Research gap in the negative language transfer studies and a Sociocultural approach: A proposal of integration to foster L2 learning[1]

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Abstract

There is a fairly long history in the studies of Second Language Acquisition and particularly in the field of Language Transfer (LT) as an inevitable phenomenon (Odlin, 1989). Most literatures thus far complied with a certain procedure in its study of LT, however, this is not without its limitations. Meanwhile, LT, particularly negative LT (-LT), may benefit from the application of Vygotsky's Sociocultural Theory of the Zone of Proximal Development (ZPD) and Scaffolding. The present paper reviews -LT literatures and suggests an integration with ZPD and Scaffolding to its study.

Aim of the Present Paper

The aim of the present paper is to review past literatures of negative language transfer (-LT) studies and propose an integration with Vygotsky's Zone of Proximal Development (ZPD) and Scaffolding to its research.

Negative Language Transfer Studies and the Research Gap

'Language transfer', 'cross-linguistic influence', 'cross-language transfer', 'interference' and so on, are a few of the very many names that refer to the one phenomenon with slight variations, with the terms 'language transfer' and 'cross-linguistic influence' being the most commonly used (Odlin, 2005). From the list, the term 'language transfer' is used in the present paper to represent the phenomenon (defined below) as the "theory neutral cover-term" (Jarvis and Pavlenko, 2008, p.3).

Language learners produce errors when using their target language (TL) and some errors are due to language transfer (LT). LT is defined as "the influence of a person's knowledge of one language on that person's knowledge or use of another language" (Jarvis et al., 2008, p. 1) both consciously and subconsciously (Odlin, 1989; Chan, 2014). There are two possible outcomes to LT: the facilitation or impediment of learning or use of the TL. Positive LT (+LT) is the name given to the facilitation or the constructive effects from prior language (Lp) knowledge on the TL. On the other hand, negative LT (-LT) refers to the impediment or deconstructive effects from Lp, or alternatively, -LT causes unusual or "non-native like" forms

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of the TL of which resembles the Lp. The present study focuses on -LT.

Some early studies, including Epstein (1915), Jespersen (1922) and Mencken (1937), described -LT as a negatively connotated phenomenon that is often undesirable and harmful, affecting language use and even endangering the second language (L2). It was perceived as the L2 learners' 'narrow-mindedness', 'sloppiness' and 'laziness' (Jarvis et al, 2008).

The view of LT was revolutionised by the works of Fries (1945), Weinreich (1953), Haugen (1953), Lado (1957) and Selinker (1966). They regarded LT as an inevitable phenomenon in L2 development and, therefore, identified and legitimised it as a linguistic, psycholinguistic and sociolinguistic phenomenon. This scholarly footing also encouraged further significant academic books by Gass and Selinker (1983), Sharwood and Kellerman (1986) and Odlin (1989), which explored more precisely the effects of LT at the levels of semantics, syntax, phonetics, the forms of transfer (e.g. underproduction, overproduction, misinterpretations), the role for the mother tongue, and the effects on L2 learning (both +LT and -LT). And, they challenged the view of contrastive analysis by examining Universal Grammar and LT. The main focus was commonly on two languages (i.e. L1 to L2) until more recently the works of scholars such as Jarvis (2000), Pavlenko and Jarvis (2002), Cook (2003), Ringbom (2007) stimulated more examination in multilingual contexts, examining the directionality of LT (forward, lateral and bidirectional transfer) with more consideration on perceived language distance or relatedness of languages, and why LT happens in certain cases and not others.

Despite the extensive studies on -LT at multiple levels like the semantic (e.g. Jiang, 2004; Wang, 2013), orthographic (e.g. Kato, 2006)., morphologic (e.g. Zhang et al., 2010), lexical (e.g. Kellerman 1977, 1978) and syntactical levels (e.g. Lee, 2016) and so on, there are typical phases of research on LT (See Table 1).

