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THEORETICAL PERSPECTIVES ON L2 WRITING AND LANGUAGE LEARNING IN COLLABORATIVE WRITING AND THE COLLABORATIVE PROCESSING OF WRITTEN CORRECTIVE FEEDBACK

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Introduction

For many years, scholarship on second language acquisition (SLA) focused on spoken language, viewing oral interactions as the site for second language (L2) learning (Harklau, 2002). It is relatively more recently that writing has come to be recognized as an equally suitable and in some ways a superior site for L2 learning. Writing is now perceived as offering learners opportunities not only to develop writing abilities and content knowledge, but also opportunities to learn the target language (Manchón, 2011; Manchón & Vasylets, 2019; Williams, 2012). Manchón (2011) refers to these two types of opportunities as “learning-to-write” and “writing-to-learn” respectively.

An activity closely associated with writing in instructional contexts is the provision of feedback on writing, and in particular corrective feedback on errors in language use. Corrective feedback on writing can be delivered orally (e.g., in one-on-one conferences) and/or in written form. However, it is written corrective feedback (WCF) that has received much research attention in the field of L2 writing in the past 25 years or so. This growing body of research (see review in Bitchener, 2019; Bitchener & Storch, 2016) seems to support the stance adopted by recognized experts on WCF (e.g., Bitchener, 2012, 2017; Ferris & Kurzer, 2019) that WCF feedback has the potential to contribute to language learning and in particular to the development of grammatical accuracy. However, there is also an acknowledgment among researchers that whether and how learners attend to the feedback is, as Han and Hyland (2015, p. 31) put it, “a critical link that connects the provision of WCF with learning outcomes.”

Writing and the processing of corrective feedback activities are generally completed by the learner individually. However, such activities can also be completed collaboratively, in pairs or small
groups. The main aim of this chapter is to critically review the theoretical basis for implementing writing and feedback processing in the collaborative condition.

The chapter begins with a discussion of what collaborative writing means and how this activity has been extended to include online collaboration and collaborative processing of expert and peer feedback. A discussion of the theoretical rationale for implementing these collaborative activities follows. Although there are a number of theories that attempt to explain L2 learning processes (see Gass & Mackey, 2012; Ortega, 2009), the two that have informed much research in SLA and that have been identified as being of most relevance to discussions of writing and WCF are cognitive and sociocultural perspectives (see Bitchener, 2019; Polio, 2012; Manchón, 2011; Manchón & Vasylets, 2019; Williams, 2012). However, these discussions focus predominantly on cognitive perspectives and on individual writing and feedback processing (as discussed in Chapter 2, this volume). In this chapter, it is sociocultural perspectives and collaborative writing and feedback processing that receive prominence. Thus, although I begin with discussing key cognitive theories, or rather hypotheses, this discussion is brief. I note the relevance of these hypotheses to individual writing and WCF and then discuss their relevance to collaborative writing and WCF processing. The discussion then moves to sociocultural perspectives, and specifically Vygotsky’s (1978, 1986) sociocultural theory (SCT), and the key tenets in the theory of relevance to collaborative writing and feedback processing activities. This discussion also identifies areas requiring further empirical investigations and constructs in SCT that need further explication.

**Collaborative Writing and Feedback Processing**

The term collaborative writing describes a writing activity where two or more authors create one joint text. In mainstream composition classes, the main rationale for implementing joint writing tasks is to prepare students for the kind of multi-authored writing projects in the workplace (Ede & Lunsford, 1990) as well as to expose them to different ways of expressing ideas and different writing strategies (Louth, McAllister, & McAllister, 1993). In L2 writing classes, particularly university level L2 writing for academic or professional purposes, a similar case can be mounted. In other words, joint L2 writing tasks can be viewed as “learning-to-write” activities. However, an additional rationale for implementing collaborative writing with L2 learners in instructed second language acquisition (SLA) contexts is that of “writing-to-learn.” The argument I have put forward (see Storch, 2013, 2016, 2017a, b) is that collaborative writing tasks, if appropriately designed, implemented and monitored to ensure that learners share a sense of collective ownership and responsibility for the creation of their joint text, may provide L2 learners with more language learning opportunities than individual writing.

