

# On Three Potential Sources of Comprehensible Input for Second Language Acquisition

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## ABSTRACT

Three potential sources of comprehensible input for second language acquisition are examined: Modified Input, Interactionally Modified Input and Modified Output. To this end, an attempt is made to closely investigate how each type of linguistic environment facilitates learner comprehension, and subsequently, acquisition. Different theoretical claims as well as a number of empirical studies are discussed in order to explore the link between different sources of input and language development. The paper concludes with a critical discussion of how the perceived comprehension actually leads to the acquisition of the features of the target language, and with suggestions for future research in this area.

## INTRODUCTION

The role of input comprehension has been of prime importance in the second language acquisition (SLA) research and theory, especially during the past two decades. This has been motivated by the belief that a learner's exposure to the target language is not in itself a sufficient condition for second language (L2) acquisition. From Corder's (1967) early claims of input and intake<sup>2</sup> to Krashen's (1982) Input Hypothesis and Long's (1983, 1996) Interaction Hypothesis, there has been a widespread conviction that input must be comprehended by the learner if it is to assist the acquisition process. This stems from the widely held claim that input which is understood by the learner constitutes primary data for SLA (Hatch, 1983a; Krashen, 1980, 1982; Long, 1983, 1985; Pica, Young & Doughty, 1987). Given the importance of input comprehension in language acquisition, current SLA research has tried to identify what it is that makes input comprehensible (or incomprehensible) to the learner, and its role in the language-learning process. Of particular interest has been the effect of the input that is provided to the learners, the interactions which the learners engage in, and how the input and interactions facilitate comprehension and foster SLA.

Most of the studies on input comprehension have developed from Krashen's (1980, 1982,

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<sup>2</sup>Corder (1967) made an important distinction between input and intake: Input refers to any stretch of the target language *available* to the learner, whereas intake refers to that subset of input that actually *goes in* and is utilized in some way by the learner.

1985) Input Hypothesis which first claimed the importance of comprehensible input in SLA. The Input Hypothesis claims that in order for L2 acquisition to proceed, learners must be exposed to target language data which they can access – what Krashen termed *comprehensible input*. He identifies comprehensible input as “the only causative variable in SLA” (Krashen, 1981, p. 57) and argues that in order for L2 acquisition to take place, learners must be exposed to comprehensible input which contains language structures that are beyond their current stage of interlanguage (IL) development, which he calls “ $i+1$ ” (Krashen, 1982, p. 21). According to Krashen, in moving from stage  $i$  to  $i+1$ , it is necessary for the acquirer to understand input that contains  $i+1$ , where *understand* is taken to mean that the acquirer focuses on the meaning and not the form of the utterance. The main assumptions of the Input Hypothesis are as follows: (1) access to comprehensible input is characteristic of all cases of successful language acquisition, in both first and second language acquisition; (2) greater quantities of comprehensible input seem to result in better or faster L2 acquisition; and (3) lack of access to comprehensible input results in little or no acquisition (Long, 1982).

Despite the significant influence that the Input Hypothesis has had on SLA studies since its inception, it has received strong criticisms from several researchers (e.g., Gass, 1988; Gregg, 1984; McLaughlin, 1987; Swain, 1985; White, 1987). According to White (1987), it may be *incomprehensible* input which is vital to SLA. She contends that it is *incomprehensibility* or comprehension difficulties which can provide important negative feedback to the learner, which she believes to be necessary for L2 acquisition. For Gass (1988, 1997), crucial importance should be given to the concept of *comprehended* input<sup>3</sup> rather than comprehensible input. Swain (1985) also argues in her Comprehensible Output Hypothesis that in addition to comprehensible input, comprehensible *output* is also necessary for L2 acquisition, and that learners will be obliged, and therefore, make their output more comprehensible if communicative demands are put on them. This view contrasts sharply with Krashen’s Input Hypothesis where the role of production, or output, is minimized. Hence, notwithstanding its popularity and influence, the Input Hypothesis has been challenged by a number of researchers, owing to the strong claim<sup>4</sup> that comprehensible input actually *causes* acquisition (see Gregg, 1984; White, 1987), and the lack of supportive evidence. However, Krashen’s Input Hypothesis has been by far the most influential theory on the role of input, and has had a huge impact in the history of L2 literature, spawning many valuable empirical studies on input and interaction. Currently, it is generally accepted that “language acquisition entails not just linguistic input but *comprehensible* [italics original] linguistic input” (Long, 1996, p. 414), and comprehensible input is held to be a necessary, though not a sufficient, condition for SLA (Krashen, 1985; Long, 1983).

How then is input made comprehensible? Long (1982) suggests four ways that input can be made comprehensible: (1) by modifying speech; (2) by providing linguistic and extralinguistic context; (3) by orienting the communication to the ‘here and now’ and (4) by modifying the interactional structure of the conversation. Long asserts that all four ways may aid communication, but he especially emphasizes that the 4<sup>th</sup> way – i.e., modifying the interactional structure of the conversation – is most likely to aid language acquisition. Furthermore, he argues that the input that has not been comprehended (i.e., the ‘+1’ part of the

<sup>3</sup>Gass (1988, 1997) distinguishes comprehensible input from comprehended input. The former implies that the speaker controls the comprehensibility, whereas in the latter, the focus is on the learner and the extent to which the learner understands.

