. The total number of times in which this category was coded in each Polish retrospection is detailed in Table 6.

Table 6: Coding of monitoring of cognition – Comprehension in Polish group

Number of times "cognition—comprehension" was coded	Participants	Stages of the retrospection in which the category was coded
2	Marcelina Monika	Stage 3 Stages 1 & 2
3	Mira	Stages 1, 2, & 3
4	Marek	Stages 1, 2, & 3
5	Maria	Stages 1, 2, & 3
7	Marta Matylda	Stages 1 & 2 Stages 1, 2, & 3
8	Maja Magda	Stages 1, 2, & 3 Stages 1 & 3

The Polish participants frequently indicate difficulty with comprehending source language terms related to the bowel management routine described in the text.[4] Some also indicate difficulty with comprehension because of the speaker's speed. Among the SL terms mentioned as causing comprehension difficulties are bowel program, self-soiling, commode, mini-enema, digital stimulation, and suppository. In many cases, retrospections providing evidence of monitoring of comprehension also include evidence of control mechanisms employed in response to the difficulty with comprehension. In this section we limit ourselves to a few examples related solely to comprehension; see section 3.2.5 for examples involving monitoring of comprehension together with a corresponding control mechanism and for triangulation of the RPT data and the interpreting product.

(5)

a. In the beginning, I had a problem with understanding the lady who was speaking, because she was speaking quite fast. – *Maja (Stage 1)*

b. The only problem was that I didn't know the meaning of some words. – *Matylda (Stage 1)*

The greater difficulty the student group experienced with comprehension is likely in part explained by differences in language background and experience, as

[4] For the full source language text the reader is referred to Gumul and Herring (2022).

noted above; however, it is also important to note that the participants were given the topic of the speech and a period of time in which to prepare for the interpretation (in the case of the Polish students, 20 minutes; see Gumul and Herring, 2022). The fact that many of the Polish students had such notable difficulties with comprehension of only somewhat specialized terms (e.g. commode, enema, stimulation) even after dedicated preparation time is suggestive. While the scope of this study did not include investigating interpreters' use of preparation time, further study of how interpreters at different experience levels prepare for a topic and how their preparation affects performance might provide additional insight into this issue.

3.2.4. Monitoring cognition—language transfer

Monitoring of language transfer is another area in which we see differences between the two groups. This category is coded in 4 out of 7 US retrospections, in which it appears either once or twice, and in 7 out of 9 Polish retrospections, in which it appears between one and six times. It appears primarily in Stages 2 & 3 (see Table 7), which suggests that in the case of this text and this group of respondents, issues related to language transfer generally did not rise to a level of saliency which led to them being mentioned in the first, uncued, portion of the RPT session. At the same time, this must be taken in conjunction with the evidence discussed above with regard to monitoring of comprehension and below

Table 7: Coding of monitoring of Cognition – Language Transfer

Number of times cognition—language transfer was coded	Participants	Stages of the retrospection in which the category was coded
0	Maja Monika Adela Alondra Antonia	n/a n/a n/a n/a n/a
1	Maria Amaris Adrian Anahí	Stage 3 Stage 3 Stage 2 Stage 2
2	Magda Marcelina Marta Mira Abigail	Stage 2 Stages 1 & 2 Stages 2 & 3 Stages 2 & 3 Stages 1 & 3
5	Matylda	Stages 2 & 3
6	Marek	Stages 2 & 3

with regard to the use of strategic omission and calque as control strategies. That is, in some cases, interpreters (primarily the Polish group) may not have had the opportunity to encounter a moment of difficulty with language transfer because of upstream difficulty with comprehension and consequent employment of calque or omission.

The examples below of the US group's comments related to monitoring of language transfer are related to reformulation of grammatical structures (Abigail) and reformulation of unusual terminology (Anahí); the third example (Amaris) also includes a behavioral control mechanism, referring to the information she had learned during the preparation time provided to the participants.

(6)

a. I always struggle with the Spanish construction of 'the more tense you are, the more difficult it will be.' So I, I think I I changed the… I changed the sentence structure there a little bit. – *Abigail (Stage 3)*

b. I know when I heard the phrase digital stimulation, I was thinking how will I… how will that be interpreted, just because it's a term that's not commonly used. – *Anahí (Stage 2)*

c. I did have to take a look at my research a couple of times when I was interpreting, to see the terms. – *Amaris (Stage 3)*

Many of the Polish retrospections providing evidence of monitoring of language transfer also contain evidence of control mechanisms. We here provide some examples encompassing monitoring only; the reader is referred to section 3.2.5 for examples of online monitoring with an associated control mechanism.