The use of collaborative writing has become more widespread in L2 writing classes, as evidenced by the growing number of studies reporting on the implementation of such tasks in a range of L2 learning contexts, with different student populations and languages. Thus, in addition to many studies conducted with adult learners in university ESL or EFL classes (see review in Storch, 2013, 2016, 2017a, 2019a) there are now also studies reporting on implementing collaborative writing activities with primary school EFL learners of relatively low L2 proficiency (e.g., Calzada & García-Mayo, 2020; García-Mayo & Imaz Aguirre, 2019) and with learners of languages other than English (e.g., Masuda & Iwasaki, 2018), including heritage language learners (e.g., Fernández-Dobao, 2020). Moreover, collaborative writing has extended beyond face-to-face collaboration, with a growing number of studies reporting on computer-mediated collaborative writing tasks in different parts of the world (e.g., Alghasab, Hardman, & Handley, 2019; Auřa & Storch, 2021; Liu, Liu, & Liu, 2018). This body of research is likely to continue to grow in line with rapid advances in technology and the ease of using freely available online collaborative writing platforms such as wikis or Google Docs. These platforms are said to enhance collaboration because they enable the co-authors to make direct changes to the evolving joint text (Goodwin-Jones, 2003).
Collaborative writing can be augmented with collaborative processing of feedback that the co-authors receive on their joint text. This feedback can be in the form of direct or indirect WCF (e.g., Storch & Wigglesworth, 2010) or as a reformulated version of the students’ text (e.g., Brooks & Swain, 2009; Tocalli-Beller & Swain, 2005). Although reformulations tend to be provided by an expert (teacher, researcher), WCF can be provided by experts as well as by fellow L2 peers (e.g., Alshuraidah & Storch, 2019).

Theoretical Support for Collaborative Writing and Processing of Feedback

As mentioned earlier, cognitive and sociocultural perspectives are most commonly drawn on to suggest that the act of writing (e.g., Manchón, 2011; Williams, 2012) and of processing feedback (e.g., Bitchener & Storch, 2016; Polio, 2012) can result in L2 learning. Cognitive perspectives include reference to key cognitive processes (e.g., noticing, hypothesis formulation and testing), mental facilities (e.g., working memory), and models showing the sequence of processes that account for language learning (e.g., Gass, 1988; Leow, 2015). What tends to be highlighted in these perspectives is the role and type of attention learners pay to language input, drawing mostly on Schmidt’s (1990, 1993, 1995) Noticing Hypothesis. Another influential hypothesis is Swain’s (1985, 1995, 1998) Output Hypothesis and its claims about language production (output) being a more effective trigger of noticing than exposure to language (input). In what follows, I discuss these two hypotheses briefly (for a fuller discussion of cognitive perspectives see Chapter 2 by Leow & Suh) and then suggest that the collaborative condition of writing and feedback processing may create more conducive conditions for noticing than the individual condition. The discussion of sociocultural perspectives follows. I consider the main tenets of sociocultural theory and the two key constructs of most relevance to collaborative writing and feedback processing. These two constructs are the kind of assistance provided to novices (learners) during interaction, captured by the constructs of Zone of Proximal Development (ZPD, see below for further elaboration) and scaffolding, and the role of language as a mediating tool in language learning, captured by the term languaging (Swain, 2000, 2006, 2010). I explain how each of these constructs underpins collaborative writing and feedback processing.

Cognitive Theoretical Perspectives

A number of models have been put forward to explain the sequence of cognitive processes leading to L2 acquisition (e.g., see Gass, 1988; Leow, 2015; Leow & Suh, this volume), and these have been then used to explain how writing and in particular WCF (see Bitchener, 2019) can lead to L2 learning. The initial stages in these models involve input processing, which entails noticing.

The Noticing Hypothesis

The importance of noticing for language learning appeared first in the work of Schmidt and Frota (1986). In their “noticing the gap” principle, the authors state that “a second language learner will begin to acquire the target-like form if and only if it is present in comprehended input and ‘noticed’ in the normal sense of the word, that is consciously” (p. 311). In other words, the learner needs to notice not only the target language form but also the gap or difference between the form in the target language and in their own interlanguage. In his subsequent work, Schmidt (1990, 1993, 1995) articulated the Noticing Hypothesis, positing that in order to learn any aspect of the L2 (e.g., vocabulary, grammar, phonology), the learner needs to notice it in the input. Schmidt (1993, 1995) also distinguished between noticing and a higher level of awareness (the level of understanding). The claim made was that noticing is sufficient to convert input into intake for further processing and may result in item learning (e.g., a new word). On the other hand, it is awareness at the level of
understanding or “recognition of a general principle, rule, or pattern” (Schmidt, 1995, p. 29) that is required for a restructuring of the learner’s existing knowledge, that is, system learning.

