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## Understanding Second Language Learners’ Emotional-Cognitive Development through Division of Labor Collaboration

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### Abstract

In recent years, researchers from a Vygotskian Sociocultural Theory (V-SCT) perspective have sought to promote and trace the development of both emotion and cognition. Contributing to this emergent body of research, our study leveraged Concept-Based Language Instruction (C-BLI) and a Division-of-Labor Pedagogy (DOLP) to investigate the second language (L2) literacy development of university, intermediate level French learners (Buescher, 2015; Urbanski, 2023). Through investigating mediation by a researcher-teacher and in a collective, we traced four learners’ emotional and cognitive development by examining the overall content as well as micro-interactive features of their contributions to the group both on a moment-to-moment basis and over the twelve-week span of a literacy intervention. We found that the DOLP, an instructional arrangement where each group member has a key role to play in promoting the collective’s meaningful engagement with texts, not only supported the development of learners’ literacy abilities but also created the conditions for peer emotional mediation and development. This study has implications for language researchers and practitioners, compelling us to reflect on how we ask learners to collaborate and what kinds of development that collaboration allows.

**Keywords:** *Sociocultural Theory, Emotion, Division-of-Labor Pedagogy, Concept-Based Language Instruction, Second Language Literacy Development*

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### <sup>1</sup>Introduction

<sup>1</sup> This paper is part of a special issue (2024, 46) entitled: In Honour of James P. Lantolf’s Contributions to Sociocultural Theory, Second Language Development and Language Pedagogy (edited by Mirosław Pawlak, Zhisheng (Edward) Wen, and Hassan Mohebbi).

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To fully understand and support development, research and teaching must adopt holistic and ecological perspectives that center the unity of emotion and cognition (Lantolf & Swain, 2019). From a Vygotskian Sociocultural Theory of Mind (V-SCT; Vygotsky, 2012), scholars “do not study cognition per se. [V-SCT’s] focus is on consciousness” (Qin, 2021, p. 104) of which emotion is not only one of the elements, but an “integral part” (Swain, 2013, p. 1). According to Vygotsky (1987),

[Thought] is not born of other thoughts. Thought has its origins in the motivating sphere of consciousness, a sphere that includes our inclinations and needs, our interests and impulses, and our affect and emotions. The affective and volitional tendency stands behind thought. Only here do we find the answer to the final “why” in the analysis of thinking. (p. 282)

There are challenges, however, in how we define emotions and how we understand their connection to cognition. There is also a limited number of studies on the ontology and the epistemology of cognition and emotion from a Vygotskian perspective. As such, by failing to take into account the roles played by emotions, we have limited our understanding of second language learning (Swain, 2013). It is crucial that we must confront these challenges, or our study of development will necessarily be incomplete. Recently, there have been calls from V-SCT researchers (see Lantolf, 2021; Poehner & Swain, 2016) to investigate both emotion and cognition in our research and teaching to gain a better understanding of how these interconnected elements impact the development of consciousness.

A V-SCT perspective requires “[1] a clearly defined object of study—consciousness; [2] unit of analysis (or what to study to be able to understand the object of interest)—word meaning and later *perezhivanie*; [and 3] research methodology—genetic method, which consisted of uncovering the origins of consciousness” (Qin, 2021, p. 105). As noted above, consciousness includes both cognition and emotion and their dialectic unity in *perezhivanie* is the unit of analysis. Finally, the genetic method, where we promote and trace how both cognition and emotion unfold and change, allows us to trace the development of consciousness. We therefore have to investigate historically, or in the process of development, “the relationship between intellect and affection” and to keep them dialectically connected to “avoid reductionist dualisms” (Mesquita, 2012, p. 810). Lantolf (2021) has further wondered “whether or not it is feasible for teachers to engage in motivational dialogues with groups rather than with individual learners only” (p. 21). Therefore, in this study, we focus on how this mediation by a researcher-teacher in a collective promotes emotional-cognitive development. In this way, we aim to add to the limited research on emotion-cognition in second language development studies and to do so through a collective. To do this we traced four learners’ developmental process as it changed over time on a moment-to-moment basis during a twelve-week university-based literacy intervention and how a particular form of a collective, a division-of-labor pedagogy, has an impactful role in mediating learners’ emotional-cognitive development (Buescher, 2015; Urbanski, 2023).

## Literature Review

### *Emotion*

*Perezhivanie*, a term used by Vygotsky (1994), is difficult to capture in translation (as noted for example by Blunden, 2016 among many others). As introduced above, it is a unit of analysis that is the dialectical relationship, or “indivisible unity” (Vygotsky, 1994, p. 342), between emotion and cognition, “both originating in sociocultural goal-directed activity” (Lantolf & Swain, 2019, p. 530) with cognition being formed from its own dialectical unity of thinking and speaking (Lantolf, 2021; Lantolf & Swain, 2020). *Perezhivanie*, along with its own dialectical relationship with the social environment is referred to as the social situation of development (Lantolf & Swain, 2020). As many know the environment or context is essential in V-SCT, in fact it is the source of development, but the role that it plays and the impact that it has is not causal or deterministic (Lantolf, 2021; Lantolf & Swain, 2020; Vygotsky 1994). How the environment shapes particular learners’ development may be different, as Vygotsky (1994) explained through the concept of “refraction.” It is “through the process of refraction that the social situation becomes the social situation of development” (Veresov, 2020, p. 188). The relationship between a person and their context or environment, necessarily includes their relationships with others and importantly these social relationships also impact the context; the impact can happen in both directions (Mahn & Reiersen, 2013). To study *perezhivanie*, we need to see how it comes to be and what role it plays with people in their environment in the activity of developing consciousness (Golombek & Doran, 2014). Finally, and crucially, “*perezhivanie* is not limited in scope to ‘negative’ emotions such as anxiety or frustration but includes the full range of human emotive experiences and responses” (Poehner & Swain, 2016, p. 236).