(7)

a. I remember the moment I heard bowel management, I started thinking how to translate it properly so it makes sense. – *Magda (Stage 2)*

b. … so keeping the vocabulary like spot on. I was thinking about it all the time and sometimes even like finding the right word ummm wording of the concept. It was quite difficult at times. – *Mira (Stage 3)*

3.2.5. Cognitive control mechanisms—linguistic/interpreting strategies

Evidence of cognitive control mechanisms involving use of a linguistic/interpreting strategy, including visualization, generalization, calque, and strategic omission, is identified in 5 US interpreters' retrospections and 9 Polish interpreters' retrospections, as detailed in Table 8. Retrospection mentioning such control mechanisms occurs more frequently and across more stages in the Polish group than in the US group; in addition, there are noticeable qualitative

Table 8: Coding of cognitive control mechanisms – Linguistic/Interpreting strategy

Number of times "cognitive control mechanism—linguistic/ interpreting strategy" was coded	Participants	Stages of the retrospection in which the category was coded
0	Adela Alondra	n/a n/a
1	Mira Marek Adrian	Stage 1 Stage 2 Stage 2
2	Magda Monika Amaris Antonia Anahí	Stages 1 & 3 Stages 2 & 3 Stages 1 & 2 Stages 1 & 2 Stages 1 & 2
3	Marcelina Abigail	Stages 1 & 2 Stage 2
5	Marta Matylda Maria	Stages 1 & 2 Stages 2 & 3 Stages 1 & 2
8	Maja	Stages 1 & 2

differences across the two groups in terms of the content of their retrospections and the control mechanisms they report having employed.

Use of visualization as a control mechanism during the listening and note-taking phase is mentioned by both groups:

(7)

a. "the professional mmm vocabulary… the anatomical details weren't packed in one sentence [AN: text segment deleted] so that I could just see in my mind the parts and how I would name them in my… in the interpretation part. – *Monika (Stage 3)*

b. On this, this part of the interpretation, I was actually trying to play it in my mind when I was listening, planning… to play it in my mind how the process, the actual bowel movement, the routine was gonna be, so I could remember better when I was interpreting. – *Amaris (Stage 2)*

With regard to the production phase, both groups report instances of 'fudging' or creative reconstruction when encountering difficulty with reconstructing aspects of the source text:

(9)

a. I didn't understand what to put in the anus. So here was my creative invention in that a little bit. – *Marta (Stage 1)*
b. And like too much stimulation can lead to injury and I wasn't sure if it was the rectum or the anal sphincter. I just sort of… I think I kind of fudged a little bit there. – *Abigail (Stage 2)*

Both groups also describe handling difficulties with rendering SL terminology into the TL by generalization or calque:

(10)

a. So I know I… I sort of stumbled… OK, constipation, diarrhea, self-soiling … wait a minute, that's interesting, we would say that… but incontinence would be fine. So I… I hesitated a little bit with that. –*Adrian (Stage 2)*
b. Here, as I mentioned before with digital stimulation, I simply used the English name, even though the translation was in Polish. – *Marcelina (Stage 2)*
c. Insert a suppository or mini-enema into the rectum. I've decided to generalize it to probably an instrument or something like that because I didn't recognize the names at all. – *Marta (Stage 2)*

The last control mechanism we will report on in this section is strategic omission, for which there are notable differences between the two groups. This control mechanism is mentioned in 1 US retrospection and in 6 Polish retrospections. While the one US mention of this control mechanism is a general one, without specifics, the Polish group's retrospections contain details about their use of it. They report using it particularly in places where they were unsure about the meaning of SL vocabulary:

(11)

a. Like I was… like my mind was just like, let's keep going. Let's skip some portions. – *Antonia (Stage 2)*
b. This mini-edema [sic.] or something. I didn't get it the first time and then it appeared again and I wasn't panicking, I was trying not to [laughter] I knew there was nothing I could do about it. So I just omitted it. – *Magda (Stage 3)*
c. As far as the constipation, diarrhea, and self-soiling part emmmm here I left out the last one, self-soiling, because as I said before I didn't know the meaning. – *Matylda (Stage 2)*

In cases of specific reports of use of strategies such as generalization, calque, or strategic omission, it is possible to triangulate the RPT data with the performance data. While this paper's scope does not encompass extensive triangulation, we reviewed the performance data with reference to the specific instances of these strategies mentioned in the RPT data. This analysis indicates that in some cases a single unknown lexical item was calqued (e.g. Marcelina),

omitted (e.g. Matylda) or misinterpreted (e.g. Marek), while in others an entire proposition was omitted (e.g. Magda, Maja, Maria) or an idea was distorted in such a way that major loss of information occurred (e.g. Marta).

3.3. Evaluative and introspective elements of the retrospections

The retrospection data contains many comments that are evaluative or introspective in nature, as noted above. Because our focus in this study was on process tracing, strictly defined (see Herring and Tiselius 2020; Gumul and Herring 2022), these portions were excluded from our analysis of foci of online monitoring and of mechanisms employed for online control. At the same time, and as further discussed in Gumul and Herring (2022), the portions of the retrospection data coded as evaluation or introspection provide interesting and useful information. In some instances, a chunk of retrospection includes both process-tracing and evaluative/introspective elements, which can cause difficulty in teasing apart and coding the data. In other instances, introspective/evaluative portions must be taken into account in order to code a process-tracing segment.