However, it is important to note that for Schmidt (1993, 1995) noticing occurs only when learners are exposed to input. When composing a text individually learners are not exposed to input. Instead they draw on their existing linguistic knowledge as documented in studies using think-aloud protocols to investigate composing processes (e.g., Cumming 1990; Manchón, Roca de Larios, & Murphy, 2009). Thus Schmidt’s Noticing Hypothesis cannot explain how writing per se can promote L2 learning.

However, the hypothesis can be used to explain the potential contribution of WCF to L2 learning, because WCF is a form of input. For example, in Bitchener’s (2019, p. 90) model of the cognitive processing stages of WCF, the initial stages include attention to the feedback and the learner noticing the gap between their output and the WCF input. The model, however, seems to assume that WCF is in the form of direct feedback (i.e., the correct form is provided), as indirect WCF signals an error but does not provide target-like forms. The learner’s ability to resolve an error identified via indirect WCF is based on the presumption that the learner has the knowledge and can draw on it to correct the error (unless the learner consults additional resources). The important role played by the learner’s existing L2 knowledge in L2 learning is discussed in Swain’s Output Hypothesis.

The Output Hypothesis

Swain’s (1993, 1995, 1998) Output Hypothesis posits that output (as speaking or writing) can promote noticing because it pushes learners to process language more deeply than exposure to input. Indeed, originally Swain (1985) termed her hypothesis the Comprehensible Output Hypothesis. Swain identified three important functions that output can serve. One function is that of “noticing the gap.” However, the sense in which the term “gap” is used in the Output Hypothesis is different from the way it was used by Schmidt and Frota (1986). In the Output Hypothesis it refers to the learner noticing a linguistic inadequacy. Using think-aloud protocols of grade 8 French immersion students composing a text, Swain and Lapkin (1995) provided evidence of such inadequacies; that is, the learners becoming aware of a lack of vocabulary or knowledge of grammatical forms that they feel are needed to express their intended meaning better or more accurately. Swain and Lapkin refer to this kind of noticing as “noticing a hole.” The claim made is that this kind of noticing may encourage the learner to pay more careful attention to subsequent relevant input (Swain, 1998), but in the absence of such input, it may prompt the learner to draw on their existing L2 knowledge and engage in hypothesis formulation and testing. This is the second function of output and it involves the learner in sounding out and evaluating various alternatives thus testing hypotheses against existing knowledge. The third function of output is metalinguistic: Using language to reflect on language use. Swain (1995, 1998) suggests that such reflections may serve to deepen learners’ understanding of form-function relationships.

Thus the claims made by the Output Hypothesis are that output is not just a product but also a process that creates opportunities for L2 learning. The cognitive processes that follow “noticing a hole” whilst composing may eventually result in the learner generating linguistic knowledge that is new or that serves to consolidate the learner’s existing knowledge. However, what appears as new knowledge is reprocessed existing knowledge, and this type of knowledge does not align with what is considered new knowledge from a cognitive perspective (see VanPatten, 2007). Moreover, the few studies that have empirically investigated the effect of output on noticing elements in subsequent input (e.g., Adams, 2003; Izumi & Bigelow, 2000; Izumi, Bigelow, Fujiwara, & Fearnow, 1999; Hanaoka, 2007) have yielded some mixed findings.

Although Swain argued that both oral and written output can serve these important language learning functions, her research (together with her colleagues) used writing rather than speaking
tasks. Writing facilitates a greater focus on language than speaking (e.g., Adams & Ross-Feldman, 2008; García-Mayo & Aguirre, 2019; Niu, 2009). The slower pace and permanence of writing means that learners are more likely to notice holes and then have time to draw on their existing linguistic resources, to reflect on their language use, and to pay close attention to subsequent feedback. Furthermore, although initial studies (e.g., Swain & Lapkin, 1995) used individual writing tasks and think-aloud protocols, subsequent studies began to use collaborative writing tasks (e.g., Kowal & Swain, 1997; Swain, 1998; Swain & Lapkin, 1998; Watanabe & Swain, 2007).