There are a variety of ways that Vygotskian researchers-teachers have defined the scope of *perezhivanie* to investigate the dialectical relationship of emotion and cognition. Some have used the term *perezhivanie* itself to investigate very important and marked emotional experiences that may be revealed over a longer stretch of time or may impact one’s identity as a teacher or a learner (e.g., Huh & Kim 2021; Ng, 2021; Ng & Renshaw, 2019). Lantolf and Swain (2019) focused on “affect” which they defined as “bounded and refers to emotions that arise as a result of a specific situation or experience” (p. 529). Stone and Thompson (2014) have used Roth’s (2008) concept of “mood” which they define as “socially distributed aspects of emotional experiences” with a “dialectical relation between the individual and the collective” (p. 310). From their perspective, mood as an analytical tool allowed it to “become personal without ceasing to be social” (Vygotsky, 1974 as cited in Stone & Thompson, 2014, p. 311). Therefore, their concept of mood must develop over time through specific individual acts within a collective. Their work also maintains the importance of the dialectical relationship between *perezhivanie* as mood and the social environment which make up the social situation of development. Although different researchers/teachers are interested in *perezhivanie* over different timescales, from an experience of a particular event to the scale of one’s life, *perezhivaniya* (plural form) can be “events, episodes, activities, [or] happenings of experiences in which people are active participants” (Blunden, 2016, p. 275). For this particular study, we are most interested in tracing emotion-cognition on a moment-to-moment basis but also how L2 learners’ consciousness developed over three months while they worked as a collective.

In addition to Stone and Thompson (2014), other scholars have focused on tracing emotion and cognition with learners in collaboration (Imai, 2010; Mahn & John Steiner, 2002; Swain, 2013). In V-SCT, collaboration with others is an integral part of development and therefore it is important to trace emotion-cognition through collaborative activities. We can investigate for example, how “emotions may be co-constructed as an event progresses” (Swain, 2013, p. 2) through various forms of languaging or “collaborative dialogue...[where] speakers are engaged in problem solving and knowledge building” (Swain 2000, p. 102) in goal-directed activities. In fact, both emotion and cognition can mediate our development and because of their dialectical relationship, our development can then transform our *perezhivanie*, which continues in this mutual cyclical process (Bakhurst, 2019; Imai, 2010; Lantolf, 2021). In collaboration, we are working within a jointly created zone of proximal development (ZPD) through which the interpersonal becomes intrapersonal (Mahn & John Steiner, 2002). In this study, we built on these researchers’ work to trace changes in second language learners’ emotion-cognition through a unique and specific form of collaboration, that of a collective using a division-of-labor pedagogy (DOLP), which will be outlined below.

### *Concept-Based Language Instruction (C-BLI)*

This study used Concept-Based Language Instruction to help students develop narrative literacy in French. Gal’perin extended Vygotsky’s theory of mind work into education and when it is used in L2 studies, it is referred to as C-BLI (Gal’perin, 1989b; Haenen, 1996, 2000, 2001; Lantolf & Poehner, 2014). Key to C-BLI research-teaching is the use of scientific concepts, materializations or materialized SCOBAs (Schema for the Complete Orienting Basis of an Action), and verbalizations which lead to internalization; these will each be explained below (see Urbanski, 2023 for further details). Scientific concepts are developed from our best understanding of a particular area which are abstract, systematic, explicit, recontextualizable, and complete so that learners can not only learn a concept in its full form but also use it to guide their thinking in activities with the language (Karpov, 2003; Lantolf, 2011; Lantolf & Poehner, 2014; Lee, 2012; Negueruela, 2003; Toomela, 2010). The scientific concepts for this study of L2 narrative literacy included Foundation, Organization, and Genre. Adapted from the work of Cole (1996) and Palincsar and Brown (1984), the Foundation of reading any text is to use tools to be able to understand the vocabulary and any lexicogrammatical challenges so that the main ideas can be determined, and predictions made about what may come next in a text. Based on the work of Mandler (1984), Organization helps learners to understand how texts are organized, how different genres have different organizational features, how lexicogrammatical elements are used differently in each part of a text’s organization, and how the nature of how these parts are organized and whether each part is included, implied or not included can have different effects on readers. For Genre, informed by Byrnes et al. (2010) and Halliday and Hasan (1989), the focus was on how authors use language for meaning and particular effects and how we can investigate the textual use of language through field, tenor, mode, and purpose.

