

4

Research Writing, What Do We Know and How to Move Forward

Montserrat Castelló

UNIVERSITAT RAMON LLULL. BARCELONA

The chapter starts by framing research writing as a dialogic, collaborative and hybrid activity and discussing the main implications of this conceptualization. Then, based on three representative cases built from evidence from our previous studies, I discuss what we have learned in the last fifteen years regarding the common challenges students—and researchers—confront when dealing with research writing predominantly in social sciences and humanities contexts. Finally, after highlighting what I consider the main remaining research challenges of the field, I explain our recent attempts and related findings to address them, and reflect on pedagogical implications to promote students' and early-career researchers' writing development. Specifically, I discuss two intertwined aspects scarcely addressed by research in the field: a) the need for strategic regulation in authentic and demanding research writing scenarios, which, in turn, requires a new conceptualization of the regulation notion in those situations, and b) the need to understand texts as artifacts-in-activity, not just products resulting from a more or less prescribed writing process. The chapter closes with considerations regarding what I think might constitute a useful and comprehensive agenda to advance our knowledge of the research writing field.

To steal ideas from a researcher is plagiarism; to steal from many is research.

— Author unknown?

I have been using the quip that opens this chapter for so many years that I forgot where I first read or heard it. In some way, it has become part of my discourse, though I learned that the expression has a long history and, with small variations, can be attributed to at least nine authors over the last century. The first was Reverend Charles Caleb Colton in 1820¹

1 <https://quoteinvestigator.com/2010/09/20/plagiarism/>

The statement is shocking because it emphasizes the thin line between reading and writing. It also points to the type and variety of connections between these two activities, which Bakhtin defined as the dialogue of voices that takes place between the texts that we have read and those that we can produce and thus write (Bakhtin, 1981; Bazerman, 2004). Ultimately, the expression reminds us of the extent to which research writing is a collaborative and dialogic activity² (Prior & Thorne, 2014; Russell, 2009).

Despite what the initial quote might suggest, this chapter is not about plagiarism but about dialogue and voices. I conceive research writing as a particular type of conversation in which the writer must acknowledge other voices and stances but must also be able to differentiate his/her voice from others to develop a researcher identity and an authorial self.

In the next sections, I frame research writing as a collaborative, dialogic and hybrid activity and discuss how research-related genres can be characterized accordingly. Then, based on three representative cases built from evidence from our previous studies, I discuss what we have learned in the last fifteen years regarding the common challenges students—and researchers—confront when dealing with research writing. This discussion relies predominantly on social sciences and humanities higher education contexts, not only because these are where my background and the studies I developed come from, but also due to their prevalence in the writing research field. Moreover, most of my research has focused on master and doctoral students as well as on early career researchers, except for some studies conducted with undergraduate students writing their bachelor theses and dissertations.

Finally, after highlighting what I consider the main current research challenges of the field, I explain our recent attempts to address them and related findings and reflect on pedagogical implications to promote students' and early-career researchers' writing development. The chapter closes with considerations regarding what I think might constitute a useful and comprehensive agenda to advance our knowledge of the research writing field.

Characterization of Research Writing: What Are We Talking About?

Borges (1899–1986), who, in addition to being a writer, worked as a librarian in Buenos Aires, defined his work in an interesting way when he affirmed,

2 Ideas, comments and arguments in this chapter are grounded in the collaborative research we developed as a team (www.researcher-identity.com); thus, my contribution is also dialogic and includes several voices.

“[O]rdering libraries is exercising, modestly and silently, the art of criticism” (Borges, 1969). I would add that *writing research genres is also exercising, less modestly and silently, the art of criticism*. Criticism required for writers to decide which, how and why previous research should be included in their own work, as well as their alignments, omissions and rhetorical decisions. While it is true that there are different ways to promote “the art of criticism” Borges talked about, the contribution of reading and writing research to this aim cannot be neglected. Understood in this way research writing, involves transversal, interdisciplinary and critical competencies, such as critical thinking or reflective problem-solving, which contribute to transforming information into knowledge, one of highest challenges for societies in the twenty-first century (Paré, 2019; Prior & Bilbro, 2012).

As mentioned, I conceive dialogue as inherent and essential to research writing. This dialogical nature is twofold. First, it involves writing to answer other researchers and studies and expecting to be answered at the same time by other members of the research communities (Bakhtin, 1981; Castelló & Iñesta, 2012; Camps & Castelló, 2013). Second, the dialogic nature also involves texts resulting from more or less explicit dialogic situations in which multiple voices intertwine. These situations range from those in which multiple authors explicitly own the text to those in which others’ voices participate at different levels and play several roles in single-authored texts and writing processes (e.g., supervisors, research colleagues, reviewers, editors). Understood in that way, dialogue implies conceiving research writing as collaborative even when one single author is credited. Over last century, collaborative research and co-authorship have been progressively growing in all disciplines, though at different pace and available evidence points out that they relate to increased productivity, at the individual, field, and country level, as well as to researchers’ satisfaction, learning and commitment (Fanelli & Larivière, 2016; Parish et al., 2018). Moreover, writing (and researching) collaboratively are among those competencies that our students will need in their professional lives. However, our knowledge of what underlies collaborative writing research in different disciplines has not progressed at the same pace. It is urgent for research in the field to discuss what underlies the socially constructed fuzzy notion of authorship in different professional research contexts and to what extent existing practices are ethical and sustainable for students and young researchers (Lokhtina et al., 2020).

The dialogic and collaborative consideration of research writing runs parallel to its hybrid nature. Producing research texts requires a broad range of abilities (e.g., reading, writing, synthesizing, discussing) and discourses (e.g., graphical, numerical, operational). Managing these abilities and discourses is at the core

of research writing since all of them are responsible for text quality though they have not always been considered part of the research writing process or research writing interventions. The need to master a broad range of abilities and a variety of discourses and modalities is particularly relevant for students at the bachelor, master, or doctorate stages who are facing complex texts (theses, dissertations and scientific articles), as well as for early career researchers dealing with grant applications, research reports, and other alternative modalities of research dissemination (e.g., blogs, websites or digital presentations). Moreover, the hybrid nature of writing research-related genres refers to the need to produce different types of intermediate or transitional texts, not only drafts. Transitional texts are necessary, for instance, when transforming raw data from analysis into descriptive comments, tables, or graphics. Each genre requires specific transitional texts that range from elaborative and explorative writing (to develop, transform, and elaborate ideas) to communicative writing, and researchers cannot avoid them when writing articles, reports, or grant applications since the final text quality is highly dependent on mastering them. However, transitional texts are rarely taught, and so, they remain occluded and unknown for students, even at the master's or doctoral level.

I also adhere to the consideration of writing as a socially, historically and culturally situated activity (Castelló & Donahue, 2012; Prior, 2006; Prior & Thorne, 2014), which implies that research writing practices and genres evolve as disciplinary communities develop and as purposes and ways to communicate and disseminate research diversify. The growth and dynamism of research-related genres over the last decades, and subsequent difficulty of defining and mapping them, are intrinsically linked to this diversification (Castelló, 2015; Chitez et al., 2015; Hyland & Guinda, 2012; Kruse et al., 2016; Nesi & Gardner, 2018). Despite considerable disciplinary and cultural variability—as well as other genres' relevance for research purposes (e.g., reports or essays)—theses, dissertations or manuscript monograph, research projects and articles are still considered core genres to communicate research plans or results (Hyland & Guinda, 2012; Nesi & Gardner, 2018; Sala-Bubaré & Castelló, 2018; Swales, 2004; Yakhontova, 2002). However, the alignment of these genres with societal challenges and shifts in research is an emerging issue under discussion (e.g., Paré, 2019). Traditional research genres have been claimed no longer to be representative enough of the wide range of scientific and scholarly writing required in contemporary disciplinary, trans- and cross-disciplinary contexts to address different audiences and purposes. Thus, in recent years, an increasing number of multimodal texts, such as blogs, sites, and platforms, have appeared. In a growing number of cases, it is difficult to deny that they serve research purposes though they are not always considered as such even if they are, specifically in academic con-

texts (e.g., <https://thesiswhisperer.com/about/>; <https://doctoralwriting.wordpress.com/>; <https://researchers-like-me.com/>). Any agenda for future research should include critical reflection on how emergent research genres account for new research and communicative practices researchers inside and outside the academy need to confront.

Diversification of research-related genres adds a layer of difficulty to the complex issue of their acquisition. Available results from different countries (Bekar et al., 2015; Castelló 2015) indicate that students do not confront the most challenging research genres, such as theses and dissertations, until the end of their studies, and show conflicting and unclear ideas regarding their characteristics and functions. In these conditions, it is complicated for students to be able to make sense of these genres.

To help students to unpack the meaning and purposes of these genres, it is necessary to acknowledge their particular constraints when required in formal academic programs. Texts and practices involved in these academic situations are specific and significantly different from those produced by established researchers within scientific and professional communities (Harwood & Petrić, 2016; Russel & Cortes, 2012) and thus, we proposed to consider them as *academic research writing* genres (Castelló & Iñesta, 2012). What characterizes these genres is they are halfway between academic texts, produced exclusively as part of the university curricula and to be read mainly by professors in the teaching and learning community, and disciplinary texts, written to be published and, thus, usually read by the corresponding research and professional community. This halfway situation is complicated for writers, and probably for readers too. As research indicates, students tend to experience contradictions between their previous practices—usually restricted to academic texts—and new and more complex research writing demands, especially in regard to thesis writing and Ph.D. or master's publications (Castelló et al., 2013). Evidence from our studies, like that from different disciplinary and cultural contexts (Lei & Hu, 2019), suggests that contradictions not only relate to the insufficient knowledge of genres characteristics and demands, but also to the need for writers to maintain a dual positioning—as researcher and student—which ultimately call for identity development. We assume this development is crucial for mastering research writing.