The Output Hypothesis and Collaborative Writing

The rationale Swain (1998) gave for using collaborative writing tasks in her studies was that they were communicative, providing learners with opportunities to reflect about their writing. However, it became apparent from the data the researchers collected (see Swain, 1998; Swain & Lapin, 1998) that the advantages of collaborative writing tasks extended beyond opportunities to reflect on language. The data showed that when writing collaboratively, noticing a hole can elicit immediate feedback from a peer rather than being delayed, as is usually the case with teacher feedback. Furthermore, when testing hypotheses, learners need not rely solely on their own existing knowledge but can draw on a larger pool of knowledge – that of their co-authors. The units of analysis used by Swain and colleagues in these studies were “Language Related Episodes” (LREs), defined initially as instances where learners spoke about a language problem they encountered and attempted to resolve (Swain & Lapkin, 1995). A later definition of LREs took into consideration the presence of peer feedback in joint writing activities, and thus LREs included instances where learners self- or other-corrected (Swain, 1998).

Thus, from a cognitive perspective, collaborative writing tasks provide learners with opportunities to receive exposure to new input during the writing process, when learners identify holes or differences (gaps) between their respective interlanguage systems (i.e., when another-correction is offered), and this may lead to acquiring new knowledge. Any ensuing negotiations may include explanations which can promote higher levels of noticing – noticing as awareness with understanding. Such negotiations have been documented in a number of studies conducted with adult learners in different instructional contexts (see review in Storch, 2013, 2016, 2017a) as well as younger L2 learners (e.g., Calzada & García-Mayo, 2020; Swain & Lapkin, 2002). Admittedly, lower proficiency learners may not be able to resolve all the concerns that may arise during the writing phase (e.g., Leeser, 2004; Storch & Aldosari, 2013), nor have the metalanguage to reflect on language use (e.g., Calzada & García-Mayo, 2020). This is why it is important to consider task type and the basis for grouping students when implementing collaborative writing tasks (see Storch, 2013, 2017b for a discussion).

Augmenting a collaborative writing activity with collaborative processing of feedback received on the text produced provides learners with additional language learning opportunities. For example, Brooks and Swain’s (2009) study showed the cognitive processes that occur when learners receive a reformulated version of their joint text, such as comparing their output and the reformulated input and deliberating together about any gaps that they notice. Other studies provided evidence of learners discussing the WCF on their joint text, provided by a native speaker expert (e.g., Storch & Wigglesworth, 2010; Wigglesworth & Storch, 2012) or fellow L2 peers (e.g., Storch & Alshuraidah, 2020). The studies show that learners deliberate about the source of their errors, draw on their existing L2 knowledge to consider alternative ways of correcting their errors and articulate their understanding of grammatical rules and conventions. However, to date there have been no studies that have compared depth of processing of WCF in the individual and collaborative condition (although see Manchón, Nicolás-Conesa, Cerezo, & Criado, 2020).

In 2000, Swain abandoned her cognitively-oriented Output Hypothesis and her work since then became influenced by sociocultural theory. Sociocultural theory provides a very different
perspective on language learning than cognitive theories. It views the learner as a social being and focuses on interaction and dialogues where cognitive development is said to take place.

**Sociocultural Theory (SCT)**

Sociocultural theory (SCT) is based on the work of Vygotsky (1978, 1986) and in essence it is a psychological theory of human cognitive development. The theory postulates how biologically endowed cognitive capacities (e.g., involuntary attention) develop to become uniquely human, higher order cognitive capacities (e.g., voluntary attention). The development of language (both first and subsequent languages) is considered a higher order capacity and hence SCT has been employed by an increasing number of scholars to inform research on L2 learning and testing. Although some investigations of individual L2 writing and feedback processing (e.g., Haneda, 2007; Swain, Kinnear, & Steinman, 2015) have been informed by SCT and Activity Theory (a theory that has its genesis in SCT), most of the research on collaboration in L2 writing research is informed by these sociocultural perspectives (for a review see Storch, 2013, 2016, 2017a, 2019a, b).

