

The role of individual differences in L2 writing

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Abstract

Although the role of individual differences in second language (L2) speech has been extensively studied, the impact of individual differences on the process of second language writing and the written product has been a neglected area of research. In this paper, I review the most important individual difference factors that might explain variations in L2 writing processes and discuss the influence of these factors on how L2 learners exploit the language learning potential of writing tasks. First, the role of cognitive factors will be explored, and recent research investigating the relationship between writing performance and aptitude and working, and phonological short memory, will be presented. Next, the potential role of motivational factors, such as language learning goals, self-efficacy beliefs and self-regulatory capacities that influence the psycholinguistic mechanisms of L2 writing and the way students learn about the target language through writing, will be explored. The paper concludes by suggesting new directions for researching the interactions between individual learner variables, writing processes and second language acquisition.

Introduction

One of the basic questions in second language acquisition research is what accounts for students' differential success in language learning. The role of individual differences in the ultimate attainment of language competence has been excessively studied and there is abundant research on how affective and cognitive factors

influence L2 speaking (Dörnyei & Kormos, 2000; Kormos & Trebits, 2012) and reading skills (for a review see Grabe, 2009). Although the importance of individual differences, such as working memory capacity, motivation and self-efficacy beliefs, has been explored in many studies in the field of L1 writing research (for a review see Pajares, 2003), little is known about how learner differences affect L2 writing processes, the quality of the written text produced, the way L2 learning skills are acquired and the extent to which students can learn about the target language through writing. This lack of attention to individual factors both in SLA and L2 writing research is surprising, as writing is a complex process that requires the skilful coordination of a large number of cognitive and linguistic processes and resources (Hayes, 1996; Kellogg, 1996), and therefore, individuals with different cognitive abilities can be expected to execute and orchestrate these processes with varying degrees of efficiency and differ in how they learn to write in another language.

Writing is not only a complex task but also a time-consuming activity that requires concentration and determination. Producing 100 words orally might take about a minute in an L2, whereas writing a composition of 100 words might take 30 minutes. Furthermore, one often has no choice but to respond orally in communicative situations; composing a text, however, might frequently be an optional activity. All these characteristics of writing suggest that a learner's motivational profile and self-regulation play a very important role in determining whether students will engage in writing activities, what kind of writing tasks they will undertake, with what level of effort and attention they will approach the various phases of the writing process, and how they exploit the learning potential of writing tasks.

The aim of this paper in this special issue is threefold. My first and most important motivation in writing this paper has been to expand the already existing synergies between writing and second language acquisition (SLA) research and to show how an understanding of the role of individual differences in writing can offer insights to the field of second language writing. This article also intends to suggest new perspectives from which individual differences might be investigated in SLA, such as considering the role of learner variables in performing particular tasks and activities. Finally, with this paper, it is hoped to advance the discussions on the potential of L2 writing for language learning by outlining how cognitive and motivational factors can influence how and to what extent students exploit the learning opportunities offered by writing tasks.

I will first present a general model of the interplay of individual differences and second language writing that will guide the discussion in this paper. Next, I will give a brief theoretical overview of the constructs of aptitude, working memory and motivation. In subsequent sections of the paper I will discuss how cognitive factors might affect different writing processes and how learners acquire the target language through writing in L2. Then, a list of similar questions will be considered with regard to the role of motivation, attitude and self-regulation. The paper concludes with a summary of the role of individual differences in L2 writing processes and in learning through writing, and with an outline of a research agenda for future studies.

Writing and individual differences

Before considering the intersections between SLA and writing research in general, and the role of individual differences in the writing process in particular, it is

important to define the dimensions of writing that this paper is concerned with.

Manchón (2011) makes a distinction between three types of writing: learning to write in another language, using writing to learn the target language, and writing in order to learn a specific content area. Although individual differences play an important role in all three of these dimensions, and both L2 writing and SLA research should consider the investigation of learner variables in these three fields, it is not possible to discuss all of these areas within the limits of this article. Hence, in this paper, I focus on one aspect of the first dimension, namely the role of individual differences in second language writing processes. An additional focal point of the article is the role of individual differences in how students use writing to learn the L2. The arguments made in this paper will pertain to language learners instructed in foreign language classrooms as well as in different academic writing programmes. With regard to outcomes of the writing process, the scope of this paper is limited to individual written products and how individual differences affect collaborative writing will not be considered.

While acknowledging the importance of the sociocultural perspective in SLA and in L2 writing research and pedagogy (see e.g. Byrnes, 2011), this paper will essentially take a cognitive view of L2 writing. The reason for this decision is that research on individual differences primarily focuses on the writer and the writing process, and is less concerned with the products of writing as texts and the role of readers in writing (for an overview of the latter two areas of writing research see K. Hyland, 2011), which are the remit of sociocultural studies of writing.