In addition to the need to take into account the context when coding, information contained in the evaluative/introspective portions of the retrospections provides a broader view of the interpreters' experiences and suggests productive avenues for further research. For example, while mentions of the pre-task preparation time are fairly rare in the segments coded as OM and MWOC (that is, those that are 'process tracing' in the strict sense), the preparation time is mentioned more frequently and at more length in segments coded as introspection or evaluation. Similarly, substantial evidence of the US group needing to adapt or shift their note-taking approach (see Herring and Gumul, 2022) comes through in evaluative or introspective comments.

As a final point with regard to this topic, we see that evaluative comments, particularly in Stage 2 (cued by the SL transcript), contain many comments along the lines of 'I think I left that out' or 'I think I got that bit OK.' As these were clearly post-hoc evaluations, rather than strictly process tracing, they are not included in the analysis of online self-regulation discussed in the preceding sections; however, these aspects of the retrospection data, in combination with the performance data, might provide a productive starting point for an analysis of the (im)precision of interpreters' post-hoc self-evaluation of performance.

Considerations of space do not allow for further discussion of the evaluative/introspective aspects of this data set; however, we wish to reiterate the point made in Gumul and Herring (2022) vis a vis the potential value of the portions of RPT data that are not, in the strict sense, process tracing.

4. Conclusion

As discussed in Gumul and Herring (2022), the primary goal of this study was exploratory and methodological. In light of identified issues with small sample sizes, differences in method, and incomparability of results of RPT studies within Interpreting Studies, we sought to explore the possibility of carrying out multi-site, multi-researcher RPT studies. Gumul and Herring (2022) reported in depth on the successes and challenges of the methodological aspects of the study. In this paper, we have analyzed the RPT data for evidence of online self-regulation, drawing on the framework employed by Herring (2018, 2019), following Pintrich and Zusho (2002). Given that Herring's analytical approach had not previously been employed in Interpreting Studies, the present paper is also exploratory in nature, insofar as it seeks to provide additional evidence of the utility of said approach for understanding interpreters' online self-regulation.

The findings discussed in the previous section align with Herring's findings in that they provide evidence of online monitoring of a variety of aspects of performance, including the interpreter's affect, the interpreter's and speaker's behavior, the cognitive processes of interpreting, and the physical and situational context. They also provide evidence of online employment of affectual, behavior, and cognitive control mechanisms. These findings are not necessarily surprising, but do support the productiveness of Herring's (2018, 2019) analytical framework.

Although individuals' personal retrospective styles have not been our main focus of attention, the results of this study also provide additional evidence of their influence on the data that is collected through RPT. Since RPT can be conducted with no pre-participation training or preparation, as was the case in this study, participants' retrospections reflect their natural linguistic/verbal behavior and their habitual way of formulating messages (Gumul 2021, 2019); they may also reflect previous exposure or training in reflective self-assessment, such as that which is common in some interpreter training programs (Herring and Tiselius 2020). In the retrospections collected in this study, we note considerable variation across participants in terms of both length of retrospection and foci/content of retrospection. Detailed reporting on this aspect is beyond the scope of this paper, but the limited analysis reported on above suggests that this line of inquiry could productively be pursued in future research. Understanding individual differences seems crucial in refining the retrospection methodology and enhancing the analysis of the data obtained through RPT.

As noted above, our joint research project has been focused on RPT study design and method (Gumul and Herring, 2022) and on analysis of evidence of online self-regulation. In this paper, we have taken a fine-grained approach to analyzing and reporting on the data, focusing on the range of targets of

interpreters' online monitoring and the range of control mechanisms employed by interpreters. However, the retrospection data, taken as a whole, highlights the contextualized and global nature of online self-regulation—that is, the interpreter experiences the task and their self-regulation of the task as an interconnected whole, as evidenced in their retrospections. Process-tracing elements of the retrospections are also closely interwoven with elements that cannot strictly be classified as process-tracing (i.e. introspection, evaluation) but that must be taken into account as part of the analysis and interpretation of the data. Although we pull apart retrospections into chunks for analytical purposes, interpreters' experience of task performance cannot be reduced to isolated text segments neatly separated into categories. There is a tension between the methodologically-relevant desire to identify and focus on aspects of the retrospection that can, to the best of our ability to determine such a thing, be strictly classified as process tracing, on the one hand, and, on the other, to consider the retrospections more globally, taking into account the whole of the interpreter's post-task report, including introspective and evaluative aspects. This tension presents a challenge for process researchers, as we have commented on both in this paper and in Gumul and Herring (2022). We thus conclude this paper by drawing attention to this issue and calling for increased attention to and discussion of approaches to addressing it within interpreting-focused process research.

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