Materializations for these concepts included SCOBAs (Gal’perin, 1989a, 1992), or imagistic representations, that tried to capture the abstract, systematic, explicit, recontextualizable, and complete nature of the scientific concepts, yet with limited language to prevent memorization of a written definition for each concept. L2 Narrative Literacy, Foundation, Organization, and Genre each had their own SCOBAs which learners could use to

guide their thinking during the goal-directed literacy activities (see Urbanski, 2023 for the SCOBAs). Materialized versions of Organization were also used in the form of Cuisenaire rods to represent the varying narrative structures of texts. In addition, learners were asked to verbalize their understanding of the concepts, and how they used the concepts to guide their thinking and participation in goal-directed literacy activities. The goal is for learners to internalize the concepts so that they can use them on their own and in the ways that they wish.

### *Division-of-Labor Pedagogy*

DOLP was an essential part of this research-teaching and will be important in the analysis of the data for this paper. The DOLP used in this study was based on Petrovsky's (1985) work on collectivity in which there are "joint coordinated interactions" where the learners "exchange the products of activity" and most importantly "relations of interdependence and mutual control" emerge (p. 183). For the DOLP, the concepts of Foundation, Organization and Genre were each divided into four component parts which became roles. At the outset of Buescher's (2015) and Urbanski's (2023) studies, learners were assigned one role for each concept and they worked on one concept at a time for a single pass through of a text. Learners had time to prepare their roles, use tools as needed, and had access to researcher-teacher mediation. They then shared their role work with their group. Crucially, each learner's work was needed by the other group members to gain full understanding of the text. The roles rotated after each section of the text. As they developed, they took on more roles at a time and in the case of the data presented below, learners eventually took on all four roles for each concept, although they still reported their role work to the group to make sure that they had a full understanding of the text. As noted, the researcher-teacher plays an integral role in mediating individual's as well as the group's understanding and use of the DOLP to develop their L2 literacy abilities and emotional state in the classroom. As learners develop their understanding of the concepts and the roles and are able to take on more roles, they are in the process of internalizing their understanding and developing their L2 literacy abilities, in this case. The goal of full internalization allows learners to independently read other texts, using the concepts to guide them, and to use L2 literacy tools in the ways that they wish.

### **Methodology**

In order to see how emotional-cognitive development is co-constructed through a collective activity, we need data that allows us to see both emotion and cognition and trace their change over time (e.g., Imai, 2010). The data for this paper came from a larger C-BLI and DOLP study promoting second language literacy development (Buescher, 2015; Urbanski, 2023). In the data below, there were four participants, Marie Claire, Elizabeth, Sean, and Madeline (all names are pseudonyms). They were L1 English students learning French in a large public university in the Northeastern United States. At the time of the study, the learners were each enrolled in different sections of one of the bridge courses between the language-focused courses and the literature-focused courses and were all considered intermediate-level students. After expressing their interest in developing their L2 literacy abilities during recruitment, these were four of the eight students who scored the lowest on the pre-test, which involved reading a mid-level and a high-level text and writing a summary of it in their L1, English. The students scoring

the lowest were selected as they were the most likely to benefit from L2 literacy development instruction.

The students met in a small group outside of class with the researcher-teacher for a two-hour block each week over the course of 13 weeks. In order to teach the students how to use the C-BLI and DOLP, an English narrative text was used so that they could see how the concepts and the roles would work on a text that they had no difficulty understanding. The group then read increasingly more difficult French texts over the course of the semester using C-BLI and DOLP. On the first pass through of each text, the focus was on Foundation, then Organization in the next pass through, and finally with Genre on the final pass through. After each section of a text was read aloud during Foundation, each learner had time to work on their role and the researcher-teacher was available for individual mediation. Once the role work was complete, the group discussed the results of their role work and group mediation was provided as needed. The roles were then rotated and the pattern continued. As learners developed they took on more roles at a time, as noted above. The data used in this paper focused on the learners' work during the Foundation concept of weeks 2, 3, 5, and 11, and in particular on how learners predicted what comes next in the text. We wanted to know how the learners' emotion and cognition developed through C-BLI and DOLP, as they worked collectively to develop their L2 narrative literacy abilities.

### **Data Analysis**

In our analysis, we are using audio-video recordings of four learners' participation in L2 literacy activities, using C-BLI and the DOLP. We transcribed the data using CLAN software and used some select Conversation Analytic transcription conventions (Hepburn & Bolden, 2012) to mark micro-interactional features. See Table 1 for the transcription conventions used. Our analysis focuses on the emotion-cognition development of four university level intermediate learners' using a DOLP to develop their predictive abilities as part of the Foundation concept with a researcher-teacher. We identify micro-interactional features of the data both on a moment-to-moment basis and we trace these changes over time. To trace emotion-cognition through micro-interactional features, we can investigate verbal communication, in linguistic or gestural backchanneling, in the stances that individuals take, through pausing, laughter, prosody, tone, volume, body positioning, gestures, intersubjectivity, forms of alignment and other linguistic and gestural features (Imai, 2010; Stone & Thompson, 2014). We can also explore hedges, intensifiers, emotional adjectives or verbs, positive or negative appraisals, or requests for validation or help (Golombek & Doran, 2014). We can then examine how "teacher's and learners' use of these linguistic resources builds a collaborative problem-solving mood that solicits or calls forth effortful engagement on the part of the learners" (Stone & Thompson, 2014, p. 314). Therefore through our investigation of these micro-level changes over time, we can see if and how emotion-cognition may allow learners, working collectively, to engage in ways that they may not otherwise be able to, that pushes their development within the ZPD. Finally, we analyzed the data microgenetically and macrogenetically; that is, both within a particular episode as well as episodes over time to see developmental changes in emotion and cognition.