Kellogg's (1996) model was selected to guide the discussion of the role of individual differences in this paper. This influential cognitive model allows us to consider how cognitive and motivational factors influence composing processes. In

this model writing consists of three important interactive and recursive processes: formulation, execution, and monitoring. Formulation involves planning the content of the writing and translating ideas into words. During planning, writers retrieve ideas from their long-term memory or from the input provided in the task rubrics and organize them into a coherent order. In the translation of ideas into linguistic form three processes can be distinguished: retrieval of lexical items, syntactic encoding of clauses and sentences, and expressing cohesive relationships in the text. In the execution stage, writers use motor movements to create a handwritten or typed text. Finally, monitoring ensures that the created text adequately expresses the writer's intention and, if mismatches are found, the text is revised. In L2 writing research Kellogg's (1996) model has also been adapted and used for the investigation of writing processes (e.g. Manchón, Roca de Larios, & Murphy, 2009; Andringa, de Glopper, & Hacquebord, 2011; Schoonen, Snellings, Stevenson, & van Gelderen, 2009).

As Figure 1 shows, individual differences might play a role in every stage of the writing process. Cognitive factors and motivational variables might have an influence on planning processes in terms of the complexity of ideas produced and the way they are organized. Individuals also differ in the efficiency with which they can translate ideas into linguistic form. Further variation among writers with regard to how they control execution and monitoring processes might also be observed. Finally, motivational and cognitive variables are also expected to affect how successfully students can orchestrate these writing processes. Individual difference factors can, as a result, have an effect on the quality of the final written product.

Insert Figure 1 around here

Individual difference variables also play an important role in how language learners exploit the potential of writing to acquire an L2. Manchón (2011) and Williams (this volume) argue convincingly that L2 writing is conducive to second language development, because it helps learners to notice and internalize new linguistic knowledge, provides output opportunities, and thereby promotes automatization, knowledge consolidation and hypothesis testing. Feedback on L2 writing also assists SLA processes (for a recent discussion see Bitchener & Ferris, 2012). As shown in Figure 2, language learners have been found to differ in these SLA processes, based on their cognitive and motivational characteristics (Dörnyei, 2005).

Insert Figure 2 around here

Another useful way of conceptualizing the role of writing in language learning is Manchón and Roca del Larios' (2011) mental model of the L2 writer. They demonstrate that L2 learners' goal-setting behaviour with regard to the writing task, the aspects of the writing task they attend to, and the depth of problem-solving behaviour they engage in influence the potential benefits of writing for L2 learning. As this paper demonstrates, both cognitive and motivational variables play an important role in goal-setting, determining the focus and amount of attention paid to the writing process and the feedback received, and the depth of problem-solving.

Individual difference variables

Individual difference variables were traditionally divided into cognitive, affective and personality-related factors (Gardner, 1985). Recent conceptualizations of individual differences in SLA research, however, consider these three dimensions of students' characteristics inter-related and dynamically interacting with each other (Dörnyei, 2010). The inter-related nature of cognitive, affective and personality-related factors is also apparent in conceptualizations of aptitude complexes in educational psychology. The most important cognitive components of aptitude in educational psychology are crystallized intelligence on the one hand, which is a construct consisting of verbal abilities, such as comprehension and fluency, and domain specific knowledge and fluid intelligence (Cattell, 1957) on the other; the latter is usually seen as comprising abstract reasoning skills and short-term memory related skills (Horn & Knoll, 1997). Further proposed aptitude constructs entail learning strategies, self-regulatory capacity, motivational orientation and certain personality traits such as openness to experience, extraversion and conscientiousness (Ackerman, 2003; Snow, 1992).

Although Dörnyei argues that the traditional modular view of individual differences is untenable, he acknowledges that it is useful to maintain the distinction between cognition, emotion and motivation “as a broad, phenomenologically validated framework” (p. 262). Therefore, this paper maintains the distinction between cognitive and motivational factors and discusses their role in L2 writing processes and in promoting L2 learning through writing.

The construct of language learning aptitude

The role of foreign language aptitude in second language acquisition has been extensively researched; for a long time researchers were interested in the link between

foreign language aptitude and global language learning outcomes (for reviews see: Ehrman & Oxford, 1995; Grigorenko, Sternberg & Ehrman, 2000). In recent conceptualizations of foreign language aptitude, however, it is argued that different cognitive abilities might be useful in different phases and processes of language learning (Skehan, 2002) and that learners with different cognitive ability profiles might benefit from different types of learning tasks and instructional conditions (Robinson, 2005).