Students' and Researchers' Challenges When Writing Research Genres: Lessons from Research

Research on writing research genres has been prolific and extensive in the last ten years, and there is consensus regarding what are the most prevalent challenges writers—mainly students but also experienced researchers—confront

(Berkenkotter & Murray, 1983; Gallego et al., 2016; Lei & Hu, 2019). Over the last few years, answers to explain these challenges have consolidated strategies and proposals to help students cope with them effectively. A close look at available research explanations and pedagogical proposals show that most of them are complementary rather than exclusive, with some basic shared premises. In the next sections, I summarize these research agreements, explanations, and answers by analyzing three prototypical cases built on data from our previous studies with Ph.D. students (Castelló & Iñesta, 2012; Castelló et al., 2013). These cases are illustrative of research in the field, which has predominantly concentrated on Ph.D. students, whereas interest in bachelor's, master's and experienced researchers' writing has been much scarcer. The cases refer to Ph.D. students writing their first article, a requirement in almost all doctoral programs in Spain, independently of whether the thesis involves a series of articles or the traditional monograph format. These Ph.D. students share some other characteristics. First, they were enrolled in diverse Catalan doctoral programs within the social sciences (psychology, education, sport sciences). Second, they participated in a workshop we have been developing for the last ten years called "Writing the First Article."

The workshop, which ran fortnightly, extended over a semester and combined online and face-to-face sessions (for more details, see Castelló & Iñesta, 2012; Castelló et al., 2013). Between face-to-face sessions, students developed different tasks that were uploaded to the seminar platform. During the entire seminar, they uploaded at least three drafts of their articles and three writing diaries that prompted them to recall their objectives, their writing processes and activities and their feelings while they were working. Before the final session, they wrote a narrative of their writing process, and at the end of the seminar, they participated in semi-structured interviews. In those weeks of autonomous work and once the drafts were uploaded to the course platform, students read their peers' texts and prepared to provide feedback on them. After the students gave feedback, the teachers did the same. In the next face-to-face session, they discussed written feedback first in peers and then with the whole group.

Maria's Product-Oriented Approach

Maria was a teacher with five years of experience, and she was close to finishing her thesis in a monograph format. At the same time, she was writing her first article, a requirement for her to defend the thesis. Therefore, she was confronted with simultaneously writing in two different genres on the same topic and using shared data.

When she received feedback on her first draft and realized she should revise it, her reaction was to minimize the revision task and to reduce its complexity. It was as if her writing was just a matter of adapting previous texts and making them shorter while using the same content. She considered it a matter of just “telling the knowledge.” According to this interpretation, no critical changes would be necessary, so she planned only local revisions and appeared to be quite confident and relaxed when she stated in her reflective writing diary,

What I liked the most was to see that the literature review . . . which I had to write for my thesis [monograph] didn't need to be changed much to adapt it to this article. (Writing diary entry 2)

This solution was certainly inappropriate and explained the reviewers' feeling that she had not addressed any of their comments in the second draft. Thus, in the next session, reviewers insisted on the requirement to make global changes, emphasizing the need to revise the content and structure of the article. The style was characterized as inappropriate, similar to a textbook style. At that point, she realized something was wrong and felt insecure and uncertain about the results. She admitted that she should change what she was doing to modify the final text. She nicely expressed the consideration of writing products (that is, texts) as strongly dependent on processes in metaphorical terms:

Writing this article is like making a cake. There's no way of knowing if it is going to come out all right until it is finished, when someone tastes it and can say, “You need more sugar . . . or . . . less . . .” (In-class interaction, session 3)

This comment could indicate a conceptual move, but the real change did not take place until session four when, after realizing her text still had coherence problems, Maria became aware of the importance of managing the writing process without reducing its complexity. She complained,

This is very difficult. I need to read more. There are too many things to take into account . . . Need to have a clear idea of the structure before writing” (In-class interaction, session 4)

Although painful, this reflection allowed her to write differently by modifying the writing process and planning at the global level, which in turn led to the introduction of more substantial changes that improved the final draft.

These excerpts illustrate Maria's concerns when writing her article and provide a typical example of difficulties in managing the complexity of *processes involved in writing*. Cognitive and sociocognitive approaches to writing have suggested that complexity lies in the writer's capacity to orchestrate the three subprocesses of planning, formulating, and revising, with planning as key to text quality (Baaijen et al., 2014; van den Bergh et al., 2016).

Moreover, and even more interesting for our purposes, research has revealed that the moment and frequency of occurrence of specific strategies have a differential impact on the final text quality. These results suggest that decisions change dynamically during the writing process (Beauvais et al., 2011; van den Bergh & Rijlaarsdam, 2007). Thus, there is no such thing as the ideal writing process but only strategic decisions that make sense in particular communicative situations (Castelló, 2002).

Research has also extensively shown evidence of a lack of appropriate strategies among many students, including Ph.D. students, to manage the complex orchestration of writing processes when dealing with research genres. Responses have focused on helping students adopt a process approach when writing and equipping them with appropriate strategies to manage cognitive processes, such as planning, revising and textualization. Developing courses and seminars has also proven to be a useful approach. There is evidence that some particular proposals aimed at teaching strategies to manage the writing processes in a very structured way are effective to help students engage in research writing (Castelló et al., 2012). However, our data also show that focusing on cognitive strategies and processes is not sufficient to help students cope with ill-defined and challenging sociocultural writing situations, such as writing an article or a thesis (Castelló et al., 2013). Besides learning specific writing strategies to plan, write and revise, it is necessary for students to learn how to regulate these writing processes in complex and real scenarios (Sala-Bubaré et al., 2021), thus, considering the sociocultural nature of writing regulation (Sala-Bubaré & Castelló, 2018).

What is tricky about this approach is that, unfortunately, we still do not have specific knowledge about the writing processes that researchers implement in real and complex scenarios when faced with writing articles or other complex research genres. The majority of studies on writing processes have been located in primary and secondary schools and focused on simple tasks that tend to be very well controlled but poorly contextualized or situated (Sala-Bubaré & Castelló, 2018). Writing a text in one hour without considering sources is entirely different from writing an article or a thesis monograph, which lasts weeks or even months, always requires reading and using many sources in a variety of ways and is socially, disciplinarily, historically and culturally grounded (Bazerman, 1988).

Xavier: Ten Years Writing Experience

Xavier was a psychologist who wrote and published university textbooks on practice-based cases. He loved writing and had been doing it for ten years. He defined himself as a “good writer.”

Like Maria, he was writing his first article during his Ph.D., and in the context of the workshop, he received very demanding comments on his first draft that prompted him to revise it extensively. However, Xavier reacted very differently from Maria. Immediately after reading the feedback, he felt lost and realized he was confronting an unknown writing task. He needed to produce a text very different from those he was used to writing in his professional activity. The following reflections illustrate his thinking:

I don't know how to decide what is important and how to structure the text. I'm not clear about the focus of the article. It's difficult for me to prioritize information and restructure the previous draft. (Writing diary entry 2)

He made some minor changes, and in the second draft, the reviewer again mentioned the need to reduce information and revise the structure in addition to noticing that the link with the previous literature was not clear. At this point, Xavier explicitly mentioned that he was facing a new modality of writing with particular characteristics. For the first time, he reflected on the aims and audience guiding his decision-making regarding content selection and structure:

I am used to writing 70 pages, but now this is not the case. I've had to put much effort into reducing and synthesizing to make objectives clearer to readers. There are some concepts that you don't have to explain in an article because readers already know them. (In-class interaction, session 3)

Finally, a significant change was evident in the third draft in which reviewers detected only minor problems. At that point, Xavier showed increased awareness of the discursive mechanisms that characterize research articles when he said,

Now I can see what I want to say and how to say it more clearly. It's also been very helpful to learn “ways of saying” and typical statements of articles. I think this is a fundamental issue in research. Another topic is citations. Above all, I was surprised at all the “playing” one can do with the references to others' articles. (In-class interaction, session 4)

The kind of difficulties Xavier's case illustrates is strongly related to the knowledge and mastery of genre-related issues. Genre studies have demonstrated that although research genres are highly typified texts, they are also dynamic (Bazerman, 1988; Swales, 2004). Thus, their content and structure evolve depending on communities' history, characteristics and aims. Research practices and the writer's position in those communities also influence genre evolution (Hyland, 2005).

Moreover, we know that research genres accomplish different functions and purposes. First, they have an epistemic function since they contribute to the construction and growth of scientific knowledge. Second, they have a dialogic function since they aim to respond to previous studies and to be responded to by others, thus participating in discussions and debates within the scientific community. Finally, they have a relational function through citation and other discursive mechanisms that permit authors to create and maintain influential networks and indicate their position in the community (Iñesta & Castelló, 2012). Managing all these functions in a single piece of text is not easy, and research has extensively reported that students' lack of knowledge of genre characteristics and constraints accounts for various difficulties in research writing (Castelló et al., 2013). Accordingly, several successful proposals have been developed to facilitate students' learning of the discursive mechanisms related to writing research genres, such as theses, dissertations or articles, including students' reflection on and awareness of their learning and writing processes (Negretti & McGrath, 2018; Tardy 2016).