<sup>4</sup>Krashen (1977) originally claimed that comprehensible input alone is both necessary and sufficient for SLA.

comprehensible input 'i+1') may become comprehensible through the process of interaction or negotiation. Similar observations have been made by other researchers as well. In an attempt to identify the features that make input comprehensible to the learner, Pica, Young, and Doughty (1987) also tried to answer this question through a study of input comprehension in two different kinds of linguistic environment<sup>5</sup> available to the L2 learner. The first kind is said to be characterized by input that has been modified or simplified in some way before the learner sees or hears it. This is consistent with the first of the four ways that Long (1982) mentioned (i.e., by modifying speech), and it has been chosen as the first of the three potential sources of comprehensible input to be discussed in this paper. For the sake of convenience, further reference to this type of linguistic environment will be termed *Modified Input*, hereafter.

The second type of linguistic environment available to the learner, as characterized by Pica et al. (1987), is the one in which a native speaker (NS) or a more competent speaker interacts with a nonnative speaker (NNS), and where both parties modify and restructure the interaction to arrive at mutual understanding. Once again, this type of learning environment echoes with the 4<sup>th</sup> way proposed by Long (1982) – i.e., modifying the interactional structure of the conversation. This linguistic environment has been chosen as the second potential source of comprehensible input to be explored in detail, and will be referred to as *Interactionally Modified Input*, henceforth.

The third type of linguistic environment chosen as the last potential source of comprehensible input for discussion here is the one where a learner modifies his/her output to make it more target-like, thereby making it more comprehensible to the interlocutor. Again, for the sake of convenience, further reference to this type of linguistic environment will be termed *Modified Output*. All the three sources mentioned above have been investigated by researchers (e.g., Ellis & He, 1999; Gass & Varonis, 1994; Pica et al., 1987) as potentially facilitative types of learning environment which help to promote comprehension, and facilitate L2 acquisition.

Having identified the three potential sources of comprehensible input for SLA, the focus of discussion to be developed here will be on exploring how each source (i.e., each type of linguistic environment) facilitates comprehension, and subsequently, acquisition. To this end, an attempt will be made to investigate the three types of linguistic environment as potential sources of comprehensible input, by exploring in detail how each environment functions in facilitating comprehension. This will be discussed both theoretically and empirically, with evidence from studies that have been conducted thus far. Finally, this paper will conclude with a discussion of how the perceived comprehension actually leads to the acquisition of the target material, and suggest some directions for future research.

## THREE POTENTIAL SOURCES OF COMPREHENSIBLE INPUT

### Modified Input

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<sup>5</sup>The term linguistic environment as used in this paper refers to any kind of learning environment which supplies learners with input, including different sources of input or input conditions.

As noted earlier, current L2 researchers have attempted to identify what it is that makes input comprehensible to the learner by investigating input comprehension in different kinds of linguistic environment. The first kind is characterized by input that has been modified or simplified in some way before the learner sees or hears it. This can be repetitions, paraphrase of words or sentences, and reduction of sentence length and complexity, among others. The studies examined within this framework concentrate on describing modifications that different speakers make when addressing a child or an L2 learner. Some typical examples of such modified speech are motherese (Snow & Ferguson, 1977), foreigner talk (Arthur, Weinar, Culver, Lee & Thomas, 1980; Ferguson, 1975; Long, 1980) and teacher talk (Ellis, 1985; Long & Sato, 1983; Wong-Fillmore, 1985). It is believed that such simplifications serve to facilitate comprehension. Within the context of SLA research, simplified input most often refers to L2 input that has been modified by a native speaker to facilitate NNS comprehension – the so-called foreigner talk (FT).

FT studies were stimulated by Ferguson's (1971) account of simplified registers. Early FT studies were mostly aimed at determining the nature of foreigner talk. Some of the features of FT have been characterized as follows: (1) Linguistic adjustments made in NS speech when addressing a NNS are not ungrammatical but well-formed<sup>6</sup> (Arthur et al., 1980; Newport, Gleitman & Gleitman, 1977); (2) NSs use shorter, syntactically and propositionally less complex utterances<sup>7</sup> (Arthur et al., 1980; Gais, 1977); (3) NSs use more restricted vocabulary; and (4) idioms and low frequency lexical items are often avoided. Some of the other salient characteristics of foreigner talk include slower rate of speech (Conrad, 1989; Hankansson, 1986; Kelch, 1985; Wesche & Ready, 1985), louder speech, longer pauses, more repetitions (Chaudron, 1983a), more deliberate articulation (Kelch, 1985; Derwing, 1990), and more use of gestures.

Even though the notion of providing L2 learners with such modified input is intuitively appealing, relatively little is known about precisely which types of modifications actually facilitate, or possibly hinder comprehension. In reviewing 12 empirical studies on input simplification and elaboration, Parker and Chaudron (1987) report that linguistic simplification in the form of simplified syntax<sup>8</sup> and vocabulary<sup>9</sup> failed to have a significantly positive effect on comprehension, whereas an elaborative modification (i.e., repetition of information) and clear segmenting of the thematic structure of the communication were found to enhance comprehension. Hence, they suggest that one should modify input in the direction of elaborative alterations rather than syntactic simplification. It has also been noted that elaborative adjustments have the added advantage of supplying learners with access to the linguistic items they have yet to acquire (Larsen-Freeman & Long, 1991).

In a similar vein, some empirical findings support that simplification may remove much of the redundancy present in language, and that greater comprehension may be achieved through linguistic elaboration rather than through linguistic simplification. Blau (1982) found that adjustments which resulted in greater explicitness and/or redundancy while retaining syntactic complexity, tended to facilitate comprehension. Similarly, Chaudron (1983b) also supports the effect of redundancy on comprehension. On exploring the effects of varied topic

<sup>6</sup>Input to NNSs may sometimes be ungrammatical. For possible factors of this deviant speech by NSs, see Long (1981).