Table 1. "Phases of language transfer research" (adapted from Jarvis and Pavlenko, 2008, p. 5-6)

Phase	General Description	Primary Research Concerns
1	Recognition and investigation of the phenomenon as a factor – as an explanans or intervening or independent variable – that affects other processes (such as second language acquisition)	• Identifying cases of transfer • Defining the scope of transfer • Quantifying transfer effects
2	Investigation of the phenomenon as a primary process itself - as an explanadum or dependent variable – that has its own set of explanantia or independent variables	• Verification of transfer effects • Identifying causes of transfer • Identifying constraints on transfer • Investigating the selectivity of transfer • Investigating the directionality of transfer effects

3	Development of theories designed to explain the phenomenon in relation to social, situational, and mental constraints, constructs and processes	• Development of theoretical models that explain how, why when and what types of Cross-linguistic influence (CLI) occur • Development of specific and testable hypotheses concerning CLI • Empirical testing of these hypotheses
4	Development of a precise physiological account of how the phenomenon takes place in the human brain	• Detailed mapping of the brain in relation to how language is acquired, stored, and processed • Accumulation of direct evidence of cross-linguistic neurological connection in a person's long-term memory – of how such connections are formed, changed and maintained • Accumulation of direct evidence of how languages are activated in the brain and of how a person's knowledge of one language can be activated and interfere with his or her use of another language

Like research in other areas of language and cognition, the study of LT has four general phases. Phases 1 and 2 focus on identifying whether an error is LT, what the cause factor is, what is affected in the TL, the directionality of the effect and so on. Examples of this include Wang (2013), which identified the effects of Chinese on Chinese L1 ESL learners' faster semantic judgment of two English words when the words are of the same Chinese word; Peng (2003), which showed that Chinese L1 learners of Japanese produce *kanji* words that do not exist as a form and/or meaning in Japanese, but are based on the Chinese words; and Ringbom (1987) who studied the effects of Swedish as a first langauge (L1) or L2 on English as a thrid language (L3). Phases 1 and 2 refer to a bottom-up approach while Phase 3 refers to the top-down inverstigation of LT to test models and hypotheses. For example, Contrastive Analysis Hypothesis stated that L2 learners would experience some features as more difficult and some easier due to the similarity of elements to that of their native language (Lado, 1957). However, studies such as Lee (1968) and Stockwell, Bowen and Martin (1965) demonstrated that Spanish L1 ESL learners experience little difficulty in learning and using *know,* despite that there are two terms *conocer* and *saber* in Spanish, which disproved Lado (1957). Lastly, Phase 4 is a psycholinguistic approach to identify neurological effects of LT, e.g. fMRI images showed that there is a higher cognitive activation in Chinese L1 learners of Japanese with English as a L2 comprehending spoken Japanese than spoken English compared to Korean L1 learners (Jeong et al, 2007).

As mentioned, the above table summarises the general phases of research in LT and most research in the field so far falls within these phases. These phases focus on investigating the isolated individual to understand the cause and effect of LT in most cases. For example,

Kellerman (1978) investigated Dutch and English vocabulary use and found that words that are similar in both languages are positively transferred. In his study, participants completed individual language judgement tests and were measured on their rejection of expressions. In the study of subject-verb inversion in Spanish matrix and embedded wh-questions by Spanish heritage learners in the US using an individual acceptability judgement test and a written production test showed that English dominant Spanish heritage speakers experience more difficulty with the embedded wh-questions (Cuza, 2012). There is an exhaustively large number of examples of studies using the typical individualistic tests batteries or self-report (e.g. Apostolou, 2013; Atwill et al., 2010; Ecke, 2008; Ecke & Hall, 2013). Likewise, neuro-imaging studies utilizing machines, such as fMRI, that investigate language learners and acquisition are restricted to measure neuro-activities of the individuals (e.g. Jeong et al., 2007).

The common use of individually focused test batteries may stem from the experimental nature of research on LT to precisely measure cognitive functions and/or changes as reflected in language production, reaction times or brain activity. This approach is advantageous in isolating and controlling for variables that would occur in natural sociocultural environments where language is embedded to minimise noises in the results, especially when measurement of cognitive processes requires precision.