However, learning about genre characteristics might not be sufficient to guarantee that Ph.D. students will develop as research writers. There is evidence that students tend to interpret genres as formal and rigid structures and apply examples and resources in a nonreflective way (Castelló et al., 2013; Kamler & Thompson, 2008). Recent studies note that this reductionist interpretation is associated with the meaning students attribute to research, which, in turn, accounts for their authorial position when writing, either as students or researchers (Castelló et al., 2017; Lei & Hu, 2019). Moreover, some of our data indicate that both doctoral students and researchers are unable to strategically use their knowledge to decide when and why specific discursive mechanisms or resources are appropriate in meaningful writing situations (Castelló & Iñesta, 2012; Castelló et al., 2009).

Berta's Isolation

The last case is Berta, a young Ph.D. student who, after finishing her MSc, obtained a doctoral grant. She was a less experienced writer than the other

two students; the most extensive and recent research texts she had written were her bachelor's dissertation and master's thesis. When we started to discuss students' feelings as research writers within the workshop, she expressed that she had many problems because she felt unable to write an article despite trying. She considered herself *only* a student and not part of the researcher community and therefore not legitimate as an author. In her own words, "Perhaps I will be able to feel that I am someone [in the disciplinary community] in the future when I get my paper published" (Final interview).

After receiving the reviewers' comments on her second draft, she began to modify this perception and considered that authorship could be established through writing, not just publishing. She explained,

Through an article, you communicate an orientation, a certain way of conducting a study. That is, not only is it a study with its results and conclusions presented but also the researcher's motivation and orientation. (In-class interaction, session 4)

This quote also reveals a different way of understanding participation, not just through outputs but also through intentions and positioning. At the end of the workshop, she added to her comments a critical issue involving recognition and writer identity development when she stated,

I feel I am part of the research community because I feel a very close identification with the community I am addressing, although I know I'm not an important part of this community. They are not going to cite me. (In-class interaction, session 5)

Evidence from research relates Berta's concerns to doctoral students' and, more generally, early-career researchers' socialization and acculturation issues in disciplinary research communities. Writing an article is difficult for students and early-career researchers because it requires not only knowing the rules and conventions of the community they are addressing, but also understanding when, how and why some particular conventions, ways of speaking, or discursive mechanisms are appropriate and using them intentionally to play the desired role and positioning in this disciplinary research community (Castelló et al., 2013). Studies on researcher identity development have explained such complex accomplishments—strategic decisions, regulation and positioning—particularly in the writing transition from academic to researcher communities (Castelló, McAlpine et al., 2021), when students must

write in situated and authentic situations.

In these transitions, according to Ivanič's developmental framework, writers are expected to progress from learning to write like others to being read by others until they reach a final stage in which they are recognized as authors by others talking and writing about their work (Ivanič, 1998). This dynamic and interactive process requires time to learn the strategic management of different selves: the autobiographic "self" that a person brings to the act of writing, the authorial and discursual "self" constructed through the act of writing, and how the writer is perceived by the reader(s) (Burguess & Ivanič, 2010; Castelló et al., 2011). Knowledge of these selves allows writers to be aware of their *identity kit* (Gee, 1996) and its fit to specific disciplinary research communities when translated into texts.

Acculturation processes have been studied extensively, especially regarding doctoral students' transitions from peripheral practices to increasingly legitimate and central ways of participation in research and disciplinary communities (Canagarajah, 2003; Lave & Wenger, 2001). Complementarily, the notion of identity trajectories (McAlpine & Amundsen, 2018) emphasizes how past, present, and anticipated future experiences explain researchers' identity development. Moreover, recent theoretical and empirical contributions have stressed the role of networks, interactions and processes to account for the dynamics of individuals' positioning and communities' participation (Castelló et al., 2021; Castelló, Sala-Bubaré, & Pardo, 2021; Suñé-Soler, 2019; Lemke, 2000).

Based on these identity development approaches, in the last ten years, we have developed a series of studies and related pedagogical proposals addressed to undergraduate and graduate students as well as experienced researchers writing research-related genres (e.g., theses, dissertations, articles). These initiatives underline writer positioning and authorship development through strategic uses and regulation of discursive mechanisms that are useful to participate in—or confront—the specific discourses of disciplinary and research communities in which they are inserted in addition to promote a process approach and genre knowledge. These discursive mechanisms refer to the process, rhetorical and genre but also to the knowledge regarding values, premises, methods and restrictions that characterize research thinking in each discipline, subject, approach and community. Strategic uses involve reflective and intentional decisions regarding when, how and why specific mechanisms might help in adjusting texts to the writer's aims and authorial purposes whereas regulation refers to adjustments of these intentional decisions when facing a challenge or difficulty (Castelló, 2016; Castelló & Iñesta, 2012; Sala-Bubaré & Castelló, 2018).

Students' and Researchers' Writing Development: Recent Findings and Pedagogical Implications

Despite remarkable advances, evidence from research still shows that difficulties, struggles and contradictions remain even after students learn about the writing process, genres, and disciplinary research communities. Thus, focusing on knowledge acquisition and writing practices might not be sufficient to equip researchers to develop as writers. Based on our recent findings, developing a researcher identity is necessary to grow as a research writer and, in turn, to be aware of the authorial voice in social writing scenarios (Burgess & Ivanič, 2010; Castelló et al., 2013; Castelló & Iñesta, 2012). This process of identity development requires writers' agency to regulate cognitive, social and affective processes in particular communicative situations where individual or collaborative writing is required. Conceptions also play a major role in this development. When talking about conceptions, I refer not only to how writers understand the processes of writing but also how they consider texts and the interrelations of texts with processes and with general research activity. This involves developing a sophisticated understanding of texts as semiotic artifacts that evolve with the writing activity, or *artifact-in-activity* (Prior, 2006; Castelló et al., 2013).

In what follows, I address these aspects and draw a more complex picture to explain how research writing relates to acting, feeling and thinking like a researcher, that is, someone able to advance credible knowledge to solve disciplinary and societal challenges through responsible and innovative approaches (European Union, n.d.). To do so, I rely on our recent studies to discuss evidence regarding the persistence of a variety of difficulties relating to the two mentioned intertwined aspects, still scarcely addressed by research in the field: a) the need for strategic regulation of different types of knowledge in authentic and demanding research writing scenarios, which, in turn, requires a new conceptualization of the regulation notion in those situations, and b) the need to understand texts as artifacts-in-activity, not just products resulting from a more or less prescribed writing process.

The Social Nature of Research Writing Regulation. Relationship with Positioning, Voice and Authorial Self.

Writing regulation in higher education is a growing field with a broad distribution of studies framed into different theoretical and methodological perspectives, not all of them equally committed with the search for comprehensive methods that account for regulation in situated writing contexts. The results from a recent review of writing regulation research in Higher Educa-

tion indicate that, surprisingly, most studies adopt cognitive and sociocognitive approaches and focus on the writing processes of tasks that are more manageable and shorter than the complex tasks writers find in their professional careers or others that are not aligned with their disciplinary genres (Sala-Bubaré & Castelló, 2018). Moreover, there is a lack of studies exploring research writing regulation from a micro perspective, that is, observing master, bachelor or doctoral students' writing processes synchronously when dealing with complex research genres, such as theses or research articles.

To address the methodological challenge of the complexity of research writing in ecological conditions, we designed a first study (Iñesta & Castelló, 2012) in which we followed two participants, expert writers, who were writing a research article. They had the freedom to work anytime they wanted, with no time or space restrictions. Both of them worked on the research article for approximately one and a half months. We collected several types of data: writing diaries the participants completed after every writing session, the text-draft evolution, video recording of their writing activity in every session (through the Camtasia screen-capture software) and short interviews conducted weekly during the writing process to reflect upon their writing process. Finally, once they finished the article, they participated in a retrospective recall interview in which they discussed the recorded processes.

We combined macroanalysis of the discursive data and changes in drafts with microanalysis of the writing activity in which we compared the writers' discourse and interpretation of their processes with what they did—the registered writing activity (screen recorded) and draft evolution during the entire process of writing the research article. We integrated all this information in a double-scope representation. On the one hand, we considered the *writing sessions*: what they wrote and did during each session. On the other hand, we included what we called *the regulation episodes*, a new unit of analysis that accounted for intra- or intersession regulation activity.

A *regulation episode* was defined as the sequences of actions writers strategically implement to solve a difficulty or a challenge identified during the writing process. According to this definition, we initially expected regulation to be intentional and conscious (Castelló & Iñesta, 2012; Castelló et al., 2013; Iñesta & Castelló, 2012). Surprisingly, the results revealed the existence of some episodes that, although intentional, appeared to be implicit. Table 4.1 shows a condensed excerpt of one of these implicit episodes. In this case, to address the discussion of the results, the writer introduced a new sentence: “It is necessary to have more data but” and started to reformulate it (bursts 1 to 5).

Later in the same session, she started correcting the sentence by changing expressions, words, and verbs. That initial stage of reformulation lasted three

minutes (bursts 6 to 11). Then, a second phase started, and for at least ten more minutes, she continued to edit the same sentence, making small changes in words and expressions (bursts 12 to 15). The final version of the sentence occurs after a couple of bursts in which she included content and structure changes (bursts 16 & 17).

Table 4.1. Implicit Regulation Episode (I). Experienced Writer Sentence Generation (Changes Highlighted)

Burst	Time code	Transcript
1	0:35:45	New sentence: "It is necessary to have more data but
5	0:37:40	Continuing: "It would be necessary to have more research but the mechanisms through which [one's] own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."
		Pause
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 [one's] own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."
		Pause
15	0:54:41	Highlighting 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 one's own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."
		Pause
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 one's 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 one's own action is decided could move along different paths to those which explain the acquisition of conceptual knowledge (authors cited)."