<sup>7</sup>Fewer S-nodes per T-unit, fewer adjectival, adverbial, and noun clauses per T-unit, and fewer clauses and appositives per T-unit.

<sup>8</sup>e.g.) the use of two simple sentences rather than one complex sentence.

<sup>9</sup>e.g.) using 'to hold on tightly to' instead of 'to cling to.'

reinstatements on recognition and recall, he found that the repetition of the simple noun was most effective, at least in its effect on immediate language intake.

Several researchers (e.g., Chiang & Dunkel, 1992; Oh, 2001; Yano, Long & Ross, 1994) have also looked at the relative effects of simplified and elaborated texts on comprehension. Yano et al. (1994) presented learners with three types of texts: unmodified, simplified, and elaborated. The simplified texts consisted of reducing sentence length, embedding, and multisyllabic words; the elaborated texts included paraphrased information and definitions of low-frequency words. Their results showed greater comprehension for simplified and elaborated versions as opposed to the unmodified texts, although there was no significant difference between simplified and elaborated texts. More recently, Oh (2001) conducted a similar study which also looked at the comparative values of simplified and elaborated texts. She suggests that input should be modified in the direction of elaboration because elaboration retains more native-like qualities and is equally successful, if not more successful, than simplification in improving comprehension. A similar argument was also made by Pica, Young and Doughty (1987) when they compared premodified input with the input modifications produced during negotiated interactions. They argued that a decrease in the complexity of the input did not appear to be a critical factor in comprehension, and that interaction resulted in input that was more complex, which was found to have led to greater comprehension.

Not all forms of elaborations are beneficial, however. Chaudron's (1983b) study demonstrates that teacher vocabulary elaboration may in some cases lead to learner confusion about what is an alternative and what is additional information. Similarly, in a study which investigates the acquisition of word meaning from oral input, Ellis (1995) cautions that even though elaborations may help, over-elaborated input could be counter-productive. In another study, Chaudron and Richards (1986) found that modifications that included macromarkers signaling major propositions within the lecture improved listeners' comprehension and retention of lecture information. However, modifications with micromarkers signaling intersentential relations, framing of segments and pause fillers did not aid learners' retention of the lecture.

There have also been reports of evidence that different types of modifications may have differential effects for learners at different proficiency levels. Chiang and Dunkel (1992) report that the provision of redundant information in extended discourse significantly improved comprehension for advanced learners, whereas it did not appear to affect learners of lower-level listening proficiency. Therefore, it may be the case that the definition of modified speech can be quite different for learners at different stages of development. In line with this speculation, Chaudron (1983b) also points out that "no single form of simplification would be an appropriate method of presentation for a group of learners representing a range of proficiency levels" (p. 451).

In sum, it appears that modified input (whether simplified or elaborated) enhances NNS comprehension. However, as it has been noted, not all types of modified input have proved to be equally effective. Moreover, generalizations are difficult because the studies conducted thus far differ with respect to modality (i.e., written or spoken), approach to modification (i.e., simplification or elaboration), specific examples of each type of modification (i.e., different features of modified input), and how comprehension was assessed (i.e., dictation, multiple choice, etc.). At this point, one can roughly speculate the following: (1) slower speech rate<sup>10</sup>

<sup>10</sup>It should be noted, however, that there have been some recent reports that question the efficacy of slow rate of speech (see Derwing, 1990; Derwing & Munro, 2001). Another point to keep in mind is that due to the lack of a standard 'normal rate' of speech, researchers have used different rates as the norm, making it difficult to compare

and semantic redundancy have a considerable effect in increasing comprehension, (2) input simplification may facilitate comprehension for beginners, and (3) elaborative modifications may be more suitable for advanced students (Oh, 2001). It is not yet understood how different levels of comprehension feed into acquisition, nor is it clear what precise factors make input comprehensible. Future research might consider different kinds and combinations of adjustments in order to identify just which kinds of adjustments contribute, and to what degree, to the facilitating effects of comprehension.

As evidenced in the preceding studies, a great number of FT studies have mainly focused on how the NSs adjust speech to their NNS counterparts, and how this adjustment affects NNS comprehension. Although it has been suggested that the main function of FT is to promote comprehension, not much research has given attention to *how* this comprehension comes about. Recent studies (e.g., Aston, 1986; Hawkins, 1985; Mackey, Gass & McDonough, 2000) have looked at the NNSs' perceived comprehension. Hawkins (1985) took the initial step toward how comprehension comes about by looking at exactly *what* is comprehended by the NNSs in a foreigner talk discourse (FTD). She concludes that "the criterion of 'appropriate response' as a measure of NNS comprehension in FTD is not completely reliable" (p. 176) since NNSs may sometimes give appropriate responses that may not signal comprehension. This study is significant in the sense that it recognized the need to consider the NNS's role more closely in FTD, recognizing that FT is the NS's *response* in conversation with an NNS. As Hawkins (1985) noted, FT is not "a phenomenon that exists independently of the NNS" (p. 177). This comment is closely related to the next linguistic environment, which has to do with NS-NNS interactions.

