

CHAPTER 24.

TOWARDS AN INTEGRATIVE UNIT OF ANALYSIS: REGULATION EPISODES IN EXPERT RESEARCH ARTICLE WRITING

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Since the early nineties, the field of academic writing has increasingly captured researchers' attention, partially due to the increasing relevance of writing and publishing for academics' careers. Research has mostly aimed at characterizing the writing process in either experimental writing tasks (Breetvelt, van den Bergh, & Rijlaarsdam, 1994; Chenoweth, & Hayes, 2003; Galbraith & Torrance, 2004; Galbraith, Ford, Walker, & Ford, 2005; Kellogg, Olive, & Piolat, 2007; Nottbusch, Weingarten, & Sahel, 2007; Pajares & Johnson, 1994; Van den Bergh & Rijlaarsdam, 2007) or in tasks proposed in the context of the classroom (Alamargot, Dansac, Chesnet, & Fayol, 2007; Boscolo, Arfé, & Quarisa, 2004; Braaksma, Rijlaarsdam, van den Bergh, & van Hout-Wolters, 2004; Castelló & Monereo, 2000; Dysthe, Samara, & Westrheim, 2006; Ivanic, 1998; Mateos, Cuevas, Martin, & Luna, 2008; Segev-Miller, 2007; Yore, Florence, Pearson, & Weaver, 2006).

Regarding the discourse genre studied, the argumentative essay has tended to be the focus of the researchers' attention (Breetvelt et al., 1994; Castelló, & Monereo, 2000; Galbraith et al., 2005; Galbraith & Torrance, 2004; Ivanic, 1998; Kamberelis & Scott, 1992; Mateos et al., 2008; Van den Bergh & Rijlaarsdam, 2007), while the sample has most frequently been composed of secondary (Braaksma et al., 2004; Breetvelt et al., 1994; Pajares & Cheong, 2004) or undergraduate students (Boscolo et al., 2004; Castelló, 1999; Castelló, Iñesta, Pardo, Liesa & Martínez-Fernández, 2011; Galbraith et al., 2005; Galbraith & Torrance, 2004; Ivanic, 1998; Kellogg et al., 2007; Mateos et al., 2008; Nottbusch et al., 2007; Segev-Miller, 2007).

Most of the studies specifically devoted to clarifying how writers manage, control and regulate writing have been concerned with identifying the strategies

that appear to be most useful at different moments of the writing process. The results obtained in these studies have frequently ended up with lists of categories which make it difficult to portray writing regulation as a dynamic activity, especially if we understand it as a socially and culturally situated activity (Camps & Castelló, 1996; Candlin & Hyland, 1999; Castelló, Gonzalez, & Iñesta, 2010; Flowerdew & Peacock, 2001; Iñesta, 2009; Johns, 2002; Lea & Stierer, 2000). Indeed, current approaches to the study of self-regulation suggest the need to go beyond the analysis of isolated actions, identifying those patterns in which actions are organized and given a situated meaning (Järvelä, Volet, Summers, & Thurman, 2006). In this chapter, we present a study attempting to assess a new unit of analysis, the Regulation Episode (RE) (Castelló & Iñesta, 2007; Castelló, Iñesta, & Monereo, 2009; Zanotto, Monereo & Castelló, 2011), as a means to approach the regulation of a challenging task such as research article writing (RA) in a comprehensive way and to find meaningful writing strategy patterns in ecological conditions.

THE WRITING REGULATION AND COMPOSITION PROCESSES

Research conducted on writing regulation has allowed us to learn quite a lot about the specificities of the writing process. One of the main results obtained in early cognitive studies revealed the relevance and the different role of three subprocesses: planning, formulating, and revising (Bereiter & Scardamalia, 1987; Flower & Hayes, 1980), with planning appearing key to obtain a high quality text (e.g., Galbraith, 1999; Galbraith & Torrance, 2004). Idea generation appears as one of the key strategies taking place during the planning stage (Flower & Hayes, 1980), while revising tends to occur at a micro (sentence- and paragraph-level) and a macro (or structural) level (Fitzgerald, 1987; Graham & Harris, 2000; Roussey & Piolat, 2005; van Waes & Schellens, 2002). And finally, we also know that working memory plays a major role in the writers' capacity to orchestrate the different dimensions involved in text production (Alamargot et al., 2007; Galbraith, Ford, Walker, & Ford 2005; Hayes & Chennoweth, 2006; Kellogg, 1999, 2001; Olive & Piolat, 2003).

Recent research has also revealed that the moment and frequency of occurrence of certain strategies have a differential impact on final text quality, which suggests a dynamically changing relation between writing process and text quality (Beauvais, Olive, & Passerault, 2011; Breetvelt et al., 1994; Van den Bergh & Rijlaarsdam, 2007). In fact, this has led Rijlaarsdam and van den Bergh (2006, p. 46) to claim that "combinations rather than single activities should be

considered as the unit of analysis.” On the other hand, studies such as those by Page-Voth & Graham (1999), or Pajares & Cheong (2004) have shown that the intentional and conscious use of writing strategies in accordance with specific writing objectives translates into increased final text quality.