Adapted from Iñesta & Castelló (2012)

In total, the writer invested almost thirty minutes on this single sentence aimed at interpreting her results, which conflicted with previous results. In the writer's words, she was trying to *sound* polite. Thus, she was hedging some of the statements, whereas at the same time, she was interested in making her stance quite clear. To achieve this twofold goal, writers need to know quite well how the genre works and what the discursive mechanisms are that fit a specific community. In particular, they must have a clear sense of their voice and position in this community, which, in turn, is linked to their projected or desired authorial identity.

What surprised us the most was that the writer did not report any trouble or difficulty in this session. She was not aware of the amount of time and effort she invested in this single sentence until we confronted her with the Camtasia recordings and the sentence bursts transcription during the final interview. At that point, she mentioned being aware that the author with whom she was interacting—and criticizing—could be one of the reviewers; even if this was not the case, she expected him to be one of the readers when the article was eventually published. She considered him a colleague, but she felt distant from him epistemologically and empirically. From her perspective, this distance made writing this sentence more difficult. She explained that she did not report these considerations as concerns because she was not aware of the high number of linguistic decisions linked to discussing findings in scientific articles. The example reveals writing regulation can happen at the implicit level, at least for experienced researchers when writing scientific articles. We do not have enough real time data from different writers—not only experts—to explain why. It might be that our writer was aware of her positioning but did not link it to the rhetorical sphere, which was implicitly triggered by the situation, as a routine, due to her condition of expert writer; or it might be an issue of whether and how these mechanisms were taught and learned.

Moreover, the revised episode and its writer's interpretation offer a clear example of the extent to which research writing regulation is social as well as linguistic and cognitive. The discursive mechanisms put into play in this regulation episode were linked not only to the writer's intention of adjusting the sentence to the community standards, genre characteristics and audience but also to her aims and particular stance in the text.

These refined forms of regulation are extremely difficult for our students, only partially due to their lack of knowledge about the genre characteristics or writing processes necessary to understand how to discuss their results in an article. The results from studies in which writers participate in communities of practice where research writing is part of a meaningful and functional ac-

tivity showed students' struggles to go beyond genre and strategy knowledge and practices (Castelló & Iñesta, 2012; Castelló et al., 2013). The strategic management of this knowledge within the research and writing activity that allows writers to position themselves, make their stance visible, and bring their voices into the conversation constitutes a significant challenge for students and early-career researchers.

Studies of students writing their bachelor's (Cano et al., 2012; Corcelles et al., 2017) and master's theses (Iñesta & Castelló, 2012) offer illustrative examples of this challenge. A first excerpt comes from psychology students participating in writing seminars with their peers and supervisors when writing their bachelor's theses. As in the doctoral workshop described in the previous section, peer-review was a key component of these seminars. Carol was one of these students. When reviewing Felipe's text, she mentioned the need for him to hedge some expressions, which seems a quite compelling recommendation. What are shocking are the arguments used to justify the need for hedging (see Figure 4.1). She first asked for a citation as a way to reduce Felipe's agency in the statement; then, she considered it necessary to hedge the statement because it compromised the writer's neutrality, which seems far from considering hedges as mechanisms to help writers' stance (Castelló et al., 2011; Castelló et al., 2012; Hyland, 2005).

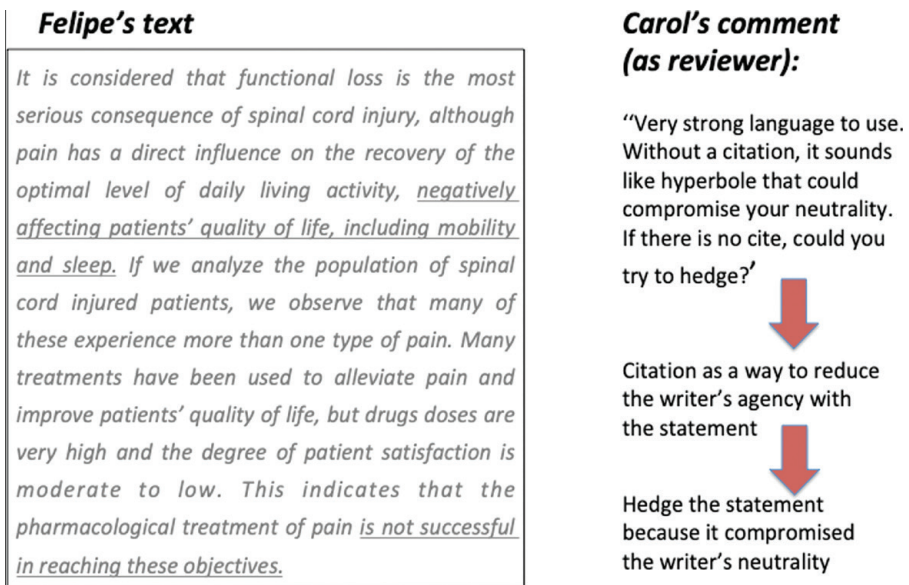


Figure 4.1. Felipe's text and Carol's comments (excerpt from Castelló et al., 2011).

A plausible explanation has to do with her struggles in combining *normative* knowledge in a challenging part of the text when Felipe is attempting to explain the gap and justifying the relevance of his study. Combining hedging and citation is always a result of strategic decisions by which authors manifest their stance—the authorial voice (Ivanič, 1998)—in specific parts of a text. Understanding such strategic decisions requires students—and their teachers—to participate in learning scenarios embedded in meaningful research activity systems in which decisions about tools (semiotic, physical, multimodal and others), goals, and the relationship and contextual constraints of actions in their research communities (Castelló et al., 2013; Prior & Thorne, 2014; Russell, 1995) are not optional but constitutive.

A second and much more frequent challenge relates to the variability of the discursive mechanisms' purposes, which remain obscure or occluded, to many students. In the following example, Laia was attempting to integrate different sources into a coherent synthesis when writing the introduction to her bachelor's thesis on the topic of *dissociation* (see Figure 4.2). In her text she summarized the different sources separately without the level of argumentation and integration that a synthesis requires (Mateos et al., 2020), which, in turn, prevented the identification of her stance in relation to the cited authors.


Laia's text	Reviewer's comment:
<p><i>Richard (2007) argues for dissociation as a process in which experiences and psychological interpretations are not related and meanings are altered. He explains how experiences are distorted and interpretations for personal and interpersonal experiences are subtly but deeply altered.</i></p> <p><i>In addition, Steinberg & Schnall (2002) suggest [y] dissociation is an adaptive behavior to face up with tensions or traumas.</i></p> <p><i>On the other hand, Bernstein and Putnam (1996) argue for different levels of dissociation, which imply memory loss and disconnection from the context. (M1)</i></p>	<p>“Ok but, do you agree or disagree with those authors' assumptions?”</p> <div style="text-align: center;">  </div> <p>Laia's answer:</p> <p>“I agree, obviously!”</p>

Figure 4.2. Laia's text and reviewer's comment (excerpt from Castelló et al., 2011).

Noticing this issue, the student who was acting as a reviewer asked her whether she was agreeing or disagreeing with the cited authors' assumptions. Laia answered that she agreed with all of them; what is relevant in this example is that she was stunned when she realized this was not self-evident to the reader. Later in the same session, when the reviewer claimed it was difficult to understand her stance because "she"—the author—was not visible in the text, Laia mentioned the contradiction she experienced between having an authorial stance and at the same time crediting the authors she read. From her perspective, the mere act of citing those authors and explaining and paraphrasing their assumptions was a sufficient sign of her own (agreeing) stance.

This contradiction referred to frequent recommendations from her supervisor regarding the requirement to cite every statement *versus* the significance of making the author's stance clear. From Laia's perspective, these were opposite moves. She felt unable to integrate both when writing the introduction; thus, she resolved the contradiction using a sequential structure consisting of writing short summaries of the readings first and then presenting her stance separately.

These examples illustrate the type of contradictions students experience when starting to make decisions about writing and need to regulate their knowledge and strategies in real research scenarios. However, these data come from retrospective designs and relationships between students' decisions to deal with these contradictions and changes in their writing processes are still fairly unknown. To advance our knowledge, we need to confront students' perceptions and discourse about their decisions (what they say) to their actions (what they do) along the writing process in authentic and complex research writing conditions.

To this end we recently designed an exploratory study in which we followed one Ph.D. student *when starting to write* a research article (RA) during the first three sessions of a writing workshop. In the first session, the writer started to draft the initial draft (extended abstract) of her research article which was peer reviewed and comments discussed in the second session. The third session was devoted to revising the text according to the received feedback.

As in the previous study with expert writers, we looked for regulation episodes in real time combining data about both the writing process and its products, and about participant's actions and perceptions about these actions (Sala-Bubaré et al., 2021). Considering what we discussed regarding implicit regulation processes (Castelló & Iñesta, 2012), we added a synchronous instrument such as keystroke logging, which, combined with screen capture software, helped us to obtain information about the moment-by-moment creation of the text and the resources used to that end. Other asynchronous instruments were an initial questionnaire and writing logs, which rendered crucial insight about the context of writing. The feedback session was also recorded to get access to

the social context through the feedback comments, the problems writers encountered and the rationale for some of the decisions taken.