## Interactionally Modified Input

The next linguistic environment chosen as the second potential source of comprehensible input for L2 acquisition is characterized by opportunities for NS-NNS interactions in which "both parties modify and restructure the interaction to arrive at mutual understanding" (Pica et al., 1987, p. 739). The role of interaction in SLA evolved from Hatch's (1978, 1983b) work, which emphasized the importance of conversation in developing grammar,<sup>11</sup> and from Krashen's (1982, 1985) claim that comprehensible input is a necessary condition for SLA. It was enriched and substantiated by the seminal work of Long (1982, 1983), who made an important distinction between modified input and modified interaction by differentiating the modified talk directed to the learner, from the modified structure of the conversation itself.

In investigating the social discourse of NSs and NNSs, Long (1983) identified the strategies employed by both parties to negotiate their way through the conversational discourse. These strategies included aspects of conversation such as comprehension checks, clarification requests, topic shifts, and self and other repetitions and expansions. Long claims that speakers modify interactions using these devices in order to avoid conversation problems, and repair discourse when non-understanding sequences arise. He first termed this *interactional*

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and generalize the findings (Blau, 1990).

<sup>11</sup>According to Hatch (1978), "one learns how to do conversation, one learns how to interact verbally and out of this interaction syntactic structures are developed" (p. 404). She claimed that language learning evolved *out of* communicative use, which was a reversal of the conventional assumption that language learning *led to* communicative use.

*modification*, which later became more widely referred to as *negotiation*. This term has been used to “characterize the modification and restructuring of interaction that occurs when learners and their interlocutors anticipate, perceive, or experience difficulties in message comprehensibility” (Pica, 1994, p. 494). Long (1982) asserts that the need to exchange unknown information will result in the negotiation for meaning characterized by modifications in the interactional structure of conversation, as participants seek to make incoming speech comprehensible. Long (1996) later redefines negotiation for meaning in his updated version of the Interaction Hypothesis:

...the process in which, in an effort to communicate, learners and competent speakers provide and interpret signals of their own and their interlocutor’s perceived comprehension, thus provoking adjustments to linguistic form, conversational structure, message content, or all three, until an acceptable level of understanding is achieved (p. 418).

In addition, Long (1982, 1983) also emphasizes that modifications are likely to occur more in two-way tasks which oblige NSs and NNSs to negotiate for meaning in order to make their speech more comprehensible to their interlocutors. Moreover, the need to obtain information from the learner (i.e., a NNS) means that the competent speaker (i.e., a NS or an advanced NNS) must attend to the feedback he/she is receiving before pressing ahead. This allows the learner to negotiate the conversation, which in turn forces the competent speaker to adjust his or her input until what he/she is saying is comprehensible to the learner. Hence, Long proposes that this *two*-way exchange of information will provide more comprehensible input, and promote acquisition better than one-way information exchange. Many researchers (e.g., Edmondson, 1999; Ellis, 1999; Gass, 1997; Hatch, 1978; Larsen-Freeman & Long, 1991; Loschky, 1994; Pica, 1987; Scarcella & Higa, 1981; Varonis & Gass, 1985) hold a similar view on the significance of input modifications which result from the negotiation process in interaction. Consequently, there have been a number of studies (e.g., Chaudron 1983; Ellis, Tanaka & Yamazaki, 1994; Gass & Varonis, 1985a, 1985b, 1994; Long, 1982, 1983; Loschky, 1994; Mackey, 1999; Pica, 1987, 1988; Pica et al., 1986, 1987; Polio & Gass, 1998) on NS-NNS negotiations.

The majority of these studies have focused on the ways in which negotiated interaction with a NS or a competent NNS helps the learner to understand the unfamiliar L2 input. Studies by Pica et al. (1987), Loschky (1994), and Ellis, Tanaka and Yamazaki (1994) have distinguished three different kinds of input conditions: (1) baseline input where the learners were given unmodified input, (2) premodified input where the learners were given simplified (and elaborated) input, and (3) interactionally modified input where the learners were given baseline input, along with the opportunity to ask for clarification if they did not understand the input (i.e., they could negotiate for comprehensible input). These three input conditions have been compared to determine their effect on the L2 learners’ comprehension, measured by success in following the directions of picture placement tasks. It was found in all of these studies that the third type of input – the interactionally modified input – led to the highest levels of comprehension.

Among the aforementioned studies, Ellis et al. (1994) and Loschky (1994) not only investigated the effects of different types of linguistic environment on comprehension, but also the relative effects of each environment on acquisition. Ellis et al. (1994) found a clearly different effect for each type of input. In a post-test administered after the treatment, the interactionally modified group was found to have acquired more new words than the

premodified input group, which in turn acquired more than the baseline input group. However, in Loschky's (1994) study, even though the moment-to-moment comprehension was highest for the interactionally modified input group, no correlation was found between the differential results of comprehension and acquisition of target structures, suggesting that the higher level of comprehension does not necessarily entail better acquisition (this will be elaborated in detail later in the paper).

As it has been noted, the majority of the studies report the beneficial effects of interactionally modified input over modified input. However, these results should be interpreted with caution. It has been pointed out that there could have been a bias due to the *time factor* since interactionally modified input conditions take considerably longer time than premodified conditions.<sup>12</sup> Therefore, it is likely that those studies where no time limit was imposed could have been biased toward the interactionally modified input condition (Polio & Gass, 1998). Ellis (1999) takes this argument one step further, asserting that it is difficult to see whether "the beneficial effect of interactionally modified input on comprehension were the results of more input and longer processing time or of the kinds of qualitative differences Long and others have claimed to be important" (p. 7). Another possible flaw in regard to studies on negotiated interactions is that some of them have sought to evaluate the quality of interaction for acquisition by simply counting instances of conversational modifications. As Aston (1986) cautioned, one should not assume that more heavily modified interaction would automatically produce better quality of input to the learner. He argues that a higher frequency of 'troubleshooting' procedures does not necessarily "indicate a greater 'negotiation of meaning,' or entail more appropriate input for acquisitional purposes" (p. 128). Therefore, more attention should be given to the quality of negotiation, which may be more important than the sheer quantity of negotiation (Ellis, 1999).