Those studies conducted from cognitive and sociocognitive approaches have signaled the importance of certain factors in the participants’ writing experience and, in turn, in final text quality. Firstly, the perception of self-efficacy has a clear positive effect on final text quality (Pajares & Johnson, 1994). Secondly, an increase in the knowledge of the writing process and of the writing strategies results in more complex conceptualizations of the writing process (Boscolo et al., 2004; Castelló & Monereo, 2000; Englert, Raphael, & Anderson, 1992; Englert, Mariage, & Dunsmore, 2006; Graham & Harris, 2000;).

TOWARDS AN INTEGRATIVE AND SOCIALLY SITUATED APPROACH TO WRITING REGULATION RESEARCH: THE REGULATION EPISODE AS A NEW UNIT OF ANALYSIS

Despite the relevance of previous studies’ results, the possibility to comprehensively explain the complexities that current conceptualizations of self-regulation emphasize (e.g., Fitzsimons & Finkel, 2011; Koole, van Dillen & Sheppes, 2011; Papies & Aarts, 2011) when applied to writing tasks still remains an open question. The importance of such complexities lies in that they result from in-depth situated analysis of the “self-generated thoughts, feelings and actions that individuals plan and cyclically adapt while solving a specific task to the attainment of personal goals” (Zimmerman, 2000, p. 14). We will claim that this kind of situated analysis is also necessary if we aim to gain a complex perspective on self-regulation of the academic writing activity learning. In the following lines we will briefly present what we consider to be the five main complexities that writing regulation research should address.

The first complexity stems from the consideration that the thoughts and actions implemented by the individual during task resolution can no longer be simply categorized as “correct” or “incorrect.” Rather, a more careful analysis is required so as to consider them more or less strategic or adjusted to the established goals (Boekaerts, 2002; Boekaerts & Cascallar, 2006; Castelló & Monereo, 2000; Monereo, 2007; Pozo, Monereo, & Castelló, 2001).

The second complexity has to do with the establishment and maintenance of goals, two processes which are considered the key that allows the transition from thought—knowing which strategies are best suited to solve a given task—to action—their actual implementation. Different approaches are currently in-

terested in the nature and implications of goal establishment and maintenance in self-regulation (Carver & Scheier, 2000, Shah & Kruglanski, 2000). Among these, the need to study of the “whole-person-in-context” (Boekaerts, 2002) as well as the dynamics of task- and context-specific conflicting goals stands out as those which can dialogue with the situated approach to writing regulation research this chapter advocates.

The third complexity also derives from a situated approach to self-regulation. Indeed, in the last few years, context has come to be considered a constituting element that configures regulation, which is considered to be a socially shared activity (Jackson, Mackenzie, & Hobfoll, 2000; Järvelä, Järvenoja, & Veermans, 2008), even when sharing takes place intra-subjectively (Monereo, Badia, Bilbao, Cerrato, & Weise, 2008). This intrasubjectivity refers to those occasions in which the individual recreates the voices of significant others during a task-resolution process, and tailors his/her activity accordingly.

The fourth complexity relates to one of the most important emerging concepts in the reflection on self-regulation, that of identity (Farmer, 1995; Ivanic, 1998; Walker, 2007), which in fact may be even considered to function as an articulating construct, with the potential to integrate coherent thought-emotion-and-action scripts, socially and culturally situated, according to what the individual may perceive as more suitable to the given learning situation (Castelló & Iñesta, 2012; Monereo, 2007).

The complexities outlined so far may be related to the situated approach of current research on writing regulation. The fifth and final complexity we would like to refer to relates to the debate regarding the degree of explicitness involved in the implementation of self-regulation activities. While classical approaches tend to consider that self-regulation is possible when individuals exercise explicit control or monitoring over the task resolution process (e.g., Flavell, 1981; Zimmerman, 1989, 1990, 2000), some authors have proposed that intentional decisions may also take place implicitly (Beauvais, Olive, & Passerault, 2011; Boekaerts & Cascallar, 2006; Kuhl, 2000; Liesa, 2004; Shapiro & Schwartz, 2000). In this respect, for instance, Efklides’ model of self-regulation (e.g., 2001, 2006), with the constructs of Metacognitive Experiences and Metacognitive Feelings, portrays self-regulation as a highly dynamic activity depending on cognitive as well as emotional processes which take place at a conscious and unconscious level.

As we have seen, current views on self-regulation present it as a complex activity of a highly situated and social nature (Hurme, Palonen, & Järvelä, 2006; Järvelä & Järvenoja, 2007; Järvelä et al., 2008; Veermans & Järvelä, 2003), involving cyclical thought-action-emotion dynamics, and the individual’s capacity to monitor his/her self-regulation activity at varying levels of explicitness. However, this dynamic approach to self-regulation has not been applied

to writing. On the other hand, those studies addressing the situated dimension of writing have focused on issues other than writing regulation.