Carroll (1981) identified four components of language aptitude: i) phonetic coding ability, that is, the “ability to identify distinct sounds, to form associations between those sounds and symbols representing them, and to retain these associations”; ii) grammatical sensitivity, that is, the ability “to recognize the grammatical functions of words (or other linguistic entities) in sentence structures”; iii) rote learning ability, defined as “the ability to learn associations between sounds and meanings rapidly and efficiently, and to retain these associations”; and iv) deductive learning ability, which is “the ability to infer or induce the rules governing a set of language materials, given sample language materials that permit such inferences” (p.105). Instruments developed to measure language aptitude, such as the Modern Language Aptitude Test (MLAT) (Carroll & Sapon, 1959) and Pimsleur’s Language Aptitude Battery (PLAB) (Pimsleur, 1966), test language learners on the above mentioned four components (for a review see Abrahamsson & Hyltenstam (2008) or Robinson (2005)).

The construct of working memory

The most widely accepted conceptualization of short-term memory today is the working memory model developed by Baddeley and Hitch (1974; Baddeley, 1986). While previous theories of memory systems focused on the storage function of memory, the new model, as its name suggests, adopts a more dynamic approach. This conceptualization of working memory combines storage with the processing and manipulation of information; thus, in this view, working memory plays a far greater role in cognitive activities such as comprehension, reasoning and learning than was previously assumed (Baddeley, 2003).

The working memory model comprises a multi-component memory system consisting of the central executive, which coordinates two modality-specific subsystems, the phonological loop and the visuo-spatial sketchpad. Later, a fourth component was added to the model – the episodic buffer; this uses multi-dimensional coding, integrates information to form episodes, and is in communication with long-term memory (Baddeley, 2000). The visuo-spatial sketchpad works with visual and spatial information, while the phonological loop is specialized for the manipulation and retention of speech. The central executive, “the most important but least understood component of working memory” (Baddeley, 2003, p.835), has several functions, including attentional control, directing the flow of information through the system, and planning (Gathercole, 1999).

The most widely researched component of working memory is the phonological loop. This subsystem consists of a phonological store, which holds information for a few seconds, and an articulatory rehearsal process, which refreshes decaying information, amongst other functions. The rehearsal process is analogous to subvocal speech and takes place in real time, resulting in a limited span of immediate memory (after a certain number of items, the first one will fade before it can be rehearsed).

Phonological loop capacity is often measured by tasks involving immediate serial recall of numbers (digit span) or words (Baddeley, 2003).

As working memory co-ordinates attentional resources and is responsible for the temporary storage of information and intermediary products of processing, its capacity is an important predictor of the success of a large number of complex cognitive operations, including note-taking, writing and reasoning (Engle et al., 1999). In a recent paper, Gathercole and Alloway (2008) argue that working memory “acts as a bottleneck for learning” (p.12), because all information stored in long-term memory needs to be processed by working memory first.

Constructs in motivation research

Language learning motivation research has a long history in the field of second language acquisition, starting with Gardner and Lambert’s (1959) pioneering work in the bilingual context of Canada. There is also a long-standing tradition of motivation research in educational psychology that is particularly relevant for the study of motivation in writing. Motivation explains why people select a particular activity, how long they are willing to persist at it, and what effort they invest in it (Dörnyei, 2001). These three components of motivation correspond to goals and the initiation and maintenance of learning effort.

In the field of SLA a number of different language learning goals have been proposed. Gardner (Gardner, 1985, 2006; Gardner & Lambert, 1959; Masgoret & Gardner, 2003) differentiated instrumental goals, which are associated with the utilitarian values of speaking another language, from integrative goals, which express students’ wish to learn a language in order to become integrated into the target language culture. In the twenty-first century, English, however, has become an

international language serving as a lingua franca in a globalized world (e.g. Jenkins, 2007; Seidlhofer, 2005; Widdowson, 1993). Therefore, the English language has become separated from its native speakers and their cultures (Skutnabb-Kangas, 2000). Consequently, a new language learning goal has emerged: international posture, which includes “interest in foreign or international affairs, willingness to go overseas to study or work, readiness to interact with intercultural partners ... and a non-ethnocentric attitude toward different cultures” (Yashima, 2002, *ibid*, p.57). Further language learning goals may include friendship, travel and knowledge orientations (Clément & Kruidenier, 1983). As I will argue below, language learning goals are closely linked to the importance students attribute to L2 writing, to learners’ writing needs, interest in writing and attitudes to writing, and to the perceived value of writing tasks.

Language learning goals are only effective motivators if they become internalized to some extent (Deci, Koestner & Ryan, 1999), an assumption which is expressed in Deci and Ryan’s (1985) important distinction between intrinsic and extrinsic motivation. Intrinsically motivated students engage in the learning process because they find it interesting and enjoyable, whereas extrinsically motivated learners carry out the learning activity in order to gain a reward or avoid punishment. In the field of language learning motivation, Noels, Clément and Pelletier (2001) also identified intrinsic language learning goals, which are related to the feelings of enjoyment and enhancement experienced during the process of language learning. Interest as an important source of intrinsic motivation has been regarded an important concept in L1 writing research. Interest is usually defined as “a relatively enduring predisposition to engage with particular content, such as objects, events and ideas” (Hidi & Boscolo, 2006). As interest is content and object specific, one can distinguish general interest

in writing from interest in writing about particular content and engaging in specific writing activities (Hidi & Anderson, 1992).