**Table 1***Transcription Conventions Used*

(xxx)	can't hear what is being said
(word)	best guess at what is being said
.	falling intonation
,	slightly rising intonation
?	rising intonation
+ / ++ / +++	pausing (more + = more time)
(0.9)	measured time (greater than +++)
[	onset of overlapping speech
<i>word</i>	in French
=	latching
:	elongation
o o	soft speech
{	gesture/gaze description timed with verbal utterance
(( ))	gesture/gaze description during a pause
W O R D	louder speech
wor-	cut-off speech
@	smiley voice

**Findings**

To trace emotion and cognition both on a moment-to-moment basis and their development over time, we present below excerpts from five different weeks during a twelve-week study, with the first and last weeks being the pre-test and post-test.

*Limited Collaboration & Understanding of Roles*

Our first excerpt comes from the second week of the L2 literacy intervention study after the first week's pre-test. The researcher-teacher and four students were seated in a grouping of five desks in an empty classroom. This week, as noted above, the learners were taught how the C-BLI and DOLP worked as they practiced on an English text. Excerpt 1 begins after their role work finished and the group was discussing what each person had worked on. When asked to report on her role of prediction, Elizabeth struggled to do so, ultimately providing a summary of the story thus far, as opposed to a forward-looking prediction of what would happen next in the story. After receiving mediation from the researcher-teacher (TEA), Elizabeth (ELI) finally issued a prediction, as it can be seen in Excerpt 1, on lines 278-280.

**Excerpt 1 - Week 2:**

278 \*ELI: yeah maybe he's gonna- (++) um. (+)  
 279 see the ghosts and find out °you know°.   
 280 (°what they were doing there°).  
 281 \*TEA: okay. so. overall your prediction i:s?  
 282 (0.7)  
 283 \*ELI: that- (+) he is going to find out.  
 284 (1.0)  
 285 \*TEA: [find out what.  
 286 \*ELI: [the ghosts:,  
 287 what the ghosts want. from hi:m?=  
 288 \*TEA: =°uh huh.° okay.

289 \*ELI: [°i guess°.  
 290 \*TEA: [{what are you thinking.  
 291 {t's gaze goes from madeline to sean and back  
 292 \*TEA: do you have a different prediction,  
 293 {do you agree::,  
 294 {teacher redirects gaze towards marie claire  
 295 (0.5)  
 296 \*MAD: i don't think i know enough.  
 297 (0.4)  
 298 \*ELI: @ yeah@ =  
 299 \*MAD: =huhuhh=  
 300 \*MCL: =yeah.  
 301 (0.4)

Elizabeth's prediction was interspersed with many interactional features that point to insecurity, such as a cut-off, pauses, a filler (i.e., "um"), soft speech, and a verbal indicator of doubt (e.g., "maybe"). Once prompted by the researcher-teacher to present only her prediction (line 281), Elizabeth made a second attempt at a prediction (lines 283-289). Again, the micro features in her turns provide clues regarding her level of insecurity, discomfort, or perceived inability to create a prediction. These include a cut-off, elongations, pause, rising final intonation, and a verbal acknowledgment (i.e., "I guess" on line 289) uttered in soft speech.

In terms of the group collaboration, at this time the researcher-teacher provided minimal mediation (line 281), simply prompting Elizabeth to give her prediction. The researcher-teacher then invited peers' participation, attempting to promote group collaboration verbally, by posing questions, and through eye gaze (lines 290-294). Ultimately, the remaining learners refrained from participating. In response to Elizabeth's prediction and the teacher's invitation to participate, Madeline (MAD) foreclosed any possibilities for further engagement by stating, "I don't think I know enough" (line 296), Marie Claire (MCL) agreed (i.e., "yeah" on line 300) and Sean (SEA) remained silent. While we do not see collaborative dialogue occurring at this point, there was evidence of affiliative work being done by learners, who collectively agreed that the assigned task for that role (issuing a prediction) was difficult, that they did not have enough information or knowledge at that point to generate a prediction, and through joint laughter (lines 298-299). We argue that this type of affiliation is laying the groundwork to the more complex form of peer collaboration that will be seen in subsequent weeks of the L2 literacy intervention.

As demonstrated in this excerpt from week 2, and representative of the dynamics during the initial weeks of this study more broadly, we point to the prevalence of interactional features that suggest insecurity and/or confusion about what the role (prediction) entailed. Additionally, there was limited engagement from peers in response to Elizabeth's prediction and the researcher-teacher's request for further collaboration.

#### *Growing Collaboration: The Emergence of Peer Emotional-Cognitive Support*

In the following week, the group engaged with a different text, and this time the text was written in French, titled *Le Champ du Lièvre* (Mbodj, 2005). The learners were in charge of different

roles, with Sean now being in charge of prediction. After reading a passage of the text and giving learners time to engage on their respective role work, the researcher-teacher elicited from each learner their responses. Excerpt 2 represents the moment when the researcher-teacher elicited from Sean his prediction of what would happen next in the story.