Although, the exhaustive list of literatures provides insightful indications of the cause and effect of LT on the individual and its cognition, and provided many educators with some errors to expect when teaching in classrooms, they also bear limitations. Firstly, this approach has been criticised for the lack of consideration for "interactional and sociolinguistic dimensions of language… [and therefore] is flawed" (Firth and Wagner, 1997, p. 1). As Odlin (1989) and Vygotsky (1998) also stated, understanding the social context is essential to understanding LT as its occurrence is encompassed by a broad variety of social contexts. In other words, isolating the individual to examine the phenomenon confines the understanding of LT in a particular context. In most cases, language is used as a means of communication and many learners learn a language in context, while interacting with others and the environment. Although isolating the individual to control for the investigation to identify the cause and effect is important, LT occurs in natural contexts where learners interact. Secondly, without doubt, one goal of both learners and educators is language learning. Previous studies of -LT do not reveal how the affected learners might overcome -LT and complete the acquisition of the affected target structure for example, nor what educators can do to enhance learning of those inevitably influenced. Therefore, the question is: Can learners learn a target grammatical structure affected by -LT?

Vygotsky's Zone of Proximal Development and Scaffolding

Of the many sociocultural theories (Lantolf, 2000; Lantolf & Thorne, 2006) the present study draws from Vygotsky's Zone of Proximal Development (ZPD) to understand learning in context.

ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Figure 1 is an illustration of the concept.
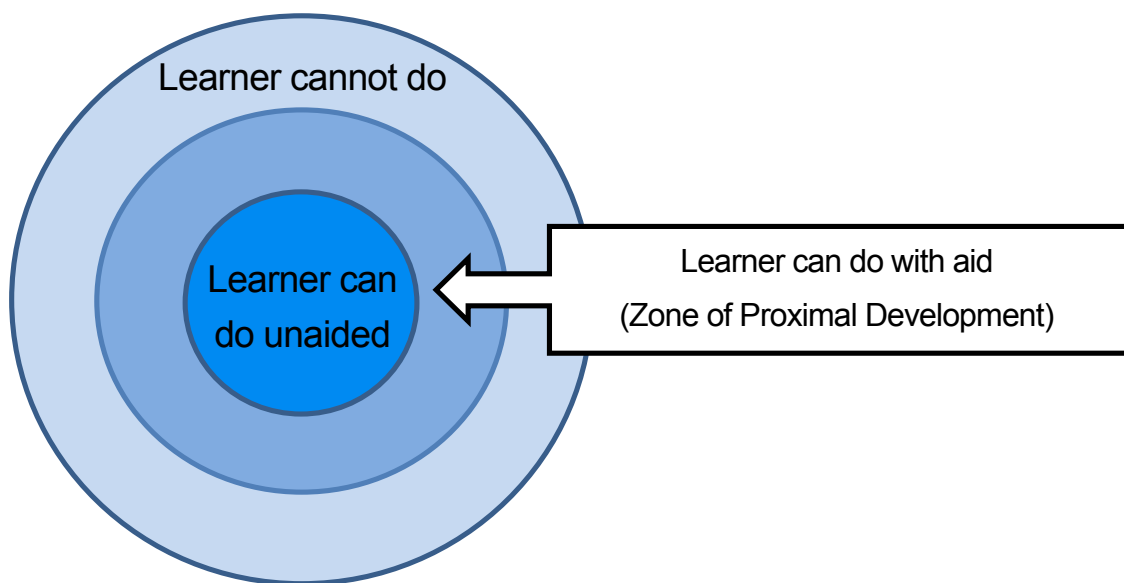

Figure 1. An illustration of the Zone of Proximal Development (Vygotsky, 1978[2])

The inner-most circle of Figure 1 represents what the learner can do alone. The outer-most circle represents what the learner cannot do, and the middle circle or zone is the potential of what the learner can achieve with the assistance of others, i.e. the ZPD. Internal developmental processes associated with learning operates only "when the [learner] is interacting with people in his environment and in cooperation with his peers" (Vygotsky, 1978, p. 90). The learner becomes able to achieve something in their ZPD, while being aided by others, and they move on to be able to achieve it on their own. In relation to ZPD, borrowing Wertsch's (1979) words, "in the transition from interpsychological to intrapsychological functioning, the learner moves through stages of other-regulation to complete self-regulation, the stage when he or she is capable of independent problem solving" (de Guerrero & Villamil,