Although highly motivating goals and activities evoking interest are conscious and help learners focus their attention on the learning task (Zimmerman, 2008), goals and interest also exert their motivational influence through emotional arousal (Ford, 1992). In educational psychology, emotional arousal is conceptualized either as the intrinsic enjoyment derived from learning (see e.g. Ryan & Deci, 2000) or as an attitude to the object of learning (Ajzen, 2005). In the field of L2 motivation, attitudes have been identified as emotional precursors of the initiation of learning behaviour. Gardner (1985, 2006) identified three important attitudes in his socio-educational model: attitudes to the target language community, attitudes to language learning in general, and attitudes toward the learning situation in particular.

Additional key elements of motivation which regulate goal setting and affect the translation of goals into action are personal agency beliefs, which in educational psychology are embodied in two constructs: self-efficacy beliefs (Bandura, 1986) and self-concept (Shavelson, Hubner & Stanton, 1976). Self-efficacy beliefs express one's views as to whether one is capable of performing a given learning task and are consequently future-oriented, whereas self-concept beliefs are based on past experiences and are broader evaluations of one's general self-worth or esteem (Bong & Skaalvik, 2003). Self-efficacy beliefs have been found to be vital in energizing students to engage in learning behaviour in a wide range of academic contexts (for a review see Bandura, 1997), including writing (for a review see Pajares, 2003).

No model of motivation is complete without considering the final outcome of the motivational process, which is called volition in educational psychology and motivated learning behaviour in the field of SLA. Volition is defined by Corno (1993)

as a “dynamic system of psychological control processes that protect concentration and directed effort in the face of personal and/or environmental distractions, and so aid learning and performance” (Corno, 1993, p.16). In the field of language learning motivation, the parallel construct for volition is motivated behaviour, which is usually seen to consist of effort and persistence (e.g. Csizér & Dörnyei, 2005; Dörnyei, 2001, 2005; Gardner, 1985, 2006).

The final motivational construct relevant for L2 writing is self-regulation, which is a process in which people organize and manage their learning, and this includes learners’ control over their thoughts (e.g. their competency beliefs), emotions (e.g. anxiety experienced while learning) and behaviours (e.g. how they handle a learning task), and the learning environment (Pintrich & De Groot, 1990; Zimmerman, 1998). Additionally, the motivation to learn can also be consciously regulated and monitored (for a recent discussion of the self-regulation of motivation in educational psychology see: Sansone, 2008; Winne & Hadwin, 2008).

Cognitive individual differences and the processes of L2 writing

Aptitude and processes of L2 writing

Unfortunately in the L2 field there are very few studies that have investigated the role of aptitude components in L2 writing processes. Most of the research has been concerned with establishing links between aptitude components and the linguistic quality and ratings of students’ texts. Kormos and Sáfár’s (2008) study demonstrated certain facilitative effects of language aptitude on L2 writing, as they found a strong link between the component of the language aptitude test that measures metalinguistic

awareness and teacher ratings of L2 writing tasks that formed part of a proficiency test.

Kormos and Trebits (2012) investigated the relationship between components of aptitude and the fluency, accuracy, syntactic complexity and lexical variety of performance in two types of written narrative tasks, which differed with regard to whether the students were required to devise the plot of the story. Using a correlational design, they found that learners with high grammatical sensitivity produced longer clauses in a written cartoon description task than students with low grammatical sensitivity scores. This task relieved students of the cognitive load of having to conceptualize the story but made high demands on the participants in the linguistic encoding phase, because they had to express the content given with their existing resources. They hypothesized that students with higher grammatical sensitivity might devote more attention to clausal complexity than learners with lower levels of cognitive ability. However, in the other written narrative task, which required learners to generate their own content, no relationship between aptitude and any of the performance measures was found. They explained this finding by arguing that due to the availability of extensive on-line planning time and the cyclical nature of writing, sharing attentional resources between conceptualization and linguistic encoding in the writing phase might be less demanding than in the other task, and therefore this task condition might not create an advantage for learners with high levels of cognitive ability.

The lack of studies in this field only allows us to make some hypothetical assumptions about the role of aptitude in L2 writing processes. It can be speculated that aptitude as a cognitive ability specific to language might influence L2 writing processes that involve linguistic processing and draw on linguistic resources.