The underlying premise of Vygotsky’s (1978) SCT is that the development of human complex cognitive functions originate and are shaped by purposeful social interaction and mediated by material and/or symbolic tools or means. This social interaction occurs between an expert (a more knowledgeable member of the community) and a novice. In the same way that noticing is highlighted in cognitive theories of SLA as key to language learning, in SCT the key ingredient that drives cognitive development is appropriate assistance. Not all forms of assistance are necessarily effective (see Storch, 2019b for a more detailed discussion).

**Effective Assistance: ZPD and Scaffolding**

According to Vygotsky (1978), effective assistance needs to be contingently responsive not only to the novice’s current state of knowledge, but more importantly, to the novice’s potential state of knowledge, as gauged by the novice’s ability to take advantage of the assistance offered. The distance between these two states of knowledge is referred to as the Zone of Proximal Development (ZPD). Effective assistance is also by definition dynamic rather than a “fixed treatment,” aligned with the novice’s changing developmental needs (Lantolf & Poehner, 2014). What this means is that the assistance provided by the expert needs to be guided by the actions and utterances of the novice, with both expert and novice working collectively towards achieving a shared object—the cognitive development of the novice. In this sense, ZPD is best viewed as a collective activity. This temporal, finely tuned form of assistance is referred to in the literature as scaffolding (Wood, Bruner, & Ross, 1976).

Vygotsky’s SCT and research focused primarily on children’s cognitive development (see discussion in Lantolf & Thorne, 2006). However, because the theory establishes learning as a fundamentally social experience, it can be used as the rationale for the use of interaction in all learning, including adult L2 learning. These interactions can take place between an expert (e.g., teacher, native speaker) and the novice learner as well as between novices (i.e., peers). It is the latter that is of particular relevance here.

As mentioned in my earlier discussion of the Output Hypothesis, one of the advantages of collaborative writing is the availability of immediate assistance from peers to address holes in knowledge learners discover in the process of writing. Studies have shown that this assistance is immediate, contingently responsive, and developmentally appropriate (see review in Storch, 2019b). In other words, it has the attributes of scaffolded feedback. Furthermore, in the collaborative condition, learners can also pool their linguistic knowledge. In L2 classes, although learners may all be classified on the basis of proficiency tests as being at a certain proficiency level, they may in fact have different pockets of L2 knowledge and expertise. The process of pooling and building on each
other’s knowledge to co-construct new knowledge, is a form of mutual assistance, and labeled by Donato (1994) “collective scaffolding.” The outcome may lead to the creation of co-constructed knowledge that is new; that is, knowledge that was not held by the individual learners previously. Donato also found some evidence that the knowledge learners co-constructed during interactions was internalized and used later by the learners in independently completed tasks. Donato’s study was conducted with adult learners completing oral group tasks. Similar findings were reported in my own study (Storch, 2002) with adult learners completing collaborative writing tasks. The study found that the pairs formed distinct patterns of interaction (see Storch, 2001, 2002, 2013) and that collective scaffolding was found mainly in pairs that formed a collaborative relationship, with participants contributing and engaging with each other’s contribution to the task. In other words, simply assigning learners to work jointly on a writing task does not guarantee that they will collaborate, offer appropriate assistance to each other, or engage in collective scaffolding.

A growing number of studies have set out to investigate the factors that impact on the relationships learners form when co-authoring texts, including learner-related factors, such as relative proficiency (e.g., Watanabe & Swain, 2007), and context-related factors, such as mode of communication (e.g., Bikowski & Vithanage, 2016; Cho, 2017; Rouhshad & Storch, 2016). For example, Rouhshad and Storch (2016), who compared face-to-face and computer-mediated collaborative writing, found that learners are more likely to cooperate rather than collaborate in the computer-mediated mode. When cooperating, the process of construction tends to be one where each author adds to the evolving text, and thus the joint text is an aggregate of individual texts rather than a co-constructed text. Furthermore, the computer-mediated mode impacts on learners’ attention to language and sense of text ownership, and consequently on language learning opportunities. Learners seem to pay less attention to language use when composing joint texts online than face-to-face as evident in the lower quantity of LREs generated (Rouhshad & Storch, 2016). Furthermore, there is less evidence of deliberations and collective scaffolding in the online mode. Learners seem more likely to amend their own contributions to the joint text than their co-authors’ contributions (e.g., Cho, 2017; Elola & Oskoz, 2010; Li & Zhu, 2017), suggesting that mode of communication has an impact on learners’ sense of text ownership (see discussion in Storch, 2017c, 2019b).