The foregoing studies on negotiation focused on demonstrating that when learners had the opportunity to negotiate meaning, they were better able to comprehend input. Other studies have also focused on identifying the participatory, task and learner variables that influenced whether and to what extent comprehension took place (e.g., Doughty & Pica, 1986; Duff, 1986; Ellis, 1985; Gass & Varonis, 1984, 1985b, 1986; Long, 1980; Pica & Doughty, 1985; Porter, 1986; Scarcella & Higa, 1981). The findings so far suggest that negotiation of meaning occurs more frequently in NS-NNS than in NS-NS conversation<sup>13</sup> (Ellis, 1985; Long, 1980; Pica & Doughty, 1985; Wesche & Ready, 1985), on two-way rather than one-way tasks (Doughty & Pica, 1986; Long, 1980; Pica, 1987), on unfamiliar tasks or with unfamiliar interlocutors (Gass & Varonis, 1984), in mixed gender rather than same gender dyads (Gass & Varonis, 1986), in mixed proficiency levels (Iwashita, 2001; Yule & Macdonald, 1990), and in certain interactional contexts where the NS provides input which is most suited to the learner's developmental needs (Tarone & Liu, 1995). It has also been suggested that older learners, who are generally better at negotiating meaning, receive more challenging input, which positively affects their acquisition process (Scarcella & Higa, 1981). However, as with other studies, these findings are not altogether conclusive, and should be interpreted with caution.

<sup>12</sup>In the Interactionally Modified Input condition, learners were allowed to ask clarification questions whenever they had difficulty understanding the input. Therefore, this type of negotiation could go on for any amount of time if no time limits were imposed.

<sup>13</sup>According to Varonis and Gass (1985a, 1985b), NNS-NNS interactions generated more non-understanding routines than NS-NNS interactions. Porter (1986) also reports that NNSs are more verbose when addressing another NNS than when addressing a native speaker.



In summary, research mostly supports that the informational structure of the two-way communication involved in interactionally modified input obliges NSs and NNSs to negotiate for meaning, and in an effort to communicate, adjustments to linguistic form, conversational structure, and message content are sought, in order to make what they say comprehensible to their interlocutors. Evidence so far also indicates that an interactional context tends to provide L2 learners with more varied and complex language data than a one-way FT. Its enhanced comprehensibility, appropriateness to the learner's level, its timing, and learner involvement in the interaction may explain the facilitative effects on SLA (Wesche, 1994). However, the studies so far have been largely limited to quantitative analyses, surface structures, and synchronic interactions. Careful studies with improved methodology which can account for the *time* factor, with a more qualitative and in-depth approach, are needed to substantiate the findings.

Until recently, most studies on interaction have mainly focused on input. In the past decade or so, a number of studies (e.g., Ellis et al., 1994; Gass & Varonis, 1985a; Gass & Varonis, 1994; Pica et al., 1987; Varonis & Gass, 1982) have addressed the need to look at how learners modify and expand their interlanguage as they interact in L2 discourse. This stems from the recent emphasis on the importance of negotiated interactions where the NNSs' output plays a substantive role. In interaction studies, it has been observed that NSs' output in fact serves as input for NNSs, and that NSs' input adjustment is in response to the NNSs' output. Therefore, in the process of negotiation, it is the output of one interlocutor that in fact becomes the input for the other. As a result, negotiated interactions may be seen as a continuum of input-output cycles where the output of a participant serves as input for the interlocutor, which again triggers output from the same interlocutor. In a similar vein, the next linguistic environment under investigation focuses on Modified Output, which constitutes yet another potential source of comprehensible input available to the L2 learner. This type of linguistic environment is inherently related to Interactionally Modified Input. However, the focus here will be more on the form of the NNS output, elicited by the input from his/her interlocutor.

## Modified Output

To a considerable extent, contemporary thinking and research about interaction have emphasized its role as a "vehicle of input" (Han, personal communication) to learners. This originates from Krashen's (1985) Input Hypothesis which claims that "only comprehensible input is consistently effective in increasing proficiency" (p. 48). For Krashen, output derives from competence which only comes from comprehensible input. Therefore, he focuses solely on the contribution of input, and maintains that the ability to produce second language (i.e., L2 output) is the *result* of acquisition.

Likewise, Long's (1983, 1996) initial version of Interaction Hypothesis was closely associated with the Input Hypothesis (Krashen, 1985) and therefore, the focus was more on the input. However, Long did allow more emphasis on the constitutive role for learner output. He recognized that learners could obtain interactionally modified input in the process of negotiation. This input, elicited by the learners' previous output, helps them to comprehend the input, and focus their attention on new or partially learned linguistic forms, which enables their acquisition. Hence, in his earlier version of the Interaction Hypothesis, Long maintained the position that learner output facilitates acquisition when it elicits modified input from a NS,

and viewed NNS output as a sort of a trigger for foreigner talk. However, in the updated version of the Interaction Hypothesis, Long (1996) offers a different role of output in view of negotiation. He recognized that meaning negotiations induce learners to modify their *own output* which in turn may stimulate the acquisition process. Both Pica (1994) and Long (1996) point out that when learners receive implicit negative feedback on their attempts to communicate, they may attempt to reformulate their initial utterances, thereby promoting acquisition.