Therefore, the stages of writing where high aptitude learners might be advantaged are most likely to be the translation and reviewing phases, and not the stages where content is generated and organizational decisions are made. As for the translation of ideas into linguistic units, L2 learners with high levels of grammatical sensitivity and good deductive abilities can be assumed to handle the grammatical encoding of the conceptual plan more efficiently than writers with lower levels of aptitude. Consequently, high aptitude learners might devote more attention to the syntactic complexity of their text and their writing might display higher levels of linguistic accuracy. Phonological sensitivity might assist learners convert phonemes into graphemes, and thus contribute to more accurate spelling performance as shown in studies in the L1 field (Grigorenko, 2001). Finally, students with good rote learning ability might have a wider repertoire of L2 vocabulary, which can lead to higher lexical variety and complexity in their written production. These aptitude components might also enhance the efficiency of monitoring the linguistic accuracy of written output. Learners with high levels of metalinguistic awareness might notice their errors more easily and might consciously devote more attention to monitoring linguistic accuracy.

Working memory and L2 writing processes

The role of working memory has been extensively investigated in the field of L1 writing research. A number of empirical studies have provided evidence for the link between working memory capacity and the quality of L1 writing, both in the case of children (McCutchen, Covill, Hoyne & Mildes, 1994; Swanson & Berninger, 1996) and of adults (Hoskyn & Swanson, 2003). Kellogg (1996) and Hayes (1996) proposed

very similar models for the writing process in which working memory plays a central role. The most important difference between these two models is that Hayes (1996) argues that working memory resources are relevant in all stages of writing, whereas Kellogg claims that execution processes (e.g. typing and hand-writing) are not dependent on working memory. Recent research by Hayes and Chenoweth (2006) suggests, however, that even L1 transcribing processes might be prone to working memory limitations. If we consider writing processes from the perspective of theories of automaticity (e.g. Schneider & Shiffrin, 1977), it is apparent that any process that has not been sufficiently automatized and thus requires some level of consciousness will draw on working memory resources (Baddeley, 1986). Therefore, it can be argued that unless typing and handwriting processes are fully automatic, similar to other writing processes, they will depend on the capacity of working memory. Consequently, individuals with different working memory spans can be expected to vary in the speed and efficiency with which they execute various writing processes. With regard to the other components of working memory, one of these, phonological short-term memory ability, which predicts the number of verbal units one can hold in memory during a cognitive operation, is an important determinant of writing success, because longer phonological short-term memory span can assist in the formulation of longer and more complex phrasal and sentence structures (e.g. Williams & Lovatt, 2003), in presenting ideas in a logical and cohesive manner, and in editing (Kellogg, 1999). The visuo-spatial sketchpad assists in keeping visual information in short-term memory while composing, which facilitates planning and editing processes (Kellogg, 1999).

L2 production is often more effortful and requires more attention due to a lack of automatized knowledge (deKeyser, 2007), and hence is more reliant on working

memory resources. For example, whereas L1 writers might automatically encode syntactic and morphological structures, retrieve syntactic information related to words and associate orthographic form with lexical entries, for less proficient L2 writers all these encoding procedures require conscious attention and the suppression of competing L1 clues. The reading processes involved in the editing, revision and proof-reading stages of writing also tend to be less automatic in L2 than in L1. Moreover, transcribing processes, which are the most highly automatized mechanisms of L1 writing, might also demand attention in L2 if the orthographic and spelling system of a student's L1 is largely different from that of the L2. As a consequence, it can be assumed that each stage of L2 writing is influenced by the individual writer's working memory capacity.

Additionally, it is important to consider that even though writing is generally not constrained by time and does not necessitate parallel processing similar to speech, it is still important that writers orchestrate their writing processes, and certain mechanisms of writing often run in parallel. Therefore, working memory is also involved in co-ordinating parallel writing processes, such as planning while typing. The central executive function of working memory, which is responsible for the allocation of attention, might determine how much attention L2 learners can pay to various stages of the composing process and how they co-ordinate their attention to accuracy, content and organization. To illustrate, during editing, writers need to read their output and attend to specific aspects of writing, such as coherence, cohesion, accuracy and appropriateness, at the same time.

There is a scarcity of research on the role of working memory and phonological short-term memory capacity in L2 writing. Kormos and Sáfár (2008) found that scores awarded in the writing component of a proficiency test showed

moderate correlations with phonological short-term memory span but not with the backward digit span test, which was used to assess complex working memory capacity. Although this study provides support for the role of phonological short-term memory in L2 writing, it does not seem to provide evidence for the importance of complex working memory capacity in the L2 writing process. Somewhat similar findings were obtained by Adams and Guillot (2008), whose study shows links between spelling performance among bilingual writers and phonological short-term memory capacity, but no significant relationship between text composition and working memory capacity.