**Excerpt 2 – Week 3 (Part I)**

956 \*TEA: any: prediction=and then we're [ready to go-  
 957 \*SEA: [so:::.  
 958 the predic- the original prediction i had was,  
 959 that the lion, (++) will start this like,  
 960 movement [to find a new solution,  
 961 \*MAD: [°hhhehehe°  
 962 \*SEA: to eating meat? (+++) u:m. or- NO.  
 963 find a new meat to eat because,  
 964 (+) u:m. (++) obviously carnivores can't=  
 965 =live on fruits and vegetables,  
 966 (++) a::nd. (++) i said that,  
 967 i don't think the solution, (++)  
 968 will be them eating each other,  
 969 \*MAD: °hhhehehe°  
 970 \*SEA: and then the new. ad- addition i had was that,  
 971 (++) this meat (+) could be:, (+++) the hare?  
 972 \*MAD: bunny.  
 973 \*SEA: yeah that they relied on,

Knowing that he was the learner in charge of the role prediction, Sean began sharing his response in overlap with the researcher-teacher's request for a prediction, indicating a greater understanding of the activity. As Sean shared his response with the group, going over his process to arrive at his most recent prediction, we see that a peer, Madeline, actively reacted to Sean's turns. She overlapped and responded to Sean's emerging prediction with laughter (lines 961 and 969) and then responded to his prediction that the hare in the story might be eaten, with a connection ("bunny" on line 972). At this point, Sean's explanation was still lengthy (lines 957-973) and his actual prediction on lines 970-971 presented a cut-off, multiple pauses, an elongation, and rising final intonation; a constellation of interactional features that, together, suggest a sense of doubt and insecurity. Despite this, Madeline's continued engagement with Sean's response points to the emerging collaboration among group members and may have encouraged Sean to continue to take risks and share his prediction. The conversation continued in Excerpt 3 below, where the researcher-teacher intervened upon listening to Sean's first attempt at a prediction. As can be seen on lines 974-975, the researcher-teacher prompted Sean to attune to the title of the story and connect it to his emergent prediction.

**Excerpt 3 – Week 3 (Part II)**

974 \*TEA: okay. so what do we-  
 975 how do we fit [in the idea of *le champ*,

976 \*ELI: [yeah.  
 977 \*SEA: the field,  
 978 \*TEA: yeah.  
 979 \*SEA: i've- i just thought of the field as this,  
 980 \*MAD: like where they're in=  
 981 \*SEA: =the range °where they live°.   
 982 \*ELI: yeah.  
 983 \*TEA: okay.  
 984 \*SEA: kinda like we think of the like lion king,  
 985 this is all like pride rock [kind of thing,  
 986 \*TEA: [okay.  
 987 \*SEA: and then,  
 988 \*MAD: [okay.  
 989 \*ELI: [hihi  
 990 (1.0)  
 991 \*SEA: [°the area (xxx)°.   
 992 \*TEA: [keep this in mind. a:nd. we'll,  
 993 (+) sum- (+) [well depending on-  
 994 \*SEA: [O::R,  
 995 \*TEA: go ahead.  
 996 \*MAD: °hhhe° HEHEHE[HEHE .HHU  
 997 \*SEA: [there's a field of hares,  
 998 and that's going to be their solution.  
 999 \*TEA: oka:y?=  
 1000 \*MAD: =but that makes me sad,  
 1001 \*TEA: i'll leave you on- on- on one parting thought.

Sean responded to the researcher-teacher's request for a connection to the title of the story by issuing a justification for not having done so. He explained that he had only thought of the "field" as the backdrop of the story, the landscape where the story unfolds without major consequences for the plot (lines 979, 981, 984, 985, 991). However, he did not issue this justification on his own; two peers, Madeline and Elizabeth, expressed their agreement with Sean (lines 980, 982, 989) and by ultimately "accepting" his explanation as valid (line 988). This reassurance from peers may have created the intellectually and emotionally safe conditions that allowed Sean to cut off the researcher-teacher, who signaled to the group that they were about to move on (lines 992-993) and volunteer a new prediction. Sean's second attempt at a prediction (lines 994, 997-998) presented interactional features that suggest an increased sense of confidence: the prediction itself was concise, uttered with falling final intonation, and was initiated with loud voice and in overlap with the researcher-teacher. This second prediction, along with the first one, was also heavily supported by Sean's peers. Here, we see that Madeline reacted positively, with loud laughter, to Sean's attempt to cut off the researcher-teacher and redirect the conversation back to his role (line 996). She also reacted to Sean's new prediction, sharing how she would feel "sad" if his prediction was indeed correct (line 1000).

In week 3 of this intervention, we began to see changes in how the learners collaborate. These changes created a more positive and supportive environment for emotional-cognitive development. Peers engaged in this type of support through laughter (mostly given in overlaps) and by volunteering comments and reactions in response to specific roles. In the example above we also see a qualitative change in the researcher-teacher's intervention; from broadly inviting peer collaboration to specifically prompting for connection between the title of the story and a proposed prediction. These changes seemed to have enabled or supported Sean to volunteer a second prediction that is markedly less hedged and that is given through overlap with the researcher-teacher, suggesting increased confidence. In sum, together--more peer collaboration and better understanding and performance of the role—seem to promote fewer markers of insecurity and more indications of confidence.