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[2] Modified based on image from https://en.wikipedia.org/wiki/Zone_of_proximal_development

2000, p. 52). Together, this suggests what learners cannot do or acquire alone can be achieved through their (interpsychological) interactions with others, experiencing other-regulation, which in turn triggers intrapsychological functions to, eventually, reach self-regulation.

The aid offered to the learner's ZPD, which enables the learner to achieve what is required, is called scaffolding. Scaffolding is defined as:

> "a temporary structure that is put up in the process of constructing or repairing a building. As each bit of the new building is finished, the scaffolding is taken down. The scaffolding is temporary but essential for the successful construction of the building… *Scaffolding*, however, is not simply another word for *help*. It is a special kind of help that assists learners in moving toward new skills, concepts, or levels of understanding." (Gibbons, 2015, p. 16).

The construction or repairing of a building refers to learning, and the scaffolding is the temporary structures necessary for the learning that can be taken down as the learner moves forward in learning. The teacher (or adult) may control the elements of the task that is beyond the child or novice's unassisted efforts to permit them to concentrate and complete what is within their competence to carry out the task or achieve the set goal.

An example of learning through ZPD and scaffolding is Nassaji and Swain's (2000) study, which investigated two Korean ESL learners of intermediate level proficiency and measured their article use in compositions. The participant who had relatively more difficulties with articles was placed in the "ZPD" help condition and the other in the "non-ZPD" help condition. The tutor utilised a gradual feedback regulatory scale (see Aljaafreh and Lantolf, 1994 for details) which ranges the feedback from the least direct to the most direct in the ZPD help condition, and random feedback, not in order of the scale, in the non-ZPD help condition. Both participants received four forty-minute sessions with the tutor. Results indicated that the participant in the ZPD condition outperformed the participant in the non-ZPD condition on a grammaticality test of article use. The participant was also observed to have higher self-regulation or less dependence on the tutor in identifying the error and self-correcting than the non-ZPD participant.

Other studies have found similar results (Rassaei, 2014; 2017). In a study investigating oral production of wh-questions of intermediate proficiency Persian L1 learners who were studying English as a Foreign Language (EFL) over three interaction sessions comparing the ZPD and non-ZPD condition and a control group (no feedback), Rassaei (2017) found that quantitatively both the ZPD and the non-ZPD conditions outperformed the control group condition in the post and delayed post-test. In addition, the ZPD condition outperformed the non-ZPD in the post-tests. The qualitative results showed that learners required more explicit feedback in a co-constructed and interactive manner in session one. However, in session two

and three, the learners required less explicit feedback and began to self-mediate using the teacher's mediation provided in session one. ZPD help condition has also been found to help learners learn the target grammar structure better compared to recasts (Rasseai, 2014).

Although scaffolding originated from adult or an expert supporting the learning of a child or novice (Wood, Bruner and Ross, 1976; and as shown in the examples above), it now encompasses peer interaction, namely peer scaffolding. Peer scaffolding, also known as peer revision, peer tutoring etc., is where the individual can scaffold and be scaffolded during collaborative work with a peer (Donato, 1994; Ohta. 1995, 2001). This is of significance as within a common classroom, the probability of one-on-one teacher-student interaction and teacher-scaffolding is relatively low compared to the time for student-student (peer-peer interaction), e.g. students may comprehend an assigned text together to produce their own or to undertake speaking activities, such as role plays, in pairs or small groups (van Compernolle, 2015; Wong-Fillmore, 1992). One important distinction is that the capable person remains static in traditional expert-novice or teacher-student interactions. On the other hand, within peer interaction, the role of the more capable person alternates and the pair often pool resources when difficulties arise (Donato, 1994; Kenning, 2010; Storch, 2002 Swain & Lapkin, 1998).