A construct which seems to capture these individual and context-related variables and their impact on learner behavior is learner agency. Learners’ behavior observed in joint writing tasks and the relationships they form are examples of learners’ enactment of their agency. Agency is a relatively recent term in SLA and L2 research (see Deters, Gao, Miller, & Vitanova, 2015), yet clearly one whose importance has been recognized (Douglas Fir Group, 2016). Agency is generally understood as a learner’s ability to act in pursuit of fulfilling individual goals (Duff, 2012). However, from a sociocultural perspective (see Lantolf & Thorne, 2006; Pavlenko & Lantolf, 2000), this ability is viewed not as a property of the individual, but as relational (interpersonal) and very much situated, with power hierarchies, expected norms of behavior, and available tools making only certain choices possible in a particular context and time. These key elements explaining human behavior in an activity are captured in Activity Theory. The theory has its roots in Vygotsky’s (1978) work but has been elaborated by others, and particularly by Engeström (1987, 2001) (for a more detailed discussion see Bitchener & Storch, 2016). Although the impact of mediating individual and some contextual variables are acknowledged in cognitive perspectives on writing and feedback processing (e.g., Bitchener, 2019; Kormos, 2012), what distinguishes Activity Theory is that it provides a framework whereby individual and context-related variables are treated as a whole system, rather than a loose set of variables.

A relatively small number of studies have used Activity Theory (e.g., Aufa & Storch, 2021; Storch, 2004) and the construct of agency (e.g., Li & Zhu, 2017; Pu, 2020) to explore and explain the nature of learners’ behavior in collaborative writing activities. Furthermore, these studies have focused mainly on learners’ goals and orientation to the activity. Future investigations of
collaborative writing and feedback processing could explore, for example, how other elements in the activity, such as the power hierarchies within the classroom and expected norms of behavior in face-to-face and online collaboration impinge on learners’ ability to exercise their agency in collaborative writing activities.

Another important dimension of agency is emotions. Vygotsky (1986) makes innumerable references to the inseparability of cognition and emotion as do a number of sociocultural theorists (e.g., Lantolf & Poehner, 2014; Lantolf & Thorne, 2006; Swain, 2013). The original definition of scaffolding offered by Wood et al. (1976) also noted that one of the functions of scaffolding is to control feelings such as frustration. Yet, although a small number of studies investigating collaborative writing note that learners seem to experience different emotions during these activities such as pleasure, antagonism, or fear of losing face (see Li & Zhu, 2017; Storch, 2004), emotions are conspicuously absent in most discussions and research on scaffolding and ZPD. Learners’ emotions may also impact on whether new knowledge provided by peers during an interaction is appropriated (see Imai, 2010). I return to the construct of agency and emotions when discussing learners’ processing of WCF from a sociocultural perspective.

Language as a Tool: Languaging

What enables experts to scaffold the performance of novices or for peers to engage in collective scaffolding is language. In SCT, language is viewed as a psychological tool that mediates development. This important role of language is captured in the construct of “languaging” used first by Swain in 2006 to describe the kind of reflections and dialogues that occur when learners produce output. Swain (2006, p. 98) defines languaging as “the process of making meaning and shaping knowledge and experience through language.” In other words, languaging is the use of language, a psychological tool, that enables learners to think through a problem. It occurs, for example, when learners encounter a problem such as a hole in their knowledge, a difference between two ways of expressing an idea (gap) or when they try to understand a complex idea or rule (for an extended discussion of languaging, see Suzuki & Storch, 2020). In the L2 learning domain, language has as a dual role. It mediates learning and the knowledge acquired is new language. Drawing on SCT, Swain (2006, 2010) distinguished between two forms of languaging: self-directed (private speech) and other-directed (collaborative dialogue).

When completing a language task individually, such as a composition, learners have been found to engage in the private speech form of languaging, talking themselves through a problem they encounter. The deliberations captured by think-aloud protocols, mentioned earlier, when learners noticed holes in their knowledge during the process of writing, are examples of the self-directed form of languaging. Verbalizing thoughts creates an audible artefact that can be analyzed further. Although self-directed talk does not guarantee that a problem will be solved (Lantolf, 2005), it may enable the learners to talk themselves into understanding something that was previously not understood; that is, it may strengthen existing knowledge.