Although exploratory, some aspects of this study design and preliminary results can contribute to the ongoing discussions in the field of writing research and thus, the purpose of this chapter. First, besides identifying changes in writing processes at different levels (micro and macro) among sessions, the multi-method approach allowed us to relate writing regulation processes to the writer's aims and stance. Evidence showed writer reflection and positioning, integrating rhetorical, genre, community, and disciplinary (subject-related) issues, triggered by feedback, resulting in more complex writing regulation processes. Second, results offer new empirical evidence of the social nature of the regulation writing processes. Unlike expert writers, it seems this student (from social sciences) struggled, through the whole writing process, to reconcile what she considered her "personal" and natural way of writing with the constraints of the writing situation imposed by the genre characteristics (article), her position (as Ph.D. student) and the perceived authorial self (provided by feedback) (Burgess & Ivanič, 2010). At the same time, looking at discussions regarding the feedback and changes required in texts from her perspective, I also consider these struggles might indicate potential dissociations of herself as writer and researcher. Although the student accepted almost all the reviewers' critical comments and recommendations, she justified her previous decisions and difficulties by claiming her in-between position as an advanced Ph.D. student but not yet a researcher, and as a good writer but not as good at writing an article or thesis.

These results, though their reduced scope and preliminary nature, not only offer evidence of these dissociations but also show that appropriately introducing other voices (in our case, reviewers' voices) in writers' inner dialogues and interpretations can modify the writing processes involved in cognitive and emotional regulation when they write the second version of their abstract. To what extent these results might transfer to other disciplinary and alternative contexts remains unknown, a pending issue for the research writing agenda.

Conceiving Texts as Artifacts-in-Activity

Another series of studies we developed relates to conceptions and how to help students consider texts as mediating *artifacts* (Prior, 2006). Considering texts as *artifacts-in-activity* implies that successive drafts can be considered as tools for writers to think about the text content, its structure and linguistic formulation as well as tools to evolve as authors—that is, as identity development tools.

This conceptualization contradicts the idea of texts as just final outputs resulting from a more or less prescribed writing process, that we found in previous

studies (Castelló et al., 2012). As mentioned, students, probably due to previous experiences, consider research genres to be highly typified and normative; thus, they believe as research writers they are expected to use a specialized lexicon and a fixed structure and have no freedom to write (Castelló et al., 2012; Castelló & Iñesta, 2012). In these cases, students struggle to attain the correct or the good final version of the text as soon as possible, which in turn prevents them from taking a stance, from defining and developing a plan to achieve their objectives and, ultimately, from developing their authorial voice and researcher identity. Therefore, their conceptions regarding research genres might contradict the possibility of reflecting upon linguistic resources and using these resources strategically.

The following example, from one of our first studies on writing conceptions, illustrates the students' struggling to find what they consider the "correct version" of a text. In this example, Sofia acted as a reviewer of the manuscript written by Maria, both of whom were psychology students writing their bachelor's theses (Cano et al., 2012; Castelló et al., 2013; Corcelles et al., 2017). Sofia's comments (see Figure 4.3) suggested changing Maria's words and sentences she defined as *incorrect*, and, as displayed in Figure 4.3, they were quite direct. Interestingly, Sofia was not an exception. More than half of the bachelor's students participating in the study did something similar when reviewing their peers' texts. This result was unexpected because these students were trained as reviewers and learned to offer indirect and critical comments instead of direct suggestions for change, like those displayed by Sofia. Students knew that when acting as reviewers, they should first clarify and explain their concerns with specific issues in the texts; second, they should justify the reasons underlying the concerns; and finally, they should make recommendations or ask questions to promote the writer's reflection. Possibly because of this, Sofia realized that she was being too directive and tried to excuse herself at the end of her comments by saying she was only offering suggestions but not "the absolute truth." Still, evidence showed she looked for the "truth," the ideal text she considered to be the only correct one.

In this study, students tended to offer simple comments, asking for changes only at the word level rather than considering texts as mediating artifacts. However, these results also offer evidence regarding how conflicting writers' conceptions and their interpretation of genre characteristics unfold in social writing contexts. Consequently, we assumed that the nature and diversity of writing experiences might mediate writing conceptions and developed series of studies to explore whether and how researchers' experiences and writing conceptions are intertwined (Castelló et al., 2017; Castelló, Sala-Bubaré, & Pardo, 2021; Sala-Bubaré et al., 2018;). Within experiences, we included the students' trajectories and their social relationships and research-related networks in addition to other aspects, such as the thesis language, discipline or country.

Maria’s text

The scarce longitudinal studies revised suggest that deficits in face recognition remain stable, at least one year in which it didn’t improve with the improvement of symptoms which are characteristic of the illness (Addington & Addington, 1998; Kee et al., 2003). [RA 1.1. Intro]

**Sofia’s comments
(as reviewer):**

‘You should change the word “deficit”.

Change the expression: “at least” for “ during”.

I would delete all the sentence: “in which it didn’t improve with the improvement of symptoms which are characteristic of the own illness”



In doing this revision, I just want to offer you what I consider to be suggestions, this is not the absolute truth. We will comment on that during the class session, ok?

Figure 4.3. Sofia’s comments related to conceiving research texts as highly typified and normative.

We combined cross-sectional with longitudinal mixed-method studies using the Cross-Country Doctoral and Post-Ph.D. Researcher Experience surveys (C-DES & C-PDR) and so-called *multimodal interviews* to collect different types of data regarding both perceptions and experiences development through time. A *multimodal interview* is a semi-structured interview in which we combine discursive data with visual methods to elicit different types of information (McAlpine et al., 2017). In our case, we used two visual methods, the *Journey Plot* and the *Network Plot* (Castelló et al., 2018; Salla-Bubaré & Castelló, 2017).

The *Journey Plot* is a two-axes graphic in which students think about and mark significant events or experiences they faced over time; thus, the resulting line represents their trajectories. Figure 4.4 shows an example of a Ph.D. student’s *Journey Plot* over a year. Time is situated in the horizontal X-axis, whereas the vertical Y-axis reflects the intensity and the value (positive or negative) of the experiences.

The *Network Plot* consists of circles that represent the individuals, groups or institutions with which students interact when writing research genres (see Figure 4.5). Students are asked to organize these circles freely to display their research writing-related network while explaining the type of relationship and activity they share (writing together, publishing, discussing drafts, writing grants or other) as well as how these relationships were created and maintained.

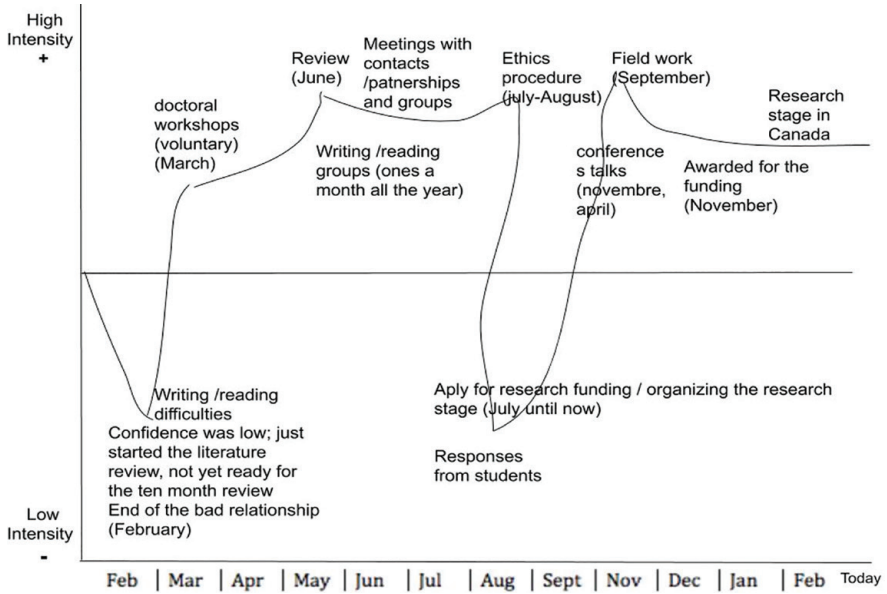


Figure 4.4, Journey Plot example.

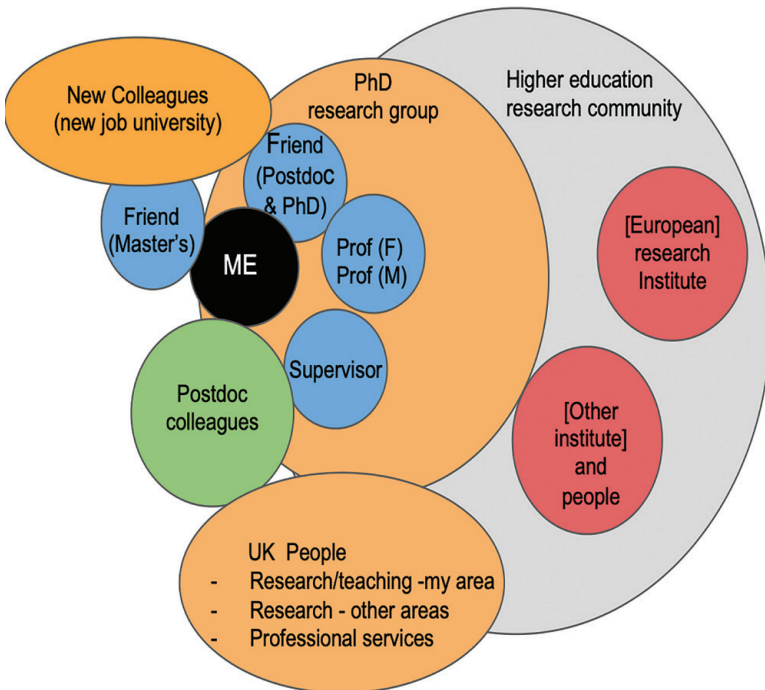


Figure 4.5. Network Plot example.