Research conducted with learners with specific learning difficulties also has relevance for the field of L2 writing. Students with learning difficulties often have shorter phonological and working memory spans (Gathercole et al., 2006), which has a significant impact on their writing processes (see e.g. Dehn, 2008). Ndlovu and Geva (2008) compared the writing skills of L1 and L2 speaking children in Canada, who were assessed as being reading disabled or non-reading disabled. They found that regardless of language background, the students identified as being reading disabled had difficulty with spelling, punctuation and the monitoring of syntax. The results also indicated that these students struggled “with higher level aspects of writing such as sentence structure constraints and the generation and coordination of vocabulary, as well as with aspects of the overall structure of their compositions including the ability to compose stories with interesting plots and story lines” (p.55).

Cognitive individual differences and L2 learning through writing

The role of aptitude in learning through writing

Learners with different aptitude profiles might also exploit the learning potential of writing tasks in different ways. Writing tasks produce ample opportunities for learners to acquire new knowledge about the L2 and to consolidate their knowledge (Manchón, 2011; Manchón & Roca de Larios, 2011; Qi & Lapkin, 2001; Williams, this volume). Unfortunately to date there are no studies that have examined how learners with differing aptitude profiles exploit the learning opportunities provided by writing tasks. We might hypothesize that learners with high metalinguistic awareness and good deductive skills are better at noticing gaps in their grammatical knowledge while writing, and might engage in more active and successful problem-solving behaviours when faced with these gaps.

Learners with different aptitude profiles might benefit to varying degrees from different kinds of feedback on their writing. To date, only Sheen's (2007) study has investigated the interaction between written corrective feedback and language learning aptitude. In her study she analyzed how language analytic ability correlates with uptake from direct correction with or without metalinguistic feedback. Her findings show that students with high language analytic ability benefit more from corrections under both feedback conditions than students with lower levels of metalinguistic abilities. In addition, the results indicate that high aptitude learners are even more advantaged when metalinguistic feedback is also provided. Sheen's (2007)

findings indicate that a high level of language aptitude assists learners in acquiring and consolidating their L2 knowledge through feedback. Additionally, the results of her study suggest that the explicit explanation of errors and regularities of language when giving feedback benefits even high aptitude learners, who might otherwise be helped by their own ability to discern those.

The role of working memory in learning through writing

Students with different working memory capacities might also vary with regard to how they exploit the learning opportunities provided by writing tasks. As shown above, the L2 writing process is in itself taxing for working memory; therefore, additional attentional resources are required for learners to notice gaps and instability in their knowledge, to test new hypotheses about language, and to engage in successful problem-solving behaviours to overcome organizational and linguistic problems experienced while composing. As noticing is “detection with awareness and rehearsal in short-term memory” (Robinson, 1995, p.318), it is by definition constrained by working memory limitations. To date no empirical studies have been conducted in the field of L2 writing to investigate how noticing and the creation of new linguistic knowledge is influenced by the functioning of working memory, but findings in L2 speech production provide support for students’ uptake from performing oral tasks being related to working memory (e.g. Mackey et al., 2002; Mota Fortkamp & Bergleithner, 2007; Sagarra, 2007).

Students’ noticing and learning processes might be assisted by giving different types of feedback on their writing. Just as in the case of aptitude, working memory might also play a different role in affecting how students learn from various types of

feedback. Currently, no studies have been conducted on how working memory capacity mediates learning through feedback in the field of L2 writing. In speech production, recent research has shown that students with longer working memory spans seem to benefit more from form-focused feedback than students with shorter working memory spans (Mackey & Sachs, 2012). Although learning opportunities through feedback in writing are less constrained by time pressure due to the off-line nature of writing (see Williams this volume), it can be hypothesized that, similar to speaking contexts, L2 writers will also show variation in how they respond to feedback, depending on their working memory capacity.

Motivation and second language writing processes

The antecedents of motivation to write in L2

Whereas in the previous sections, I considered the effect of cognitive factors on the processes of writing and learning through writing in direct relation to each other, in order to understand the role of motivation in these processes, we need to broaden our perspective. In contrast with cognitive factors, which are fairly stable and resilient to social and instructional influences, motivation to carry out a particular writing task is embedded both in motivation to write in the L2 and motivation to learn the L2, both of which constructs are influenced by the complex interplay of a large number of factors. First of all, L2 writing needs to be considered in the social, cultural and educational context in which it takes place. Writing activities can have different values in various social, cultural and educational settings (see e.g. Durgunoglu & Verhoeven, 1998) and learners' attitudes to writing can be influenced both by the role

writing plays in the learners' L1 linguistic, cultural and social environment and by the importance and value of writing activities in the target language and culture. Furthermore, the educational and language learning value of L2 writing, together with instructional practices, also exerts great influence on writing goals, attitudes, interest and students' self-related beliefs (see Manchón, 2009). Nevertheless, most studies on motivation in L1 writing have been primarily concerned with motivation at the level of the individual and the instructional context (see e.g. Hidi & Boscolo, 2006) and have ignored the important role played by the social and cultural setting. From the perspective of the motivation to write, social-contextual factors are particularly relevant in forming the goals students wish to achieve in or through their L2 writing. The socio-cultural context is also instrumental in shaping attitudes to writing and in determining the value placed on writing tasks.