Other-directed talk or collaborative dialogue, as the name suggests, is languaging that occurs in interaction with others. During collaborative writing and processing of WCF, both forms of languaging can emerge. Self-directed languaging in the presence of others makes the speaker’s thinking and deliberations accessible to others and evolve into collaborative dialogue as the co-authors offer suggestions, explanations, or confirmations. Furthermore, a sense of joint ownership of the text may encourage collaborative dialogue. For example, if disagreements arise about language use, learners may feel compelled to offer explanations to justify their suggestions and consider counter-suggestions. In this process of resolving disagreements or cognitive conflicts (Tocalli-Beller & Swain, 2005), learners construct a clearer representation of their own knowledge (van Lier, 1996).

Similarly, when processing WCF that co-authors receive on their completed texts from their teacher or peers, learners have been shown to engage in collaborative dialogue to try to understand
the intended meaning of the feedback, or to compare and evaluate a reformulated form with their own existing language knowledge (see Storch & Wigglesworth, 2010; Swain & Lapkin, 2002; Wigglesworth & Storch, 2012). However, these studies have also shown that deeper engagement with the WCF does not necessarily mean that the feedback will be accepted, and even if accepted and incorporated in revised drafts, it may not lead to learning. For examples, the study by Storch and Wiggleworth (2010) found that in instances where the learners rejected teacher feedback, they often incorporated that feedback in their revised version, perhaps due to context-related expectations and power hierarchies, but they then reverted to the use of the same erroneous structures in their subsequent individual writing. Whether learners accept or reject WCF represents an enactment of their agency.

In line with more recent research on individual learners’ response to teacher WCF that presents a view of learners not primarily as responders to feedback but as active agents (e.g., Zhang & Hyland, 2018; Zheng & Yu, 2018), including emerging research on the emotions that WCF evokes (e.g., Mahfoodh, 2017), research on collaborative processing of WCF also needs to explore more fully agency and emotions. Collaborative processing of feedback cannot be fully understood unless the co-authors’ agency and emotions are taken into consideration.

To conclude this theoretical overview, from a sociocultural perspective, collaborative writing and the processing of feedback may provide optimal conditions for language learning. Unlike solitary writing and processing of feedback, performing these tasks collaboratively provides learners with opportunities to engage in collaborative dialogue, during which they receive timely peer assistance to resolve any difficulties they encounter or gaps that they notice. The collaborative condition also enables the learners to pool their partial linguistic resources and co-construct new knowledge or consolidate existing knowledge. This co-constructed knowledge can then be internalized by the learners for their own use.

Internalization is the final stage of development. To date, however, the term internalization remains contested (see discussion in Lantolf & Thorne, 2006) and its exact meaning rather elusive. This is despite attempts by Lantolf, the leading interpreter of Vygotsky’s work in the West, to explicate the term. According to Lantolf and Thorne (2006) internalization refers to a process which enables humans to control and regulate their biologically endowed capacities in order to perform increasingly more complex functions independently. What enables this development is “the appropriation of the regulatory means employed by others” (Lantolf, 2000, p. 14) and the mechanisms that enable this development are imitation as well as self- and other-directed forms of languaging. However, the exact meaning of appropriation is not clear. It is often used interchangeably with internalization, even by Lantolf (2000), yet Lantolf and Thorne (2006) argue that the two terms are fundamentally different. The explanations they offer, however, do not make this distinction very clear.

**Concluding Remarks**

Collaborative writing is a challenging activity, more so than individual writing because learners need to negotiate a joint text. However, the activity provides opportunities for learners to address any noticed gaps (holes and gaps) as well as the means to address these gaps via peer feedback available throughout the writing process. The peer feedback is immediate and contingently responsive to their needs and thus represents effective assistance. There are also opportunities to pool linguistic resources and co-construct new knowledge. The collaborative processing of feedback learners receive on their joint texts provides additional opportunities for deliberations about language, and thus L2 learning.

Cognitive theories of SLA, focusing as they do on hypothesized mental processes, tend to ignore the potential impact of non-cognitive factors on these processes. However, learners, as Atkinson and Tardy (2018, p. 91) correctly point out, are not merely “input processors,” but human beings
References


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