Our study attempted to apply a dynamic approach to the study of writing regulation in authentic task-resolution processes in ecological conditions. We have done so by accessing and characterizing the writing regulation activities implemented by two experienced researchers while writing a RA in Spanish as their academic writing L1.¹ More specifically, our study aimed at answering the following research questions:

When, how and for what purpose do expert writers regulate their writing activity when confronted with a complex task such as research article writing?

Can the regulation activities implemented be related so as to be said to constitute a meaningful and dynamic unit of analysis? In other words, is it possible to identify Regulation Episodes which help us catch the complexity of writing regulation?

METHOD

SAMPLE

Two experienced researchers in the field of psychology participated in the study (Writer 1 and Writer 2). The researchers were members of the same research group, so they had an expert and shared knowledge of the topic they were writing about (strategic reading in Spanish secondary education). Moreover, they were considered to be expert writers given the number of RA articles published (W1: 15; W2: 14) and their experience as reviewers for other journals in the field (W1 collaborated as a reviewer of five journals, while W2 did so with four journals).

These researchers had decided to write in co-authorship conditions a RA, an earlier version of which had been previously rejected by a national journal. The writing of this earlier version had been led by another member of their research group, and only one of the writers (Writer 2) had participated in this process as coauthor. Therefore, the writing regulation analyzed in this study does not correspond to the mere revision of that earlier version. Partly for the purpose of research and partly with the objective of approaching the writing process without the limitations of the previous version of the article, Writer 1 and Writer 2 agreed to work separately on the whole article and then to compare their versions and negotiate a joined final text for submission to another national journal. This final negotiation and the response of the target journal editors were not taken into account in this chapter.

PROCEDURE

Participants wrote their paper as they usually did, having freedom to work at any time they wanted, with no time limit or space restrictions. They worked on their RA for approximately one month and a half. Specifically, Writer 1 devoted a total of 660 hours (distributed in 11 sessions) to write the RA, while Writer 2 devoted 1,016 hours (distributed in 12 writing sessions). In order to portray the researchers' writing process with as much fidelity as possible, we asked them to follow a series of steps every time they sat to work on their RA.

First, participants completed a writing diary for every writing session, where they had to respond to prompts such as "My objectives for today's session are ...", "I have found no/little/some/serious difficulties related with ...", "I believe that such difficulties are due to ...", "I have solved the difficulties by ...", "I am not at all/a little / very satisfied with the solutions found because ...".

Second, writers were asked to save every newly produced draft of their RA, which would allow for the identification of changes among them.

Third, they were asked to activate the Camtasia screen-capture software to record their writing activity in every session. This software was installed in their personal computers to ensure their writing in natural conditions. The video-recordings obtained were transcribed so as to facilitate the analysis of the writers' activity.

Fourth, short interviews were conducted on a weekly basis in order to capture the writers' impressions during the writing process. Finally, a retrospective recall interview was conducted at the end of the process where writers commented on the writing process.

Therefore, analyzed data involved the writing diaries, the different drafts that each researcher produced of the RA, the transcripts of the participants' writing activity as captured in their word-processor video-recordings in each of the sessions that the participants devoted to writing a RA, and the transcripts of the interviews conducted during and at the end of the writing process.

ANALYSIS OF THE DATA

With all the collected information, two kinds of analyses were conducted: the macro- and the micro-analysis of regulation. On the one hand, the *macro-analysis of regulation* combined declarative information (content analysis from writing diaries and interviews) and procedural information (draft analysis and Camtasia screen-recordings).

Content analysis of the writing diaries and interviews (conducted with Atlas.ti) allowed us to identify the challenges or difficulties explicitly identified by

the writers as well as the solutions they had introduced (that same session) or would introduce (in ensuing sessions) to overcome them.

Once writers' perceptions about challenges and solutions had been identified, we moved on to find traces of action that would constitute evidence of writing regulation activity. In order to do this, we first analyzed the different drafts produced by the writers to identify the changes (e.g., from draft 3 to draft 4). Then we related such traces with the solutions that writers declared they would implement or had already implemented to solve the challenges they had explicitly identified.

Following this, we aimed to learn about the specificities of the writing regulation activity that had resulted in the changes present in the drafts. In other words, we wanted to know which steps had lead to the solutions present in the text. In order to do that, we conducted a *micro-analysis* of the transcripts of each of the researchers' video-recorded writing sessions to see which actions had been implemented from one draft to the following one.

This analysis was conducted from a bottom-up approach involving the in-context analysis of all the actions implemented by the writers in every writing session. In these transcripts, the writers' actions were segmented into bursts,² that is, sequences of action framed either by changes in the activity, by more than five second-long pauses, or by actions categorized as "other" (i.e., scroll up or down in the document, open another document, check e-mail inbox ...).

With all this information we constructed an *integrated view template* with the aim to gain an integrated representation of information. This template allowed us to see when a challenge appeared and when solutions to this challenge had been implemented. Therefore, a Regulation Episode may be defined as a *sequence of actions that writers strategically implement with the objective of solving a difficulty or challenge identified during the writing process* (Castelló & Iñesta, 2007; Castelló, Iñesta & Monereo, 2009; Zanutto et al., 2011). Also, in order to obtain a global picture of RE occurrence/distribution throughout the different sessions each participant had devoted to RA writing, a *table of RE distribution* was elaborated for each writing process.