The theoretical basis on the importance of output was first put forth by Swain (1985, 1995, 2000) in her Comprehensible Output Hypothesis. Swain (1985) argues that while comprehensible input and the emphasis on interactional negotiation is essential, the role of interactional exchanges in second language acquisition “may have much to do with ‘comprehensible output’ as it has to do with comprehensible input” (p. 236). She contends that when learners are required to produce *pushed* output, they may be forced to move from semantic processing to syntactic processing. The empirical evidence for Swain’s claim comes from a number of studies on French immersion (e.g., Harley, 1988; Harley & Swain, 1978) where immersion learners receive plenty of comprehensible input, but fail to develop native-like competency in grammatical distinctions.

In a subsequent study, Swain (1995) also identifies a number of different roles for output: (1) it may help learners to recognize a gap (i.e., notice)<sup>14</sup> between what they want to say and what they can say (Izumi & Bigelow, 2000; Izumi, Bigelow, Fujiwara & Fearnow, 1999; Swain & Lapkin, 1995), (2) it serves as a means by which learners can test hypotheses about comprehensibility or linguistic correctness, and (3) it can help learners to develop metalinguistic knowledge (see Kowail & Swain, 1994) of how the L2 works. She maintains the position that both comprehensible input and comprehensible output are important for L2 acquisition.

It should be noted at this point that the claim that is being sought here is that one learner’s modified output may serve as comprehensible input for the interlocutor who may be a native speaker (i.e., in a NS-NNS interaction) or another L2 learner (i.e., in a NNS-NNS interaction). According to Gass and Varonis (1989), there is evidence that the changes learners make in NNS-NNS interactions are in the direction of the target language, and that errors of an NNS peer are not incorporated by his/her L2 interlocutor. On the basis of their findings, Gass and Varonis underline the importance of NNS-NNS interaction as a beneficial and non-threatening context which enables L2 learners to practice language, and make input (as well as output) comprehensible through negotiation. It has also been evidenced that NNSs can negotiate meaning just as NSs do, when interacting with other NNSs (Varonis & Gass, 1985a, 1985b; Porter, 1986). Therefore, as Ellis (1999) mentioned, “between learners, the Modified Output of one learner often works as another learner’s comprehensible input” (p. 14). Moreover, for the speakers who produce the output, the Modified Output would constitute *autoinput* (Schmidt & Frota, 1986),<sup>15</sup> affecting positively both parties at either end of the interaction.

Pica (1988), following Swain’s theoretical footsteps, conducted a study aimed at discovering how learners negotiate comprehensible output. The study was designed to find out

<sup>14</sup>The function of output relates directly to Schmidt’s (1994) Noticing Hypothesis which states that output facilitates the noticing of problems in the IL and the pertinent features in the input. Although the notion of ‘noticing’ is not discussed in the paper, it has established itself as an important aspect of interaction (see Gass, 1997).

<sup>15</sup>Schmidt and Frota (1986) propose that “the autoinput hypothesis is a hypothesis that the learner’s own input [sic] is a very significant part of his or her input, which affects the course of language learning” (p. 316).

how NNSs make their output comprehensible when a competent speaker signals difficulty in understanding. She hypothesized that the NNSs would respond to the interlocutor's signal of lack of comprehension by modifying their previous utterances to more target-like forms, but the results failed to confirm her hypothesis. When comprehension problems arose, the NSs often had a pretty good idea about what the NNSs were trying to say. As a result, they themselves offered the target version, which consequently resulted in the NSs actually producing the output for the NNS interlocutors. The unexpected result could be explained by a number of variables, one of which is the methodological approach adopted in the study. In a follow-up study, the researchers (Pica, Holliday, Lewis & Morgenthaler, 1989) controlled for the methodological limitations of the previous study, and found evidence that learners were more likely to modify their output by making it more grammatical in response to requests for clarification.

Other findings have also supported the efficacy of Modified Output. In a small-scale study,<sup>16</sup> Nobuyoshi and Ellis (1993) found that learners who were pushed to reformulate by means of requests for clarifications responded by correcting their past-tense errors. These learners subsequently used this feature more accurately when they repeated the task one week later. However, questions remain as to whether 'pushed' output could help learners internalize and retain these and other linguistic features over a long term (this will be discussed further in the next section). Similarly, Van den Branden (1997) also found that fifth graders who had been pushed to modify their output in the context of a two-way communicative task produced slightly more output, more essential information and a greater range of vocabulary in a similar communicative task performed after the treatment than did children who had not been initially pushed. He argues that the post-test results provide a clear indication of the potential effects of *pushed* output on acquisition.

More recently, Ellis and He (1999) sought out to investigate the differential effects of Modified Input, Interactionally Modified input and Modified Output on L2 comprehension and acquisition. The researchers report that reasonable levels of comprehension were achieved in all three of their experimental conditions. However, it was the Modified Output condition – in which a learner had the opportunity to produce and modify their own output to another learner – which “proved superior to either of the input conditions in promoting retention” (p. 297). Nevertheless, Ellis and He are reluctant to interpret that Modified Output condition worked better than the other two input conditions. They point out that it was difficult to contrive conditions that distinguished modified input and modified output since “modified output does not occur in a vacuum – it occurs as a response to input and to the opportunity to interact” (p. 299). Hence, the learners in the Modified Output group had the opportunity to produce modified output and also to listen to the modified output produced by their interlocutor.<sup>17</sup> In view of the circumstances, Ellis and He conclude from their findings that interactions that provide opportunities for learners to negotiate new vocabulary items seem to create better conditions for incidental vocabulary acquisition than in teacher-contrived conditions.