These dynamics continued to unfold as learners continued to take part in the literacy intervention over the following weeks. In their fifth week, focusing on prediction, we see that the learners were still grappling with how to perform the role and confidently share what they thought might happen next in the story. While their knowledge of the role was still developing, learners collaborated more and demonstrated greater comfort with one another, which allowed for greater risk-taking, co-construction of predictions, and further second language learning. The excerpt below shows the moment when the researcher-teacher and learners engaged in different forms of mediation to support the student who was in charge of prediction, Elizabeth. After Elizabeth spent several turns trying to elaborate a prediction and ultimately issued a vague statement about what could happen next (i.e., the characters will eventually “figure it out”), the researcher-teacher latched her response to the learner's words, eliciting more details, as can be seen in Excerpt 4.

#### **Excerpt 4 - Week 5**

1568 \*TEA: =are they gonna find ou- o:n purpose?  
1569           are they gonna find o:ut, accidentally?  
1570 \*MAD: °are they gonna eat the rabbit°.  
1571           (0.7)  
1572 \*ELI: (@maybe@).  
1573 \*MAD: at the end.  
1574 \*ELI: hehe. (+) maybe. u:m, huhuhu.  
1575 \*MAD: °finally have their meat°.  
1576 \*ELI: {huhuhuhu u:m, (+++++)  
1577           {eli browses handout/RH index rubbing chin  
1578 \*ELI: yeah=i mean=like=they're putting like=  
1579           =so much work into it,  
1580           and when they find out tha:t,  
1581           the rabbit wasn't doing anything.  
1582           °they're gonna be upset°.  
1583 \*TEA: okay.  
1584 \*ELI: so:, (++) they're=  
1585 \*TEA: =how are they gonna find out.  
1586 \*ELI: uh huh.

1587 (1.5) ((teacher gazing at elizabeth))  
 1588 \*SEA: °the rope is gonna snap°.  
 1589 \*MAD: {hhhehhhe hhehhe  
 1590 {teacher's LH moves towards sean  
 1591 \*TEA: could be.  
 1592 \*ELI: the rope. maybe.  
 1593 \*SEA: [(@xxx@)=  
 1594 \*ELI: [hehehe  
 1595 \*TEA: [hhhha  
 1596 \*SEA: =( [@implies what [i might be thinking@)  
 1597 \*TEA: [hhhhe .hh  
 1598 \*ELI: [hehehe  
 1599 \*MAD: [maybe one that- oh.  
 1600 OH. they'll take a break,  
 1601 and then obviously they'll lay down,  
 1602 and the:n, (++)  
 1603 \*ELI: they'll probably get like=  
 1604 \*MAD: [like-  
 1605 \*ELI: =so tired out [that they'll have=  
 1606 \*MAD: [ye:a:h.  
 1607 \*ELI: =to take a break and then they'll see,  
 1608 \*MAD: and then like all of a sudden,  
 1609 it'll just start like dragging,  
 1610 and they're like what the heck is going on?

Differently from prior weeks, the researcher-teacher provided mediation, with specific questions, aiming to have Elizabeth elaborate her prediction (lines 1568, 1569, 1585). In addition to this researcher-teacher mediation, Madeline and Sean voluntarily and actively participated in the conversation, and through this collaborative dialogue they provided mediation for Elizabeth to generate a more precise and refined prediction. First, the two peers shared possible predictions of their own or leads into predictions. This occurred when Madeline posed a question to the group in soft voice, “are they going to eat the rabbit at the end?” (line 1570 and 1573) and when Sean predicted, “the rope is gonna snap” (line 1588). At that point, Elizabeth took a backseat and demonstrated that she was actively considering her peers’ contributions, as she replied “maybe” after each of their turns (lines 1572, 1574, 1592). Throughout this collaborative dialogue, interactional elements that would often be positioned as dispreferred in a classroom environment, such as speaking out of turn or laughing after a peer shared a response to the researcher-teacher’s question, seem to be doing affiliative work instead. Laughter, in particular, permeates the entire conversation (lines 1574, 1576, 1589, 1594, 1595, 1597, 1598). Furthermore, on line 1599, Madeline signaled that she would initiate a new prediction; but this time, rather than taking the backseat, Elizabeth joined Madeline and added detail and specificity to the unfolding prediction on lines 1603, 1605, and 1607. By building off of one another, Madeline and Elizabeth co-authored a full-fledged prediction that fit the unfolding plot of the story, using interactional features that demonstrate greater



1317 \*MAD:=@ though@. hhhuhhu  
 1318 \*MAD:O::H- oh a three year old,  
 1319 \*TEA:[you think?  
 1320 \*MAD:[i mean that's just- i mean- no:::,  
 1321 \*TEA:he's pretty articulate.  
 1322 \*MAD:like the first [page yeah.  
 1323 \*SEA: [HHU [WELL IT'S A DREAM.  
 1324 \*TEA: [hhhe  
 1325 \*SSS:(xxx)  
 1326 \*TEA:that's interesting? (+) u:::m.  
 1327 \*MAD:[{i like your idea.  
 1328 {madeline gazing straight ahead at marie claire  
 1329 \*SEA:[no. i like marie claire's, [prediction.  
 1330 \*TEA: [yeah?  
 1331 \*ELI:yeah.  
 1332 \*MAD:yeah.  
 1333 \*MCL:thanks guys?