Inter-Judge Reliability

Data from both writing processes were used to establish the reliability of the coding systems. Two independent judges participated in the categorization of the data both at the macro- and micro-levels of analysis.

Once the individual decisions had been compared, the doubtful cases were also agreed upon by consensus. Finally, two other independent judges analyzed 30% of the data, registering a degree of agreement of 96.33%. Lack of agree-

ment led to reviewing and discussing the cases until consensus was reached on the assignment of categories. Once this done, the rest of the data were analyzed by both judges.

RESULTS

EXPLICIT AND IMPLICIT REGULATION EPISODES: THE DYNAMICS OF WRITING REGULATION ACTIVITY

Results obtained show that regulation happens by means of two kinds of Regulation Episodes: explicit and implicit.

Explicit Regulation Episodes

Explicit Regulation Episodes (RE) were those characterized by an explicit challenge that writers had identified and evidence of actions that the writer had implemented to solve that particular challenge. Data show that the experienced researchers of our sample implemented Explicit Regulation Episodes all along the RA writing process. To illustrate this, Table 1 shows the distribution of Explicit Regulation Episodes in the RA writing process of Writer 1.

The combination of macro- and micro-analyses allowed us to portray writing regulation as it takes place in Explicit Regulation Episodes, as a two-layered system. This is illustrated in the integrated view template for Writer 1's Regulation Episode 3, shown in Table 2. This RE was selected as an example of a regulation episode developing along practically all the writing process, addressing the challenge regarding the *need to reorganize information*.

As we can see, this shows:

- The identified *challenge* and the *section* in the RA where Writer 1 was working when identified
- The *writing sessions* during which the writer worked on the challenge
- The *result or outcome* of each of the sessions (either handwritten notes or new drafts of the articles together with video-recorded activity)
- The *writing objectives* expressed before initiating each of the writing sessions
- The *challenge as formulated by the writer* for each of the writing sessions
- The *cited solution* for each of the writing sessions
- The *implemented solution* for each of the writing sessions
- The *micro-level changes introduced in the text*, as revealed by the micro analysis of the writing activity video recordings

Implicit Regulation Episodes

The analysis of the video-recorded actions revealed evidence of sequences of actions of at least 10 bursts, some of which were aimed at reformulating or adjusting various elements of the sentence, showing an intention to address a challenge, despite not having made any explicit reference to it during the writing process. Such sequences of actions were considered Implicit Regulation Episodes (IREs).

Table 3. Translation from Spanish of Implicit Regulation Episode 9, Writer 2 W2.IRE7.A

Burst	Time code	Transcript
1	0:35:45	New sentence: "It is necessary to have more data but
2	0:36:00	Correcting: "It is would be necessary to have more data but
3	0:36:05	Correcting: "It would be necessary to have more data research but
4	0:36:14	Continuing: "It would be necessary to have more research but (1) this could (2) the mechanisms through which own action is decided could
		Pause
5	0:37:40	Continuing: "It would be necessary to have more research but the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).

Later in the same session:

Burst	Time code	Transcript
6	0:41:02	Correcting: "It would be necessary to have more research in order to try to validate the hypothesis but the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."
7	0:42:05	Correcting: "It would be necessary to have more research in order to try to validate the a hypothesis but that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."
8	0:42:35	Correcting: " It would be necessary to have more research in order to try to validate a the hypothesis that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."

Table 1. Distribution of Regulation Episodes in the RA writing process of Writer 1

Writing session	1	2	3a	3b
Date	30.09.07	01.10.07	06.10.07	06.10.07
Draft		1	2a	2b
Section		Method Results	Method / Results	
Challenges cited in the writing diary of the session		P.ER2	P.ER1 P.ER3	
Cited and implemented solutions		S.ER2	S.ER1 S.ER3	
Implemented actions		S.ER2: presentation of variables	S.ER3: paragraphs are reorganized	S.ER3: the position of two paragraphs is modified
			S.ER1: S.2.2.: the Results section is reorganized	

Writing session	4	5a	5b	6
Date	08.10.07	09.10.07	09.10.07	10.10.07
Draft	3	4a	4b	5
Section	Discussion	Discussion / Results		
Challenges cited in the writing diary	P.ER4	P.ER4		
Cited and implemented solutions	S.ER4.A			
Implemented actions	S.ER4.A: the writing of the Discussion begins		S.ER4A: modifications are introduced in the Discussion	

Table 1. Continued

Writing session	7	8	9a	9b
Date	12.10.07	28.10.07	01.11.07	01.11.07
Draft	6	7	8a	8b
Section	Results	Introduction	Introduction	
Challenges cited in the writing diary	P.ER4		P.ER3	
Cited and implemented solutions	S.ER4.B S.ER4.C		S.ER3	S.ER3
Implemented actions	S.ER1 Results are developed	S.ER1: the Introduction starts to be developed once the Results and Discussion sections are ready	S.ER3: information from the source text is included and reorganized	S.ER3: the Introduction is reorganized around 2 theme units
	S.ER4.B: the simple-complex / explicit-implicit table is included S.ER4.C: the target journal requirements are noted in the writing diary			