Current research on Modified Output has extended its notion, and focuses more on the syntactic development with a potentially significant role in the development of syntax and morphology. They have attributed considerable importance to feedback since *pushed* output entails the provision of useful and consistent feedback from the more competent interlocutor

<sup>16</sup>There were six subjects: three subjects in the experimental group and three subjects in the control group. For a critique of this and some other studies on Modified Output, see Krashen (1998).

<sup>17</sup>This means that the Modified Output group experienced both modified output as well as comprehensible input. Therefore, it is perhaps natural that learners in this group performed better than learners in the other two groups.

(Lyster & Ranta, 1997). Such provision of corrective feedback encourages self-repair which involves accuracy and precision, not only comprehensibility.<sup>18</sup> Although the issue of feedback could well be yet another potential source of comprehensible input available to the L2 learner, it will not be discussed here due to the space constraints of this paper.

It is important to note at this point that the different types of linguistic environment presented here separately are not independent, but are inherently related. Even though each environment was discussed separately for the sake of clarity, it should be kept in mind that the distinctions are not at all real or rigid, but somewhat artificial,<sup>19</sup> and that the three types are inevitably integrated in a complex interplay. What constitutes *interaction* for one learner serves as potential *input* for other learners who are involved in the discourse only as hearers (Ellis, 1999). And, as it has been noted earlier from Ellis and He's (1999) study, one should specifically note that Modified Output does not occur by itself, and that Interactionally Modified Input and Modified Output work in tandem since one learner's modified output often works as another learner's comprehensible input. Accordingly, researchers who have previously approached negotiated interaction with more focus on the NS input, are currently looking at both input and output as equally important factors in negotiated interactions. As Long (1996) puts it, interaction/negotiation "connects input, internal learner capacities, particularly selective attention, and output in productive ways" (p. 452).

To summarize, three different kinds of linguistic environment as potential sources of comprehensible input have been discussed in this section. Studies conducted thus far have suggested that input modifications facilitate comprehension, and that Interactionally Modified Input and Modified Output in an interactional context seem to be more beneficial than Modified Input in terms of raising comprehensibility. The next question that logically follows is whether and how the perceived comprehension actually results in acquisition.

## FROM COMPREHENSION TO ACQUISITION

It is clear from the preceding reviews that some form of comprehension must take place before we can begin to talk about intake and acquisition. Accordingly, most of the empirical studies on this issue have focused on how input affects comprehension or task performance. The main objective of these studies has been to identify and quantify various conversational modifications, without taking into consideration their effect on acquisition. However, the theory of input cannot bypass the fundamental problem of how it is that input becomes intake (see Chaudron, 1985; Sharwood Smith, 1985), and how intake is eventually utilized in the generation of output.<sup>20</sup> Certainly, comprehension and acquisition are not synonymous (see Sharwood-Smith, 1986; Faerch & Kasper, 1986), and simply ensuring that input is comprehensible does not guarantee that acquisition will take place. Yet, most studies on input

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<sup>18</sup>This is now widely known as 'negotiation of form,' which concentrates on the didactic functions of negotiation – namely, "the provision of corrective feedback that encourages self-repair involving accuracy and precision" (Lyster & Ranta, 1997, p. 42).

<sup>19</sup>In some sense, the distinction of *input*, *interaction* and *output* is somewhat artificial since interaction is a form of input (Gass, 1997), as well as a form of output.

<sup>20</sup>It should be noted that production cannot be directly equated with acquisition. However, production of target forms could be a manifestation that these features have become part of the learner's grammar.

and interaction fall short of providing an account of how comprehending input actually leads to the acquisition of the target material. How do we show the effects of input modifications on acquisition?

Long (1985) points out that it is possible to establish a relationship between environmental features and language development in the following manner:

Step 1: Show that (a) linguistic/conversational adjustments promote (b) comprehension of input.

Step 2: Show that (b) comprehensible input promotes (c) acquisition.

Step 3: Deduce that (a) linguistic/conversational adjustments promote (c) acquisition (p. 378).

According to Long, satisfactory evidence of a-b and b-c relationships would allow the linguistic environment to be posited as an indirect causal variable in L2 acquisition. In most of the input/interaction studies conducted so far, “comprehensible input is viewed as the *sine qua non* for SLA” (Ondarra, 1997, p. 33) without any explanation as to how and when input is comprehended, and how comprehended input turns to intake. These studies seem to assume that conversational adjustment will make input comprehensible, and therefore language development will be stimulated. Hence, it is not at all surprising that the majority of the studies have focused mostly on the *first* of the three steps put forth by Long. In other words, they have examined how different modifications and adjustments contribute to making input comprehensible. The second and (consequently) third steps have not been adequately investigated (Young, 1988). This partly owes to the fact that the construct *acquisition*, though widely used throughout SLA literature, is not sufficiently described or operationalized for empirical scrutiny (Mackey, 1999; Pica, 1996).

Another shortcoming of the studies conducted so far is that most of them that have claimed to test the effects of input modification on L2 acquisition have been cross-sectional in nature. However, acquisition does not take place at a particular point in time, but rather over a period of time. Fortunately, some recent studies (e.g., Ellis, 1994; Loschky, 1994; Mackey, 1999; Polio & Gass, 1998) have attempted to show a direct relationship between comprehensible input and acquisition. These studies have tried to investigate the relative effects of different input types on language development by looking at the delayed effects of the treatments via pretest, post-test and/or delayed post-test designs. Three studies that have set out to investigate the direct effects of input on language development are reviewed in this section.