In what follows I transversally discuss results of the mentioned series of studies we developed so far to offer an integrated and comprehensive picture of their accounts. Cross-sectional results, based on person-centered analysis, allowed us to differentiate writing conception profiles of both doctoral students (Sala-Bubaré et al., 2018) and post-Ph.D. researchers (Castelló et al., 2017; Castelló, Sala-Bubaré, & Pardo, 2021) with similar characteristics across countries, disciplines and researcher expertise. As summarized in table 4.2, Ph.D. students and post-Ph.D. researchers share the productive and struggler profiles, the two ends of a continuum while the two other profiles—the productive struggler and the reduced productivity—were found within each group respectively.

Table 4.2. Ph.D. Students' and Post-Ph.D. Researchers' Writing Perceptions Profiles

Profiles	Characteristics	Ph.D. (n=1.463)*	Post-Ph.D. (n=134)**
Productive	Transformative writing perceptions		
	Few problems when writing	x	x
	High publication experience as first and co-authors		
Productive struggler	Transformative writing perceptions		
	Struggles when writing	–	x
	High publication experience		
Reduced productivity	Transformative writing perceptions		
	Some problems when writing	x	–
	Low publication experience		
Struggler	Less transformative writing perceptions		
	Struggles when writing	x	x
	Low (Ph.D.) to medium (post-Ph.D.) publication experience		

*See Sala-Bubaré et al. (2018) for a Ph.D. profiles results detailed account and their statistical significance.

** See Castelló, Sala-Bubaré, & Pardo (2021) for a Post-Ph.D. profiles results detailed account and their statistical significance

The *productive* profile includes those who consider writing as a tool to think and create new knowledge, thus held the most transformative writing perceptions, and experienced fewer problems than the rest of the profiles when writing. Moreover, they had more publication experience as both first and second authors and perceived themselves as productive. This profile was the most frequent among the post-Ph.D. researchers and the second most frequent among

the doctoral students (see Figure 4.6). The Ph.D. students and post-Ph.D. researchers included in the *struggler* writer profile reported suffering several problems when writing, such as high levels of procrastination, blocks and anxiety when writing, which prevented them from writing; thus, they were less productive than writers in the rest of the profiles. They also held less transformative writing conceptions, and Ph.D. students considered writing to be an innate ability more frequently than writers in the other profiles.

The two other profiles were specific to each group of participants. The *productive struggler* was the second most predominant writer profile among post-Ph.D. researchers. It included those who experienced blocks and had difficulties when dealing with research writing even though they were almost as productive as the first profile participants and also held transformative writing perceptions.

In the case of doctoral students, we found a *reduced productivity* writer profile. In this case, participants held transformative writing perceptions and experienced fewer problems in writing than *struggler* writers but more than *productive* writers. Nevertheless, they were the least productive among the doctoral students' profiles with regard to both their perceptions and the reported number of publications. These doctoral candidates were also more likely not to have determined the format of their dissertation. These last two profiles were unexpected according to previous findings (Castelló et al., 2018; Lonka et al., 2019) in that they both had transformative writing perceptions but differed in productivity.

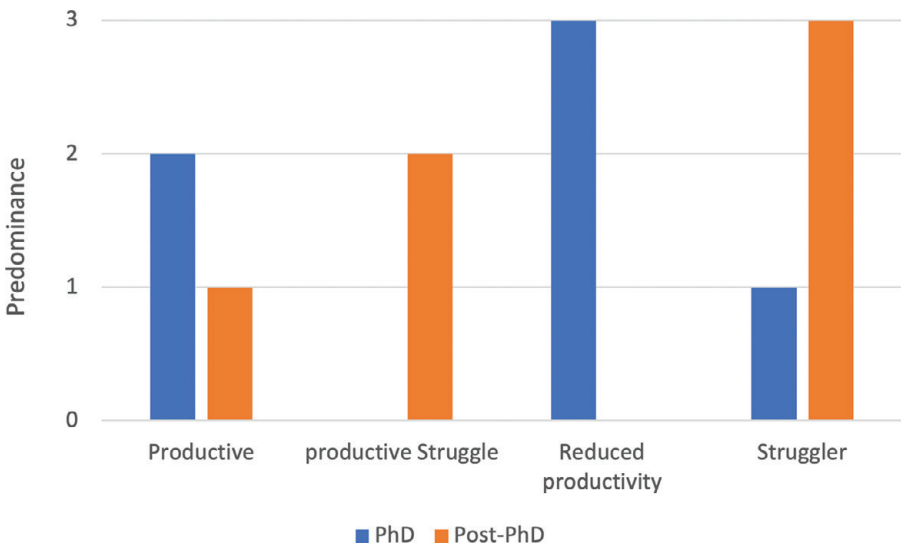


Figure 4.6. Profiles distribution and significant predominance among Ph.D. and Post-Ph.D.

In the case of doctoral candidates, low productivity was related to not knowing the format of the thesis and to a higher focus on research-related tasks other than writing, such as data collection and analysis. In both cases, there were no differences among profiles regarding the writing language, countries (data discussed here come from Switzerland, UK, Spain, and Finland) and, even more surprisingly, in the case of postdocs regarding the perceived social support from their research team, their supervisor or their disciplinary research community.

These results offer a complex picture of how writing conceptions evolve through early-career researchers' development but, at the same time, appear to contradict previous findings and assumptions about the mediating role of social experiences and writing trajectories on writing conceptions, one of our primary concerns when trying to understand research-writing development. Nevertheless, when looking at the qualitative multimodal data, we found inspiring patterns complementing the quantitative analysis that shed new light on the relationships between the profiles and their trajectories and networks (Castelló, Sala-Bubaré, & Pardo, 2021).

Participants included in the *productive* writer profile reported mainly positive and rather stable research writing trajectories. Consistently, their Journey Plots displayed either horizontal or ascendant trajectories. Moreover, they mentioned writing a diverse variety of genres: articles as well as conference presentations, workshops and project proposals, among others.

In contrast, *productive struggler* writers' trajectories went from very negative to more positive points; therefore, their Journey Plots were also ascendant but looked less stable since they displayed very negative experiences. Writers in this profile detailed many specific difficulties they experienced when writing particular genres, mainly articles, such as inability to finish them or dealing with bad reviews. Most of their discourse focused on how much they suffered and struggled, though they ultimately managed to solve challenges and thus finished very satisfied.

The post-Ph.D. researchers included in the third profile, *struggler writer*, displayed a roller-coaster, upside-down trajectory in their Journal Plots. Although these writers reported positive writing experiences, the transitions between events were often abrupt, changing from very positive to very negative in a short time. In most cases, the explanation for such radical changes was unclear and did not offer evidence of the participants being agentic in solving the issues they experienced. An excerpt from one representative student of this profile, Víctor, is illustrative of this lack of agency when talking about the rejection of a paper:

Well, this was a bit difficult because we had very good chances.

In theory, it is well done, with the same methodology [as the

previous paper] and everything, but they did not like it. At the end, we will not publish it, and we will add the physiological variables to the second article.

Instead of taking an active role in solving the problems they encountered, postdocs included in this profile frequently expected that the passing of time or other people would solve them (i.e., Victor explained that his supervisor rewrote the paper because, after rejection, he was unable to work on it again). The majority mentioned almost exclusively writing articles and rarely reported other genres.

Differences among profiles also appear in the postdocs' relational research networks. Participants from the *productive writer* profile demonstrated that they built mainly international networks and offered clear evidence of what we have called a relational agency, meaning that their networks were created primarily by themselves. They explained how they actively contacted people they were interested in, whether through email, conferences or stays, and how they started to write together. In contrast, postdocs' networks representative of the *struggler writer* profile mainly focused on their local context, either the university or the department. Thus, their writing and publishing experiences were restricted to researchers from the local context with no evidence that they actively looked for opportunities to write with other remote partners. Accordingly, their co-authors were mainly supervisors or their research team members.

Altogether, these results indicate the extent to which social relationships and researchers' positioning in any particular community mediate writing perceptions, practices and outputs. Therefore, participating in a variety of communities and experiencing different roles as researcher, but also as a writer—either single or in collaboration—reviewer or discussant in such communities might impact on developing more complex conceptualizations and ideas regarding research writing and on using texts as artifacts-in-activity.

Final Remarks

In this chapter, I discussed consolidated and emergent research that relies on several related premises, the dialogical, social, hybrid, and epistemic nature of research writing. Producing research texts is a particular form of conversation that requires a broad range of abilities and a variety of discourse modalities, all of them related to particular communicative contexts that not only might transform and create knowledge through critical reflection but also develop research writers through positioning and authorial development.

I have also argued that research-writing development involves transversal, interdisciplinary and critical competencies, such as critical thinking or socially-shared regulation. Considering that these competencies have been progressively included during the last 20 years in many of the world's bachelor's curricula and study programs and they appear as critical in the knowledge society (Castells, 2000), it seems reasonable to include research writing in higher education from the first years of bachelor's programs through a variety of formats and in connection with particular disciplinary requirements. Moreover, if research writing is a complex and hybrid activity, it cannot be taught via short and straightforward tasks or an isolated subject.