Writing session	10a	10b	11
Date	02.11.07		03.11.07
Draft	9a	9b	10
Section	Introduction		Method Results Discussion
Challenges cited in the writing diary			P.ER3
Cited and implemented solutions			S.ER3
Implemented actions			S.ER3: 2 paragraphs in the Method section are reorganized

Table 1. Continued

Cited challenges	Cited and implemented solutions
PER1: Difficulty is to construct a representation of the Introduction	S.ER1: To work on the Results section first
PER2: Lack of clarity in the presentation of the study variables	S.ER2: To explicitly distinguish between dependent and independent variables
PER3: Need to reorganize information	S.ER3: To reorganize information
PER4: Difficulty is to select information from the source text	S.ER4.A: To use the Discussion section as a reference point
	S.ER4.B: To elaborate tables
	S.ER4.C: To revise the requirements set by the target journal

Table 2. Integrated view template for W1’s RE3

W1.RE3	Challenge addressed: Need to reorganize information Article scope: Method, Results, Discussion		
		Objectives	Challenges
RE3.A Session 3a (of a total of 11) 06.10.07	drafts & activity	“Today I have decided to start directly with the study and skip the theoretical framework, to which I’ll go back later. I’ve done this because, given that in the source text there is a lot of interesting information, but it needs to be synthesized and adjusted to the article, the best was start directly with the study, and thus the work on selecting the theoretical basis would be easier and more adjusted.” (Same objectives because these two writing sessions take place on the same day and W1 produces just one writing diary.)	The expression of the action implemented includes the expression of the challenge
RE3.B Session 3b 06.10.07	drafts & activity		
RE3.C Session 9a 01.11.07	drafts & activity	“Tots Sants[National holiday]. I’m about to devote this holiday to progress in the development of the theoretical framework of the article.”	The expression of the action implemented includes the expression of the challenge
RE3.D Session 9b 01.11.07	drafts & activity	(Same objectives because these two writing sessions take place on the same day and W1 produces just one writing diary.)	The expression of the action implemented includes the expression of the challenge

Table 2. Continued

RE3.E Session 11 03.11.07	drafts & activity	None are cited	"I've found a problem of disorder in two sections of the Method"
	Cited solution	Implemented solution	Micro-level changes in the text
RE3.A Session 3a 06.10.07	"I have filled in the empirical section in both sessions and I have found some sections which, in my opinion, should be relocated (e.g., I've moved the paragraph on independent judges)."	Information from the source text is included and reorganized	Discursive Style: 8.33% Precision-Clarity: 91.66%
RE3.B Session 3b 06.10.07		The position of two paragraphs is changed	Relationship with Reader: 10% Precision-Clarity: 80%
RE3.C Session 9a 01.11.07	"In the first part I have filled in the set sections, first with ideas expressed in sentences and later with a development, connection and relocation of different subsections."	Information from the source text is included and reorganized	Discursive Style: 12.5% Positioning: 6.81% Questioning: 5.68% Relationship with Reader: 5.68% Precision-Clarity: 63.63% Cohesion-Coherence: 5.68%
RE3.D Session 9b 01.11.07	"In the second part I have worked on the coherence and consistency of the text, reducing the initial topics to two: studying to learn in secondary school and the study of expository texts. I haven't found any special difficulty. What I've found hardest is to decide what to eliminate and how to integrate the selected information around these two topics."	The Introduction is reorganized around two theme units: 1. Studying to learn at the secondary school and 2. The study of expository texts	Relationship with Reader: 20% Precision-Clarity: 20% Cohesion-Coherence: 60%
RE3.E Session 11 (of a total of 11) 03.11.07	"Basically I've copied what I had corrected on paper"	One of the paragraphs in the Method is reorganized	Precision: 100%

		Pause
9	0:43:29	Correcting: “ It would be necessary to have more research in order to try to validate analyze the hypothesis that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
10	0:43:33	Correcting: “ It would be necessary to have more research in order to try to analyze explore the hypothesis that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
11	0:43:40	Correcting: “ It would be necessary to have more research in order to try to explore the hypothesis regarding the possibility that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
		Pause
12	0:44:03	Correcting: “ It would be necessary to have more research but in order to try to explore the hypothesis regarding the possibility that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
		Pause
13	0:44:57	Correcting: “ It would be necessary to have more research but the working hypothesis appears to be clear; it could regarding the possibility that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
14	0:45:07	Correcting: “ It would be necessary to have more research but the working hypothesis appears to be clear; it could regarding the possibility be possible that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
		Long pause
	0:53:42	Stops video-recording
15	0:54:41	Correcting, marking in yellow a fragment of the sentence here marked in bold: “ It would be necessary to have more research but the working hypothesis appears to be clear; it could be possible that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”

Later in the same session:

Burst	Time code	Transcript
16	1:16:21	Correcting: “It would be necessary to have more research information to validate some but the working hypothesis appears to be clear that results point towards ; it could be possible that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”
17	1:16:56	Correcting: “It would be necessary to have more information to validate some working hypothesis that results point towards; firstly , it could be possible that the mechanisms through which own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited).”