As shown above, students' goals in terms of writing, the value of writing activities and writing attitudes are largely determined by the social, cultural and educational context. At the level of individual learners, the goals that learners plan to achieve in language learning and through L2 writing play an important role in the establishment of general attitudes to L2 writing activities. As argued by Manchón (2011) goals and attitudes may jointly influence the values students attribute to L2 writing tasks. Goals and attitudes to writing are also instrumental in two other important motivational concepts: writing interest and self-efficacy beliefs related to writing, both of which might also have direct social and contextual antecedents (Manchón, 2009). Research on the development of interest has shown that, at the outset, interest is usually environmentally triggered (Hidi & Renninger, 2006), which points to the important role of the quality of L2 writing instruction and the role of L2 writing in the curriculum, as well as the general social and cultural environment

(Byrnes, 2011). Cumulative experience of engaging in activities such as L2 writing tasks that learners find motivating leads to the development of individual interest. Studies in the field of L1 writing have shown that interest in the field of writing can relate to the activity of writing in general, to a given type of writing task or genre, and to writing about a particular topic (Hidi & Boscolo, 2006). Consequently, L2 learners' motivation to write might show large variation, depending on the writing task. Students' self-efficacy beliefs are also influenced by the social and educational context, through the kind of feedback learners receive with regard to their performance and by means of observing others engaging in similar behaviour (Bandura, 1986; Manchón, 2009). The formation of favourable self-perceptions with regard to L2 writing is thus largely affected by feedback. Self-efficacy beliefs also interact with the development of interest, as students might become interested in an activity because they have a positive appreciation of their ability to succeed in the task and, inversely, interest in a task might raise students' self-evaluation of their competence in performing the given task.

Motivational factors and writing processes

The most important determinants of learning effort and persistence in a given activity are positive self-efficacy beliefs and increased interest (Bandura, 1986). As L2 writing is laborious, time-consuming and in many contexts often a voluntary activity, interest and self-efficacy beliefs might determine whether L2 learners engage in writing at all and, when given the choice, what kind of writing tasks they decide to perform. Importantly, interest and self-efficacy beliefs also affect the processes of L2 writing. Unfortunately, to date, no studies have been conducted to investigate the role

of motivational and self-regulatory factors in L2 writing processes; therefore, in this section, I will discuss how the insights offered in the field of L1 writing research and educational psychology can provide a better understanding of the interaction between motivational variables and writing processes.

The model of self-regulated learning behaviour by Zimmerman (2000), is particularly useful in elucidating how motivational variables might influence the processes involved in L2 writing. Zimmerman and Kitsantas (2002) applied their model of self-regulation to the study of writing and show that the forethought phase of self-regulation can be matched with the planning phase in writing. In planning the content and organization of a written text, learners need to establish the goals they want to achieve with the given text; they need to employ planning strategies, analyze the task requirements and, if necessary, collect background information for the writing task (see also Manchón & Roca de Larios, 2011). The attention, effort and time devoted to the different phases of composing are affected by students' interest, self-efficacy beliefs and the value attributed to the task.

The next phase of self-regulation in Zimmerman's (2000) model is the Performance Phase, which is the stage when students start committing their ideas to paper or the computer monitor. This stage of self-regulation is particularly relevant, not only for the translation phase of writing but also for planning, as translation and planning are often cyclical and parallel processes in writing. In L2 writing tasks it is vital that students apply successful self-regulatory strategies, such as controlling attention, potential feelings of anxiety, boredom and the environment in which writing takes place, and apply appropriate strategies to overcome problems experienced during writing. In the section on the role of working memory in L2 writing, I highlighted the important role of attention in L2 writing processes in terms of

affecting the final quality of the output and exploiting the potential of writing for L2 development. Attention is not only a cognitive factor, it is also regulated through motivational processes, such as interest (Anderson, 2005) and, consequently, self-regulatory strategies can have considerable influence on the amount of attention paid to various stages of the writing process and how learners' allocate their attention between various stages of writing.

The final self-regulatory phase called self-reflection can be paired with the monitoring stage of writing, as it involves the self-evaluation of one's writing processes and outcomes (Zimmerman, 2000). Monitoring the adequacy of the content, organization and form of one's written product and carrying out necessary revisions are not only cognitive but often affective processes whereby writers make different self-evaluative judgements about the text they produce. Written products might be evaluated positively by learners which can provide impetus for engaging in further revisions and future writing activities, whereas negative self-evaluations might be detrimental for task engagement (Zimmerman & Kitsantas, 2002).