Upon the researcher-teacher's invitation to the learners to reconsider their prediction based on their peers' predictions, Marie Claire announces that she indeed had a new prediction now (line 1300) and shared it with the group (lines 1306-1312); after listening to her peers, Marie Claire believed that the story consists of a child's dream in which he imagines himself in the future. This new interpretation sparked great interest and conversation among Marie Claire's peers. They immediately and collectively evaluated the new prediction by stating, for example, "I like that one" (Sean on line 1314), "that's good" (Elizabeth on line 1316), "I like your idea" (Madeline on line 1327), and "I like Marie Claire's prediction" (Sean on line 1329). This explicit peer support led Marie Claire to smile and thank her fellow learners for the encouragement and positive receipt of her newly-generated prediction. This happened despite the fact that the researcher-teacher—the one person in the group who has read the whole story and knows what will happen next—objected to key details of the prediction, openly raising doubt ("you think?" on line 1319) and questioning the grounds of the prediction by pointing out that the main character is "pretty articulate" (line 1321) to be a young child. The researcher-teacher was careful to mediate the learners' role work and sharing to not give away the story, while still pushing them to make their predictions based on textual evidence.

In this highly emotionally and intellectually safe space, discussions around the role of prediction continued to grow in complexity as peers take on Marie Claire's new prediction and build upon it. Madeline connected Marie Claire's allusion to "the boy" with the content found on "the first page" of the story, arriving at the conclusion that the character must be three years old (line 1315, 1318). When the researcher-teacher questioned this assessment of the character's age (lines 1319, 1321), Sean came to his peer's defense on line 1323 using a loud voice. As such, he pushed back against the researcher-teacher's claim by reinforcing the main assumption behind their prediction: the whole story is a dream and, as such, the character could be three years old and "articulate."

In stark contrast to what we saw in the initial weeks of the intervention, the conversation around prediction on week 11 generated active engagement and the collaborative construction of new avenues for interpretation and meaning-making. As the conversation unfolded, we see that the four learners took on Marie Claire's new prediction and continued to further develop it in Excerpt 6.

**Excerpt 6 – Week 11 (Part II)**

1335 \*SEA: as a way like- warning, not warning him,  
1336 but showing him like what's to come,  
1337 if we keep going down, [this-  
1338 \*TEA: [but then wouldn't=  
1339 =you have to be from the past?  
1340 \*ELI: (no-) (+) cause he is-  
1341 (1.5)  
1342 \*SEA: [no but he's like- he's like present day.  
1343 \*MAD: [but he could just see [the future.  
1344 \*MCL: [(xxx) right now.  
1345 \*SEA: so let's say it's like, (+) two thousand,  
1346 \*TEA: O::::::::::[::H? i see- okay,  
1347 \*SEA: [fourteen, and he goes to bed, but=  
1348 =in his dream he's like in like three thousand,  
1349 [twenty,  
1350 \*TEA: [O::::::::::[::H? u::::::::::[:::h?  
1351 \*MCL: [and like,  
1352 [the reason why the sandman doesn't [know all=  
1353 \*TEA: [o::::::::::[::h?  
1354 \*ELI: [hihihi  
1355 \*MCL: =that- yeah.  
1356 \*TEA: gotcha, [gotcha gotcha.  
1357 \*ELI: [hihi  
1358 \*SEA: but then why are they lighting lamps:.  
1359 (0.5)  
1360 \*TEA: u:::m.  
1361 \*SEA: {maybe we got so [far ahead,  
1362 {sean's clenched BHs/index out/circ mov forward  
1363 \*MAD: [{maybe it is the industrial,  
1364 {mad points RH thumb to sean  
1365 \*MAD: [revolut@ion@. °hhhe°  
1366 \*SEA: [{tha:t we:::::, went-  
1367 {sean's clenched BHs/index out/circ mov backward  
1368 \*ELI: yeah (you would think we) would have,  
1369 \*SEA: [i mean there were sunf[lowers,  
1370 \*ELI: [industrialized,  
1371 \*MAD: [i think they- they're gonna team up and take=

1372 =down [the ro[bot.  
 1373 \*SEA: [yeah.  
 1374 \*MCL: [but why would there be a [robot=  
 1375 \*ELI: [lamps,  
 1376 \*MCL:=(°when you still can°).  
 1377 \*MAD:WHY- can they really not find water like=  
 1378 =the boy needs to drink water to live. you know,  
 1379 [hhha HHE  
 1380 \*SEA:[well i woul- that's- why like, i thought maybe=  
 1381 =like water was scarce. so they only like, (+)  
 1382 humans get it- before, (+) plants and stuff.  
 1383 but then you need plants for (°xxx°).  
 1384 \*TEA: hum.  
 1385 \*SEA: i don't know.  
 1386 \*MAD:[what does-  
 1387 \*SEA:[°this is-° IT'S A DREAM therefore this stuff can-  
 1388 \*MAD:do you mean [the (xxx) is a dream?  
 1389 \*SEA: [(xxx).  
 1390 \*MAD:it could be a fiction. real life.  
 1391 \*SSS: ((laughter and inaudible speech))  
 1392 \*TEA:hu:::::m? [(+) alright. (++) tsk  
 1393 \*MAD: [hhhe