My point here is that preparing students as professionals currently requires equipping them with research competencies and attitudes. This consideration relates to the need to rethink the role and purpose of research training and education in higher education curricula. Identifying challenges, designing ways to address them, and interpreting and communicating results are crucial not only for professionals' lifelong learning but also to innovate in their professional contexts. Consequently, it is urgent to analyze the role of research training, understood in a broad sense, which also incorporates different research genres in higher education curricula. It is not only a matter of knowing, writing, and doing research but also of being able to decide *when*, *how*, and *why* a particular way of thinking, acting, and feeling is appropriate and necessary to deal with social and disciplinary challenges.

When envisaging the role of research in twenty-first century societies and how professions will evolve, it is plausible to assume the professionals capable of generating cycles of reflection-inquiry-innovation are probably those who will have better and more exciting workplaces in any sector. From my perspective, this assumption has significant consequences for writing research and intervention and alludes to the need for what we may consider, following Yore's (2012) idea, a new *scientific literacy*. To move forward in this direction and confront the most urgent challenges research writing is already facing, future research in the field would require, at least, considering the following challenges.

First, clarifying and mapping the situation of research-related genres in higher education as well as how students but also faculty interpret the so-called scientific literacy in different disciplines and at the graduate and undergraduate levels. Understanding when, how and why students learn research-related writing genres and to what extent they are familiar with their purposes and tools is necessary to enhance both students' research competencies and writing development. Moreover, any agenda for future research should include critical reflection on how emergent research genres account

for new research and communicative practices researchers inside and outside the academia need to confront.

Second, knowing how writing processes unfold when writing research-related genres in a variety of ecological research contexts and disciplines is a pending task necessary to build comprehensive and non-reductionist explanations of such processes. Advancing on such knowledge not only would ground theory and models adjusted to specific research writing conditions but would also open spaces for those with teaching responsibilities to reflect, think and sometimes rethink research writing interventions.

From my perspective, focusing on research writing processes has to do with accounting not only for the social dimension of writing but also for writing-in-the-activity. As mentioned, this implies looking both at processes and writers' knowledge, as well as taking into account time and space signifying historical and cultural rules and practices. Understanding how these systemic components intertwine in particular research communities remains a priority for those committed to improving research writing in the twenty-first century. It might also be a promising way to develop a comprehensive framework to facilitate the competent and harmonious development of research writers in diverse, global and complex research scenarios.

Dialogue, discussions, and cross-fertilization among different streams, approaches, and disciplinary traditions that converge on the study of research-related genres and research writing is imperative for future research in the field. A vast body of knowledge has been built based on these traditions, which in many cases has remained confined within their own boundaries. The development of cross-, trans- and multidisciplinary projects and teams that are just emerging can be the first step to bridge those boundaries and move forward to the integration of existing evidence and the promotion of meaningful and relevant, though complex and challenging, research. This volume assembles a promising step forward towards this direction.

References

- Baaijen, V. M., Galbraith, D., & de Glopper, K. (2014). Effects of writing beliefs and planning on writing performance. *Learning and Instruction, 33*, 81-91. <https://doi.org/10.1016/j.learninstruc.2014.04.001>
- Bakhtin, M. (1981). *The dialogic imagination*. University of Texas Press.
- Bazerman, C. (1988). *Shaping written knowledge: The genre and activity of the experimental article in science* (Vol. 356). University of Wisconsin Press.
- Bazerman, C. (2004). Intertextualities: Volosinov, Bakhtin, literary theory, and literacy studies. In A. F. Ball, S. Warshauer Freedman, & R. Pea (Eds.), *Bakhtinian perspectives on language, literacy, and learning* (pp. 53-65). Cambridge University Press.

- Beauvais, C., Olive, T., & Passerault, J. M. (2011). Why are some texts good and others not? Relationship between text quality and management of the writing processes. *Journal of Educational Psychology*, *103*(2), 415-428. <https://doi.org/10.1037/a0022545>
- Bekar, M., Doroholschi, C. I., Kruse, O., & Yakhontova, T. (2015). Educational genres in eastern Europe: A comparison of the genres in the humanities departments of three countries of three different universities in three different countries. *Journal of Academic Writing*, *5*(1), 119-132. <https://doi.org/10.18552/joaw.v5i1.164>
- Berkenkotter, C., & Murray, D. M. (1983). Decisions and revisions: The planning strategies of a publishing writer, and response of a laboratory rat: Or, being protocolled. *College Composition and Communication*, *34*(2), 156-172. <https://doi.org/10.2307/357403>
- Borges, J. L. (1969). *Elogio de la sombra*. Emece.
- Burgess, A., & Ivanič, R. (2010). Writing and being written: Issues of identity across timescales. *Written Communication*, *27*(2), 228-255. <https://doi.org/10.1177/0741088310363447>
- Camps, A., & Castelló, M. (2013). La escritura académica en la universidad [Academic writing at university]. *Revista de Docencia Universitaria*, *11*(1), 17-36. <https://doi.org/10.4995/redu.2013.5590>
- Canagarajah, A. S. (2003). A somewhat legitimate and very peripheral participation. In C. P. Casanave & S. Vandrick. (Eds.), *Writing for scholarly publication: Behind the scenes in language education* (pp. 197-210). Routledge.
- Cano, M., Corcelles, M., Castelló, M., & Fuentealba, M.O. (2012). Características y funciones de las ayudas en la revisión colaborativa de textos científico-académicos. *Proceedings CIDUI*. UPF
- Castelló, M. (2002). De la investigación sobre el proceso de composición a la enseñanza de la escritura. *Revista signos*, *35*(51-52), 149-162. <http://dx.doi.org/10.4067/S0718-09342002005100011>
- Castelló, M., Iñesta, A., & Monereo, C. (2009). Towards self-regulated academic writing: an exploratory study with graduate students in a situated learning environment. *Electronic Journal of Research in Educational Psychology*, *9*(3), 1107-1130. <http://www.investigacion-psicopedagogica.org/revista/new/english/ContadorArticulo.php?367>
- Castelló, M., Corcelles, M., Iñesta, A., Bañales, G., & Vega, N. (2011). La voz del autor en la escritura académica: una propuesta para su análisis. *Signos*, *44*(76), 105-117. <http://dx.doi.org/10.4067/S0718-09342011000200001>
- Castelló, M., & Donahue, C. (2012). Introduction. In M. Castelló & C. Donahue (Eds.), *University writing: Selves and texts in academic societies* (pp. i-xxvii). Brill. <https://doi.org/10.1163/9781780523873>
- Castelló, M., & Iñesta, A. (2012). Texts as artifacts-in-activity: Developing authorial identity and academic voice in writing academic research papers in M. Castelló & C. Donahue (Eds.), *University writing: Selves and texts in academic societies* (pp. 179-200). Brill. <https://doi.org/10.1163/9781780523873>

- Castelló, M., Iñesta, A., Pardo, M., Liesa, E., & Martínez-Fernández, R. (2012). Tutoring the end-of-studies dissertation: Helping psychology students find their academic voice. *Higher Education*, 63(1), 97-115. <https://doi.org/10.1007/s10734-011-9428-9>
- Castelló, M., Iñesta, A., & Corcelles, M. (2013). Ph.D. students' transitions between academic and scientific writing identity: Learning to write a research article. *Research in the Teaching of English*, 47(4), 442-478. <http://www.jstor.org/stable/24397847>
- Castelló, M. (2015). La investigación sobre escritura académica en los procesos de enseñanza-aprendizaje en la universidad Española. *Culture and Education*, 27(3), 465-476. <https://doi.org/10.1080/11356405.2015.1072362>
- Castelló, M. (2016). Escribir artículos de investigación. Aprender a desarrollar la voz y la identidad del investigador novel. In G. Bañales-Faz, M. Castelló, & N. A. Vega-López. *Enseñar a leer y escribir en la educación superior. Propuestas educativas basadas en la investigación* (pp. 209-232). Fundación SM. http://web.metro.inter.edu/facultad/esthumanisticos/crem_docs/Ensenar%20a%20leer%20y%20escribir.pdf
- Castelló, M., McAlpine, L., & Pyhältö, K. (2017). Spanish and UK post-Ph.D. researchers: Writing perceptions, well-being and productivity. *Journal of Higher Education Research & Development*, 36(6), 1108-1122. <https://doi.org/10.1080/07294360.2017.1296412>
- Castelló, M., Pyhältö, K., & McAlpine, L. (2018). European cross-national mixed-method study on early career researcher experience. In A. J. Jaeger & A. J. Dinin (Eds.), *The postdoc landscape. The invisible scholars* (pp. 143-174). Academic Press.
- Castelló, M., McAlpine, L., Sala-Bubaré, A., Inouye, K., & Skakni, I. (2021). What perspectives underlie “researcher identity”? A review of two decades of empirical studies. *Higher Education*, 81, 567-590. <https://doi.org/10.1007/s10734-020-00557-8>
- Castelló, M., Sala-Bubaré, A., & Pardo, M. (2021). Post-Ph.D. researchers' writing conceptions as mediators of trajectories and networking. *Written communication*, 38(4). <https://doi.org/10.1177/07410883211027949>
- Castells, M. (2000). Materials for an exploratory theory of the network society. *The British Journal of Sociology*, 51(1), 5-24. <https://doi.org/10.1111/j.1468-4446.2000.00005.x>
- Chitez, M., Kruse, O., & Castelló, M. (2015). *The European writing survey (EUWRIT): Background, structure, implementation, and some results*. Zürcher Hochschule für Angewandte Wissenschaften (ZAHW).
- Colton, C. C. (1820). *Lacon: Or, many things in few words; Addressed to those who think* (5th ed.) [Quote Page 229]. Longman, Hurst, Rees, Orme, and Brown. <http://books.google.com/books?id=fcQsAAAAYAAJ&q=%22steal+thoughts%22#v=snippet&>
- Corcelles, M., Cano, M., Mayoral, P., & Castelló, M. (2017.) Enseñar a escribir en la Universidad: el Trabajo final de grado. *Signos*, 50(95), 337-360. <http://dx.doi.org/10.4067/S0718-09342017000300337>