Table 3 shows the translation of Writer 2’s IRE 9 video-recorded transcript, originally elaborated in Spanish. We have chosen this episode because it provides clear evidence of intentional writing regulation as well as of the socially situated dimension of this activity. More specifically, the writer’s awareness of the conceptually challenging nature of the sentence is revealed in the intra-session discontinuity of the IRE and in the amount and kind of adjustments he introduces until he reaches a satisfactory version. In this respect, this transcript reveals the history of actions involved in the writer’s establishing his authorial positioning and making his voice and identity visible.

In this sense, though, Writer 2 addresses the complexity of softening the reader’s possible disagreement with the hypothesis that procedural decision-making may be a highly complex matter, tied to implicit conceptions regarding the task, the learning situation and to one’s own previous experiences and interpretations. As we can see, burst 2 corrects burst 1, changing “It is necessary to have more data ...” for “It would be necessary to have more data.” Also, bursts 6 to 11 illustrate how Writer 2 moves from saying “It would be necessary to have more research in order to validate the hypothesis ...” to saying “It would be necessary to have more research in order to try to explore the hypothesis regarding the possibility that ...”, thus adding more tentativeness to the claim. Burst 13, however, shows a move towards a more emphatic expression of the claim: “It would be necessary to have more research but the working hypothesis appears to be clear; it could ...”. However, the inclusion of the adjective “working” shows Writer 2’s awareness of the need to balance the assertiveness of the expression “appears to be clear.” Finally, this expression disappears from the last version of the sentence, which is connected to the results obtained in the study conducted: “It would be necessary to have more information to validate some working hypothesis that results point towards.” All in all, it seems the Writer

is aware that these results could be questionable and tries to avoid or minimize some possible readers’—or reviewers’—critiques. However, the Writer does not renounce highlighting the interest of the results obtained, thus is positioned as someone who anticipates readers’ voices but at the same time is able to dialogue with them to maintain a personal stance.

We believe that this example fully illustrates the complexity of RA writing regulation, suggesting that key aspects of this regulation (such as voice/identity and the social) are addressed by expert writers in an implicit mode.

Table 4. Implicit RE distribution in the RA writing process of Writer 2

Writing Session	Initial negotiation	1a	1b	2	3
Date	19.03.2007	01.04.2007	01.04.2007	02.04.2007	05.04.2007
Sections		Introduction	Introduction	Introduction	Introduction
IRE				ERI3	
Inferred Challenge				Need to enhance clarity	

Writing Session	4	5a	5b		6a
Date	08.04.2007	21.04.2007	21.04.2007		22.04.2007
Sections	Introduction	Introduction	Introduction		Method
IRE			ERI1	ERI4	
Inferred Challenge			Need to avoid questioning + enhance clarity + self-directed signals	Need to enhance clarity	

Writing Session	6b	7	8	9	10
Date	22.04.2007	01.05.2007	02.05.2007	03.05.2007	05.05.2007
Sections	Method	Results	Results	Results	Introduction Method Results
IRE		ERI2			

Inferred Challenge		Need to enhance clarity + need to avoid questioning			
Writing Session	11		12		
Date	17.05.2007		19.05.2007		
Sections	Discussion		Whole article		
IRE	ERI5	ERI6	ERI7	ERI8	ERI9
Inferred Challenge	Need to enhance clarity	Need to enhance clarity	Need to enhance clarity	Need to avoid questioning	Need to enhance clarity

Table 4 shows the distribution of Implicit REs along the writing sessions devoted by Writer 2 to the elaboration of the RA. As we can see, most of the Implicit REs concentrate at the end of the writing process, in sessions 11 and 12, where five of the Implicit REs are implemented, while in the rest of the sessions only 4 IREs are implemented.

The Division of Labor between Implicit and Explicit Regulation Episodes

When writing the Introduction of the RA, participants identified challenges related to constructing a representation of the RA section (RE1.W1), reorganizing information (RE3.W1; RE4.W2), justifying the approach taken to the study of the topic (RE1.W2), selecting information from the source text (RE2.W2), and ensuring the argumentative progression of the text (RE3.W2). On the other hand, when elaborating the Method section, the writers encountered challenges related to presenting the variables clearly (RE2.W1), justifying the comparability of the texts used in the study (RE0a.W2), and organizing information (RE3.W1; RE4.W2). Finally, the challenges identified while working on the Results section had to do with selecting information from the source text (RE4.W1) and with justifying the use of a certain categorization of procedures (RE0b.W2). W2 also declared the need to edit the expression and the format of the tables in all the sections of the RA (RE6.W2).