De Guerrero and Villamil (2000) studied peer scaffolding of learners from the same class. Participants were a pair of intermediate ESL Spanish L1 college learners in an ESL writing course. The learner who required more revision in their composition was the writer and the other learner with less trouble on writing was the reader. The pair revised the writer's composition together in their interaction session and their interaction was transcribed and analysed. Results showed that the reader assumed the role of the tutor and began scaffolding behaviours to promote self-regulation in the writer early on. For example, the reader began to recruit interest and marking critical aspects of the task revealing intentionality as a tutor, e.g. directing the writer's attention to features of the text that required improvements (e.g. illegible handwriting, the need to indent paragraphs and preposition use) and in return the writer engaged with that scaffolding as he justified and explained his behaviour. Through this the writer gained awareness about his writing. In the final draft submitted, improvements suggested by the reader were found.

The scaffolding in this pair is extended beyond L2 relevant aspects. At a point, the reader repeatedly corrected the writer's errors in the composition. The writer responded with frustration. Sensing the uneasiness, the reader then attempted to ease the stress by inviting the writer to voice his opinions and reminded the writer that he was only revising. This was the

reader's scaffolding act of frustration control and contingent responsivity, managing the affective dimensions of the interaction by sharing the control, dominance or power over the task to prevent any breakdown of interaction.

Although the target focus was on the writer's composition, there were also multiple occasions where the writer provided scaffolding to the reader (e.g. the use of contraction and tense). Despite that the reader did not seem convinced on one occasion, he uptook and included the feedback in his final composition. As can be seen, both the reader and writer are more capable on different aspects of L2 and provided scaffolding accordingly. As the interaction unfolded, there were more cases of self-regulation by both participants. This is an example where the person scaffolding, and the person scaffolded do not remain static in peer scaffolding like that of a teacher-student or an expert-novice interaction and that both peers learnt through the interaction. Furthermore, similar results were also found in Storch (2002) and Storch and Aldosari (2012) where learners indicated learning after peer scaffolding when working more collaboratively.

Although these papers indicated positive effects on learning, they are certainly not without limitations. The presented studies are limited in their research design, in that firstly, there lack comparison groups or control on apparent variables that may impact on the study (e.g. in Nassaji and Swain (2000) where participants' progress compared to non-participants' general classroom progression on learning has not been considered). Secondly, whether the learning retains after the immediate learning effects is unknown. Lastly, most studies presented thus far investigated peer interaction using writing tasks, either written prior to the interaction or co-written with a peer in interaction. They measured learning as reflected in their final submission of the same composition. Thus, further investigation is necessary to study the effects of peer interaction on learning on tasks other than written compositions.

Conclusions

No studies to date integrated –LT with a sociocultural approach or explored the effect of scaffolding within a learner's ZPD on the learning of L2 items affected by -LT. Traditional -LT studies are advantageous in understanding the effects of -LT and provide insights into the neurological changes in L2 development. These often incorporate individualistic quantitative research methods that are more representational and generalisable, producing more standardised measures of treatment (interactional) effects and removing noises in the study. On the other hand, ZPD and scaffolding studies provide insights into the learning of a language and an analysis of the details of interaction highlighting social and environmental

factors in order to reflect qualitative aspects of the interaction. Therefore, the present study suggests to reconcile the benefits of both approaches to more thoroughly explore the effects of peer interaction on the learning particularly of -LT-affected TL items.

The present study recommends to simulate, where possible, the classroom situation and learning environment, e.g. where learners of similar proficiency work in pairs, reflective of more typical sociocultural studies. However, studies should also incorporate more experimental control to allow for better comparisons, such as utilising a control group and follow-up post-test, reflective of more typical -LT studies.

Future studies to attempt this incorporation the two theoretical and methodological approaches can provide a better understanding of the effects of peer interaction on the learning of TL affected by -LT. and can provide insights into whether peer interaction, common in a classroom that is effective in learning, can help learners learn what they are experiencing difficulty with due to their Lp.

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