Loschky (1994) investigated the acquisition of two locative expressions under three conditions: unmodified input, premodified input, and interactionally modified input. The task involved identifying pictured objects from spoken descriptions, focusing on the effects of different input conditions on comprehension and vocabulary retention, through a post-test which comprised of vocabulary recognition and sentence verification tasks. The results revealed that interactionally modified input, which resulted in the highest level of comprehension, did not result in better retention or acquisition of the target material, providing only partial support for the Interaction Hypothesis. It is difficult to pinpoint the reason behind this result, for there may have been a number of factors that contributed to such outcome.<sup>21</sup> One possible

<sup>21</sup>One reason put forth by Ellis et al. (1994) is the difference in target items (locative constructions vs. vocabulary items) used to measure language development. Other possible factors could be attributed to the learner’s developmental readiness, and the differences in the interactional situation (Mackey, 1999).

explanation could be attributed to the efficacy of the post-test (as a measure of acquisition) which was conducted the very next day. Although Loschky (1994) did go a step further to investigate the acquisitional aspects of the target features, a post-test conducted merely one day after the treatment hardly seems sufficient for the target structures to be *acquired* in the learner's internal system. As Gass and Varonis (1994) caution, "the absence of short term effects does not exclude the possibility of long term effects" (p. 286) where the learner has had sufficient time to process and incorporate the material. Keeping in mind that the effects of interaction may not be immediate (Gass, 1997), subsequent studies should investigate delayed developmental effects by allowing reasonable amount of time<sup>22</sup> between the treatment and delayed post-tests.

Ellis et al. (1994) conducted a similar study in analyzing the relationship between input modifications and comprehension, and between comprehension and acquisition of unknown lexical items. They found that interactionally modified input led to better comprehension and to the acquisition of a greater number of unknown items. Acquisition was measured by means of two post experiment tests (conducted two days after the treatment, and a week after the treatment, respectively), and a follow-up test which was administered six weeks after the treatment. It was found from the follow-up test that the group treated with interactionally modified input retained more vocabulary than the other two groups – i.e., baseline input group, and premodified input group. The study thus provides evidence of a link between interactionally modified input and lexical acquisition. However, since acquisition entails different aspects of language (syntax, morphology, etc.) which may be acquired in different ways, these aspects should be investigated further in future studies.

More recently, Mackey's (1999) study also looked at the direct effects of interaction on acquisition. She investigated the effects of conversational interaction on L2 learners' acquisition of English question patterns, basing her research on the developmental model by Pienemann and Johnston (1987). It was found that groups of learners who participated in interaction showed greater developmental gains in producing questions than those who did not participate in interaction. She noted a positive relationship between interaction and development, indicating that learners who were involved in interaction advanced through the developmental stages more rapidly, and also produced significantly more higher-level question structures.<sup>23</sup>

Inasmuch as the finding from Mackey's study sheds a positive outlook on the effects of interaction on L2 acquisition, more studies of this nature need to be conducted in order to establish a direct link between different types of input and their effect on second language acquisition. And going back to the three-step processes proposed by Long, it would seem likely that in investigating steps two and three, researchers may need to turn to a more long-term approach (e.g., Sato, 1986). As Pica (1996) pointed out, the impact of negotiation on learners must be studied over time – not just from data collected on a single recording session, but also from data collected over the course of several research sessions.

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<sup>22</sup>The issue of 'reasonable amount of time' may differ from one study to another, depending on a number of variables such as the target features under investigation, as well as the researchers' definition and operationalization of the construct, 'acquisition.'

<sup>23</sup>Similar results were reported by Tarone and Liu (1995). Their findings showed that different interactional contexts differentially affected not only the rate of acquisition, but also the route of acquisition. They report that in certain interactional contexts (in this particular study, it was in interactions with the researcher) the learner was able to produce later-stage interrogatives even before the appearance of earlier-stage interrogatives.

## CONCLUDING REMARKS

In the process of exploring different sources of comprehensible input, different theoretical arguments have been advanced in terms of Modified Input, Interactionally Modified Input, and Modified Output. The research thus far indicates that interactional contexts – where learners are given the opportunity to negotiate comprehensible input, and encouraged to repair their output to make it more comprehensible – are more conducive to language development than merely providing NNSs with comprehensible input. And although many studies have tested the claims of these theories, the studies have mostly been cross-sectional in nature, and the results have been mixed. As we have seen, some recent studies on interaction, especially those with an emphasis on Modified Output have started to directly explore the effects of linguistic environment on acquisition, which is a positive undertaking that needs to be pursued further with more carefully designed studies. On the other hand, despite the large number of studies and the wealth of information provided from the empirical studies conducted so far, the role of different input properties in actual development and internalization of L2 knowledge continue to challenge researchers (Gass, Mackey, & Pica, 1998). Indeed, “we are still left with the issue of how comprehensible input leads to L2 learning,” (Swain & Lapkin, 1998, p. 320) and “still a long way from explaining how input interacts with the learner’s internal cognitive mechanisms to shape the course of language acquisition” (Ellis, 1994, pp. 287-288).

At this point in time, the link between input and direct facilitation of L2 acquisition has not been fully spelled out nor tested empirically, and the question of how certain input properties in different sources function for L2 acquisition still remains an empirical question. Subsequent studies should trace the path from L2 forms contained in input, through the process of comprehension, to measures of intake, and finally, to the acquisition of the target material.

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