As can be seen above, Sean elaborated a rationale for Marie Claire’s new prediction (lines 1335-1337), explaining that the child’s “dream” is a warning about what the world might become in the future. The researcher-teacher continued to cast doubt over the prediction and its underlying assumptions, now questioning the learners’ conjectures in light of the timeline of the events in the story (lines 1338-1339). In response, the four learners came together to push back against the researcher-teacher’s critique, explaining that the main character, a child, is in the “present day” (Sean, line 1342) “but he could just see the future” (Madeline, line 1343) and even gave an example of what this looks like (Sean, lines 1345-1349). The researcher-teacher finally seemed to accept the learners’ rationale for Marie Claire’s prediction (“gotcha, gotcha, gotcha” on the line 1356). Importantly, the four learners continued to fact-check their new collective prediction, such as when Sean posed the question to the group “but then why are they lighting lamps” (line 1358), as evidence from the text that seemed to contradict their previous agreement that the story is set in the future. Similarly, Marie Claire pointed out another inconsistency in their collective prediction in light of textual evidence, reminding the group of the fact that the main characters could not find drinking water (lines 1377-1378). With minimal intervention needed from the researcher-teacher at this point, we see that the four learners came together to create and assess predictions as well as elaborate rationales for their collective interpretation of the story.

Overall, on week 11 we see considerably increased peer collectivity, learners’ evident familiarity with how to do the role (prediction), and a deeper understanding of what prediction entails (evaluating a prediction, checking it against the story plot, questioning the validity of

the story plot). We argue that this is possible because there is more supportive collaboration. This extended, supportive collaboration changed qualitatively over time, from needing collaboration to produce a prediction to collaboration to refine predictions. It is also important to highlight here that the most reserved learner, Marie Claire, is the one who volunteered the additional prediction in week 11, and while it still carried interactional features such as cut-offs and pauses, it denotes greater confidence than in previous weeks.

## Discussion

In the above excerpts, we traced moment-to-moment evidence of the dialectical relationship between emotion and cognition and followed their concurrent development in goal-directed activities over the twelve-week study. What started as insecure contributions, limited understanding of the role work, lack of clarity about how to work collectively (despite invitations from the researcher-teacher to join in), later changed to better understandings of the role work, peer encouragement and support to take risks, increased confidence, and affiliative work. This emotionally supportive process resulted in an increased ability to create and redefine predictions, to generate collective evaluations of predictions, to push for support from textual evidence, and to volunteer predictions. In this data, we also saw the full range of human emotions (Poehner & Swain, 2016). Finally, in terms of refraction, while each learner had their own developmental path, there were also some commonalities.

As noted above, through a variety of linguistic, gestural, and multimodal resources a collective space was created for learners to engage in (Golombek & Doran, 2014; Imai, 2010; Stone & Thompson, 2014). The learners' development was shaped by their social environment through the researcher-teachers' highly attuned mediation which promoted collectivity through eye gaze, verbal invitations, asking for connections to known information, giving the floor to students after overlap, allowing space for changing possibilities, seeking agreement or disagreement, posing questions to focus predictions and to elaborate on predictions, and inviting commentary and the possibility to change in light of new information. In addition, as Swain (2013) pointed out, "emotions may be co-constructed as an event progresses" (p. 2). We saw evidence of that in the DOLP, an integral part of their social environment, which indeed played a significant role in the development of emotion and cognition over the course of the study. The collective nature, where each person had an essential role to play, not only mediated their understanding of the concepts and helped them develop their literacy abilities, but importantly this social environment allowed for and helped promote emotional mediation and development. Learners were able to have access to the help that they needed, were able to provide help to others, had a safe space to admit that they did not know or were not sure, and were able to support each other through laughter and encouragement. Learners' *perezhivanie* in this particular social environment led to a very productive social situation of development. Finally, through this analysis, we could see that not only did the participants shape the environment, but the new environment also shaped the development of the learners (Bakhurst, 2019; Imai, 2010; Lantolf, 2021; Mahn & Reiersen, 2013).

## Implications

This study joins the others highlighted in the literature review that are pushing for the promotion and tracing of emotional-cognitive development over time and not limiting our


understanding of learners' abilities to cognitive only. As researchers, we need to continue to pursue the myriad of ways to see emotion in data and trace the development of both emotion and cognition, taking into consideration gesture, body movements, gaze, verbal contributions, and micro-interactive features. For teachers, this study provides evidence of the need to think deeply about how we ask learners to collaborate and what kinds of development that may allow. While some groupings may allow learners to work together, others may importantly promote the development of true collectivity (Petrovsky, 1985). Teachers need to be intentional in the ways they generate and provide tools, concepts, and goal-directed activities in language teaching that will allow the learners to develop, becoming independent and able to use the language in the ways that they wish. This includes paying special attention to the different forms of mediation, at both the individual and group levels, in terms of concepts and SCOBAs as well as attuning mediation to learners' particular needs as their learning develops. Additionally, the attunement to the unity of emotion-cognition centered here compels teachers and teacher educators to engage in self-inquiry and reflection on how their histories shape their thinking, manner of providing attuned mediation, engagement with learners' work, and ultimately their relationship with students (Golombek, 2015).

### **Conclusion**

Through the carefully designed C-BLI using a DOLP, the researcher-teacher was able to promote their emotional-cognitive literacy development in terms of the macro and microgenetic changes in the amount, type, and nature of the collective work as well as changes in interactional features through the C-BLI and DOLP. As Swain (2013) noted "language learning is not just a cognitive struggle, it is a cognitive and emotional struggle" (p. 11). Because of their dialectical nature, we need to attend to our learners' needs in terms of both emotion and cognition.

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