Motivational factors and learning the L2 through writing

Motivational factors also play an important role in determining to what extent learners make use of the learning opportunities offered by writing tasks. Noticing gaps in one's knowledge and engaging in problem-solving behaviours that can potentially promote acquisition processes require increased motivational effort, intrinsic interest in language learning and positive self-efficacy beliefs. If students lack strong goal orientation and interest and do not believe in their ability to successfully acquire the L2, then they are only likely to complete the writing task

itself and may not engage in further cognitive processing or collaborative effort to learn from the task. Similarly, motivational intensity also affects learners' attention paid to feedback and their further involvement in creating text revisions.

Unfortunately, very few studies in the field of SLA have considered the extent to which motivational factors influence how students exploit the learning potential of oral or written communication tasks. F. Hyland (2011) conducted a qualitative analysis of learners' attitudes and motivation to learn from the feedback provided on writing tasks in a university context. Her study demonstrates that students' willingness to engage with form-focused feedback is largely influenced by their learning goals, and consequently students also make varying degrees of progress in developing their accuracy through writing.

Summary and direction for future research

In this paper I have discussed the role of three important individual difference factors, aptitude, working memory capacity and motivation, in the different stages of writing and the processes of learning through writing. As argued in this paper, motivational variables and self-regulatory capacity interact with cognitive factors, and they separately and jointly affect writing processes, which include the planning, formulation, transcribing and editing phases of writing. These individual differences also exert influence on how students process feedback, the extent to which they notice gaps in their knowledge, the aspects of language they pay attention to and, consequently, how they exploit the learning opportunities provided by writing.

As this paper reveals, there is a scarcity of research on the role of individual differences in L2 writing and in the study of how students learn through writing.

Many of the existing studies, especially with regard to cognitive factors, are quantitative in nature and mainly use correlational designs, which makes it difficult to gain deeper insight into possible causal relationships between writing success, learning processes and individual variables. On the one hand, in the quantitative research paradigm, there will be more need for studies that experimentally manipulate certain variables, such as task motivation, and that investigate how motivation and interest in particular writing tasks affect the quality of the written output and how students acquire new linguistics knowledge through writing. Information on the role of task motivation could be particularly useful for designing motivating and engaging writing tasks, both in writing instruction and in assessment. On the other hand, as Bitchener and Ferris (2012) also suggest both experimental and exploratory research would be useful to gain a better understanding of how learners with different cognitive and motivational profiles benefit from various types of feedback. This can inform writing pedagogy as teachers could be guided how to vary their feedback techniques based on students' individual needs.

It is also important to investigate the role of individual difference factors using qualitative methods such as think-aloud and retrospective interviews, either in combination with quantitative methods or as a single method. Rich information and interesting insights could be gained by comparing the composition processes of learners with different cognitive and motivational profiles and by analyzing how they exploit the learning opportunities provided by writing activities and how they process the feedback they receive. Modern technology, such as tracking composing processes electronically on computers (e.g. Wengelin et al., 2009), could offer additional means to triangulate data gained from think-aloud protocols and retrospective interviews. Furthermore, qualitative research methods can help us to understand the complexity

of the interaction between individual difference factors and writing and learning processes.

It needs to be noted that, in this paper, I have mainly focused on writing as a solitary activity whereas, in many contexts and modern-day classrooms, writing is often carried out collaboratively. Both cognitive and motivational factors might potentially influence how L2 learners work on writing tasks in co-operation with each other. Therefore, future studies could also be directed at unravelling the role of individual difference in collaborative writing processes and in different types of collaborative writing activities.

Finally, it should be mentioned that the role of individual differences can vary in different types of writing tasks. For example, Robinson (2001) argues that individual learner variables might have a stronger affect on task performance in cognitively complex tasks, in which learners have to divide their attentional resources between content planning and linguistic encoding, than in cognitively simple tasks. Learners with different individual profiles might also vary in the extent to which they exploit the potential of cognitively complex tasks that demand syntactically and lexically more varied and complex language use (Robinson, 2001). Another important aspect of task and individual difference interactions is that students with different learning profiles vary in how they interact with learning tasks and benefit from different types of instruction. In the field of educational psychology, Snow (1992) argues that unstructured learning situations are more favourable for “able, independent, mastery oriented and flexible” (p. 28) individuals, whereas highly structured learning contexts are more suitable for “less able, less independent, less mastery-oriented learners” (ibid.). This so-called aptitude treatment interaction, which is well documented in academic learning (for a review see Ackermann, 2003), has

clear implications both for writing pedagogy and for highlighting the importance of research into the role of individual difference variables in L2 writing and SLA.

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