- European Union (n.d.) *Science with and for Society (SwafS), Horizon 2020*. Retrieved December 2, 2021, from <https://rb.gy/44uq6x>
- Fanelli, D., & Larivière, V. (2016). Researchers' individual publication rate has not increased in a century. *PLoS one*, *11*(3), e0149504. <https://doi.org/10.1371/journal.pone.0149504>
- Gallego, L., Castelló, M., & Badia, A. (2016). Faculty feelings as writers: Relationship with writing genres, perceived competences, and values associated to writing. *Higher Education*, *71*(5), 719-734. <https://doi.org/10.1007/s10734-015-9933-3>
- Gee, J. P. (1996). *Social linguistics and literacies: Ideology in discourses* (2nd ed.). Taylor Francis.
- Harwood, N., & Petrić, B. (2016). *Experiencing master's supervision: Perspectives of international students and their supervisors*. Taylor & Francis.
- Hyland, K. (2005). Stance and engagement: A model of interaction in academic discourse. *Discourse studies*, *7*(2), 173-192. <https://doi.org/10.1177/1461445605050365>
- Hyland, K., & Guinda, C. S. (Eds.). (2012). *Stance and voice in written academic genres*. Palgrave Macmillan.
- Iñesta, A., & Castelló, M. (2012). Towards an integrative unit of analysis: Regulation episodes in expert research article writing. In C. Bazerman, C. Dean, J. Early, K. Lunsford, S. Null, P. Rogers, & A. Stansell (Eds.), *International advances in writing research: Cultures, places, measures* (pp. 441-448). The WAC Clearinghouse; Parlor Press. <https://doi.org/10.37514/PER-B.2012.0452.2.24>
- Ivanič, R. (1998). *Writing and identity: The discursive construction of identity in academic writing*. John Benjamins.
- Kamler, B., & Thomson, P. (2008). The failure of dissertation advice books: Toward alternative pedagogies for doctoral writing. *Educational Researcher*, *37*(8), 507-514. <https://doi.org/10.3102/0013189X08327390>
- Kruse, O., Chitez, M., Rodriguez, B., & Castelló, M. (2016). *Exploring European writing cultures. Country reports on genres, writing practices and languages used in European higher education*. Winterthur: ZHAW Zürcher Hochschule für Angewandte Wissenschaften. <https://doi.org/10.21256/zhaw-1056>
- Lave, J., & Wenger, E. (2001). Legitimate peripheral participation in communities of practice. In J. Clarke, A. Hansson, R. Harrison, & F. Reeve. *Supporting lifelong learning* (pp. 121-136). Routledge.
- Lei, J., & Hu, G. (2019). Doctoral candidates' dual role as student and expert scholarly writer: An activity theory perspective. *English for Specific Purposes*, *54*, 62-74. <https://doi.org/10.1016/j.esp.2018.12.003>
- Lemke, J. (2000). Across the scales of time: Artifacts, activities, and meanings in ecosocial systems. *Mind, Culture, and Activity*, *7*(4), 273-290. https://doi.org/10.1207/S15327884MCA0704_03
- Lokhtina, I., Löfström, E., Cornér, S., & Castelló, M. (2020). In pursuit of sustainable co-authorship practices in doctoral supervision: Addressing the challenges of writing, authorial identity and integrity. *Innovations in Education and Teaching International*, 1-11. <https://doi.org/10.1080/14703297.2020.1799839>

- Lonka, K., Ketonen, E., Vekkaila, J., Cerrato, M., & Pyhältö, K. (2019). Doctoral students' writing profiles and their relations to well-being and perceptions of the academic environment. *Higher Education*, 77(4), 587-602. <https://doi.org/10.1007/s10734-018-0290-x>
- Mateos, M., Rijlaarsdam, G., Martín, E., Cuevas, I., Van den Bergh, H., & Solari, M. (2020). Learning paths in synthesis writing: Which learning path contributes most to which learning outcome? *Instructional Science*, 48, 137-157. <https://doi.org/10.1007/s11251-020-09508-3>
- McAlpine, L., & Amundsen, C. (2018). *Identity-trajectories of early career researchers*. Palgrave Macmillan.
- McAlpine, L., Pyhältö, K., & Castelló, M. (2017) Building a more robust conception of early career researcher experience: What might we be overlooking? *Studies in Continuing Education*, 40(2), 149-165. <https://doi.org/10.1080/0158037X.2017.1408582>
- Negretti, R., & McGrath, L. (2018). Scaffolding genre knowledge and metacognition: Insights from an L2 doctoral research writing course. *Journal of Second Language Writing*, 40, 12-31. <https://doi.org/10.1016/j.jslw.2017.12.002>
- Nesi, H., & Gardner, S. (2018). The BAWE corpus and genre families classification of assessed student writing. *Assessing Writing*, 38, 51-55. <https://doi.org/10.1016/j.asw.2018.06.005>
- Paré, A. (2019). Re-writing the doctorate: New contexts, identities, and genres. *Journal of Second Language Writing*, 43, 80-84. <https://doi.org/10.1016/j.jslw.2018.08.004>
- Parish, A. J., Boyack, K. W., & Ioannidis, J. P. (2018). Dynamics of co-authorship and productivity across different fields of scientific research. *PLoS One*, 13(1), e0189742. <https://doi.org/10.1371/journal.pone.0189742>
- Prior, P. (2006). A sociocultural theory of writing. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp. 54-66). The Guilford Press.
- Prior, P., & Bilbro, R. (2012). Academic enculturation: Developing literate practices and disciplinary identities. In M. Castelló & C. Donahue (Eds.), *University writing selves and texts in academic societies* (pp. 19-31). Brill. <https://doi.org/10.1163/9781780523873>
- Prior, P., & Thorne, S. L. (2014). Research paradigms: Product, process, and social activity. In E.-M. Jakobs & D. Perrin (Eds.), *Handbook of writing and text production* (pp. 31-54). Mouton de Gruyter.
- Russell, D. (1995). Activity theory and its implications for writing instruction. In J. Petraglia (Ed.), *Reconceiving writing, rethinking writing instruction* (pp. 51-77). Lawrence Erlbaum.
- Russell, D. R. (2009). Writing in multiple contexts: Vygotskian CHAT meets the phenomenology of genre. In C. Bazerman, R. Krut, K. Lunsford, S. McLeod, S. Null, P. Rogers, & A. Stansell (Eds.), *Traditions of writing research* (pp. 365-376). Routledge.

- Russell, D. R., & Cortes, V. (2012). Academic and scientific texts: The same or different communities? In M. Castelló & C. Donahue (Eds.), *University writing: Selves and texts in academic societies* (pp. 3-17). Brill.
- Sala-Bubaré, A., & Castelló, M. (2017). Exploring the relationship between doctoral students' experiences and research community positioning. *Studies in Continuing Education, 39*(1), 16-34. <https://doi.org/10.1080/0158037X.2016.1216832>
- Sala-Bubaré, A., & Castelló, M. (2018). Writing regulation processes in higher education: A review of two decades of empirical research. *Reading and Writing, 31*(4), 757-777. <https://doi.org/10.1007/s11145-017-9808-3>
- Sala-Bubaré, A., Castelló, M., & Rijlaarsdam, G. (2021). Doctoral students' writing regulation processes. *Journal of Writing Research, 13*(1), 1-30. <https://doi.org/10.17239/jowr-2021.13.01.01>
- Sala-Bubaré, A., Peltonen, J. A., Pyhältö, K., & Castelló, M. (2018). Doctoral candidates' research writing perceptions: A cross-national study. *International Journal of Doctoral Studies, 13*, 327-345. <https://doi.org/10.28945/4103>
- Suñé-Soler, N. (2019). *The dialogical self of doctoral candidates* [Unpublished doctoral dissertation]. Universitat Autònoma de Barcelona. Bellaterra
- Swales, J. M. (2004). *Research genres: Explorations and applications*. Cambridge University Press.
- Tardy, C. M. (2016). *Beyond convention: Genre innovation in academic writing*. University of Michigan Press.
- van den Bergh, H., & Rijlaarsdam, G. (2007). The dynamics of idea generation during writing: An online study. In G. Rijlaarsdam (Series Ed.), M. Torrance, L. van Waes, & D. Galbraith (Eds.), *Writing and cognition: Research and applications* (pp. 125-150). Elsevier.
- van den Bergh, H., Rijlaarsdam, G., & van Steendam, E. (2016). Writing process theory: A functional dynamic approach. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 57-71). The Guilford Press.
- Yakhontova, T. (2002). "Selling" or "telling"? The issue of cultural variation in research genres. In J. Flowerdew (Ed.), *Academic discourse* (pp. 216-232). Routledge.
- Yore, L. D. (2012). Science literacy for all: More than a slogan, logo, or rally flag! *Issues and Challenges in Science Education Research, 5*-23. https://doi.org/10.1007/978-94-007-3980-2_2