Regarding the challenges in IREs, here too, certain challenges appear to be addressed more frequently while working in certain sections of the RA, with the particularity that Implicit Regulation Episodes address more than one challenge in an integrated way. The IREs identified in the video-recorded writing activity happening while writing the Introduction addressed the challenge of enhancing

clarity (IRE7.W1; IRE8.W1; IRE9.W1; IRE2.W2), adjusting phrasing to academic discursive style (IRE7.W1; IRE9.W1), directing the reader’s interpretation (IRE8.W1), establishing authorial positioning (IRE9.W1), and obtaining an adequate formulation of a word or expression (IRE1.W1).

The IREs identified in the writers’ activity while working on the Method section, on the other hand, focus on enhancing clarity (IRE2.W1; IRE1.W2; IRE2.W2; IRE4.W2), obtaining an adequate formulation of a word or expression (IRE3.W1), avoiding questioning (IRE1.W2; IRE2.W2), and regulating the writing process through the inclusion of self-directed signals (IRE1.W2).

When the writers worked on the Results sections, their IREs focused on enhancing clarity (IRE4.W1; IRE6.W1; IRE5.W2) and on obtaining an adequate formulation of the word or expression (IRE5.W1). Finally, while no IREs were identified in W1’s elaboration of the Discussion section, W2’s process focused on enhancing clarity (IRE6.W2; IRE7.W2; IRE8.W2; IRE9.W2) and on avoiding questioning (IRE8.W2).

The analysis of the challenges addressed in RE shows that Explicit RE tend to address more molar issues while Implicit RE address more local challenges.

CONTINUOUS AND DISCONTINUOUS REGULATION EPISODES: THE TIME DIMENSION IN THE DYNAMICS OF WRITING REGULATION ACTIVITY

Results revealed a morphological difference in both Implicit and Explicit REs: the existence of continuous REs (where the challenge and the solutions are cited and implemented in the same writing session) and discontinuous REs (where the challenge and the solutions are cited and implemented in the course of various writing sessions). In addition, two kinds of discontinuity were distinguished: inter-session discontinuity (indicating that the writer works on the

Table 5. Continuous and discontinuous Implicit and Explicit Regulation Episodes identified in participants’ writing processes:

		Writer 1		Writing 2	
		Explicit	Implicit	Explicit	Implicit
Continuous		1	7	4	3
Discontinuous	Inter-session	3	0	4	0
	Intra-session	0	2	0	3
	Inter- & intra-session	0	0	0	2
Total		4	9	8	8

same challenge or RE in different writing sessions) and intra-session discontinuity (the writer does so at different moments of one writing session).

Table 5 shows the continuous and discontinuous Explicit and Implicit REs identified in the participants' writing processes. As we can see, no clear pattern can be distinguished. Interestingly, Writer 2's writing process shows a peculiarity: the existence of an Implicit RE showing both an inter- and intra-session discontinuity.

These results constitute empirical evidence of the recursive nature of writing regulation because even in the case of continuous Regulation Episodes, writers appear to implement actions associated with a particular intentionality at different times of the same writing session.

DISCUSSION

With the objective of going beyond the analysis of isolated actions and the intention of approaching regulation activities in an integrative way (Järvelä, Volet, & Järvenoja, 2010; Rijlaarsdam & van den Bergh, 2006; Volet, Summers, & Thurman, 2009), this chapter has presented a study aimed at assessing the Regulation Episode as a meaningful unit of analysis of research article writing regulation. Results showed this unit to be useful for identifying meaningful and orchestrated patterns in the writing activity of the two experienced researchers which formed part of the sample. One possible limitation of this study is that although the RA was written from the start, it had a previous history. Nevertheless, since each RA writing situation has its own previous history and it is situated in a different constellation of contextual conditions, we consider that the current analysis is useful for knowing how the regulation activity develops in those complex and specific writing situations. Precisely, we consider that writing regulation research should aim to transcend the unavoidable specificity of these writing situations while, at the same time, understanding that such specificity must be taken into consideration so as to approach writing regulation as it truly develops.

As for the first research question, results show that the when, the how and for what purpose of expert writers' activity regulation during research article writing have to do with the complexity of the writing patterns or Regulation Episodes. More specifically, regarding when writers implement regulation activities, such complexity is revealed in the fact that they can take place all along the writing process, their implementation spreading along different writing sessions. On the other hand, regarding how writers regulate their writing activity when working on a research article, the Regulation Episodes' complexity has to do with what we could call dynamics of writing regulation.

Regarding the regulation dynamics, it seems that expert writers are able to perform a kind of complex regulation oriented by goals aimed at solving molar challenges and involving a myriad of micro decision-making processes which finally bring the “rehearsed text” (Camps, 1994) to a strategically-adjusted final version. In this sense, regulation appears as a two-layered system involving both Implicit and Explicit Regulation Episodes in a dialogue aimed at solving specific challenges. More research would be necessary to know whether the observed “division of labor” between Implicit and Explicit Regulation Episodes is common in experts’ writing regulation. In any case, these results show the complexity of academic writing regulation, a complexity that novice writers have had trouble addressing at the beginning of their research careers (e.g., Castelló & Iñesta, 2012; Castelló, Iñesta, & Monereo, 2007; Castelló, González, & Iñesta, 2010; Castelló, Iñesta, Pardo, Liesa, & Martínez-Fernández, 2011; Maher, Seaton, Mullen, Fitzgerald, Otsuji, & Lee, 2008; Rinck, 2006), probably because they are unable to master this two-layered system and its division of labor that our writers have displayed all along the writing process. The complexity of mastering this system is paramount especially if we take into account that some of the implicit actions involved in IRE have to do with social concerns about how readers will interpret the author’s positioning, as we have discussed in our results displaying the nature of Implicit Regulation Episodes.

In addition, regarding the time dimension in the regulation dynamics, the unit of analysis of the Regulation Episode has allowed us to obtain evidence of the theoretically agreed-upon recursivity of the writing process, also when focusing on writing regulation. In this respect, our results suggest that writers work on the challenges identified (either implicitly or explicitly) in intra- and inter-session recursive dynamics whereby increasingly adjusted or strategic thoughts and actions are implemented until the text reaches a satisfactory version which fulfills the established writing objectives.

Moreover, the discontinuity of RE has shown that expert writers are capable of setting and maintaining their goals all along the writing process. Our results also seem to suggest that the kind of goals expert writers use as signposts during writing self-regulation are molar and task and socially dependent. The kinds of challenges that writers address and which we consider to be the focus of the writers’ goals may be considered evidence of this. The social dimension of such goals can be seen, on the one hand, in that generally the challenges addressed are aimed at fulfilling the conventions of academic texts and, thus, the readers’ expectations (e.g., need to reorganize information [RE3.W1; RE4.W2], the need to ensure the argumentative progression of the text [RE3.W2], and the lack of adjustment between the introduction and the discussion sections [RE5.W2]). On the other hand, some of the challenges addressed are aimed at

avoiding the journal editors' and ultimately the readers' problematization of the study conducted (e.g., lack of clarity in the presentation of the variables [RE2. W1], need to justify the comparability of the texts used in the study [RE0a. W2], need to justify the use of a specific categorization of procedures [RE0b. W2]), which adds to the socially dependent nature of the challenges addressed and thus of the writers' goals. More research would be necessary on the study of the "whole-person-in-context" (Boekaerts, 2002) to deepen our understanding of the dynamics of task- and context-specific goal setting and maintenance in writing regulation in ecological conditions.

Results obtained in this study complement those found in recent research on regulation (Efklides, 2001; Papies & Aarts, 2011) and which point towards the existence of an implicit mode of regulation. Although regulation has been generally considered to take place consciously (Boekaerts, 2001; Monereo, 2007; Zimmerman, 2001) our results indicate that another kind of regulation may take place in an implicit and yet intentional level. Despite the very incipient nature of these results, the data seem to suggest that this kind of regulation is very much imprinted in the writing process, even automatized. In this sense, then, the results obtained invite us revisit the conceptualization of regulation in complex tasks such as RA writing.

In relation to this, it seems also necessary to consider whether implicit regulation is a characteristic of expert RA writing, and whether the kind of regulation these writers implement takes place mostly implicitly. In fact, having to complete the writing diary may have brought to the writers' awareness certain issues that may otherwise have remained at the same level of unconsciousness as the challenges addressed in the Implicit Regulation Episodes.

On the other hand, the characteristics of Implicit REs add other dimensions to our understanding of RA writing regulation, which refer to the interrelation of the when, how and for what purpose dimensions of writing regulation implied in our first research question. Among this is the fact that key aspects of this regulation may be addressed by expert writers in an implicit mode while affecting text production both at the macro (structural) and micro (local) levels. In this respect, the results obtained present authorial voice and the social dimension as central both in the kind of micro-changes visible in Implicit Regulation Episodes and in the macro-changes visible in Explicit Regulation Episodes. This would provide evidence to the consideration of identity as an articulating construct with the potential to explain socially and culturally situated thought-emotion-and-action scripts (Castelló & Iñesta, 2012; Ivanic, 1998; Prior, 2001) such as those presented in the Regulation Episodes.

This suggests that a huge amount of craftsmanship is involved in strategic text tailoring, and that such craftsmanship has remained invisible to the eyes

of those who, like student researchers, would very much benefit from accessing and learning from it. This would again point towards the need to conduct further studies involving the micro-analysis of regulation, that is, the in-content analysis of the actions implemented during writing sessions conducted in ecological conditions in order to learn more about the process whereby expert but also other profiles of writers construct their discursive identity as researchers (Walker, 2007).

We are conscious that our study is limited in scope firstly because we have worked only with two writers. Moreover they were experienced writers in a very particular condition: writing their paper separately. Our intention was to develop a new unit of analysis and to find out if this allowed us to explain regulation activities all along an extended process such as RA writing. Different writing situations should be analyzed with the same unit to find out if the different types of Regulation Episodes can be maintained.

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