

The Acquisition of Scalar Implicatures by Second Language Learners: What Does Current Research Tell Us?

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ABSTRACT

This study investigates how Indonesian learners acquire scalar implicature. The objectives are to examine the robustness of the pragmatic effects of scalar implicature acquisition and to find out whether such variables as language proficiency (measured by the students' Grade Point Average), gender and previous English learning experience, which were not controlled in previous studies, can affect the interpretation of SI. Twenty-eight learners participated in this study. The instruments used were adopted from Noveck (2001) and Slabakova (2010). They included both factually universal and factually existential statements, to which the students were asked to choose *Agree* or *Disagree*. Results showed that despite an attempt to control such variables as language proficiency, gender and previous English learning experiences, the majority of the participants in the present study had a tendency of thinking more pragmatically than logically. The finding of the present study confirms the assumption held in previous studies that the pragmatic effect of the interpretation of scalar implicatures is robust.

Keywords: Scalar implicature, pragmatic effects, language proficiency, gender, previous English learning experiences, factually universal and factually existential statements, interpretation of scalar implicatures

INTRODUCTION

The recent interest in investigating scalar implicature (henceforth SI) inevitably

owes very much to Grice, whose theory of conversational implicature or Gricean implicature is widely known in most literature on pragmatics as the cooperative principle. This principle basically emphasises the parsimony of language use as a basic condition of informativeness, similar to the principle of Ockham's razor – "Entities should not be multiplied unnecessarily."

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Nevertheless, as influential as this theory might have been, critics have argued that speakers may flout it and not always be cooperative in a conversation. These critics, calling themselves neo-Griceans (most notably Laurence R. Horn), have attempted to dispute the status of one particular type of Gricean inference known as scalar implicature (Geurts, 2009). Specifically, both Gricean and neo-Gricean linguist-pragmatists have their own contention regarding the real status of SI (Papafragou, 2002). The former claim that SIs are derived on the basis of broadly Gricean quantity considerations, while the latter argue they are context-specific or generalised, default inferences.

It is well established that in many circumstances there is an indication that the speaker chose not to articulate a more informative term from the same scale. For instance, by uttering *Some of the students failed the exam*, the speaker intentionally uses the so-called weaker scalar expression (i.e. *some*) rather than a stronger one (i.e. *all*), thus inviting the hearer to infer the meaning of such an utterance. In the neo-Gricean literature, the investigation of SI has been particularly prominent mostly in theoretical linguistics. Studies on SI in the field of second language acquisition (SLA), for example, are still a sort of rarity. Papafragous (2002) has stated that studies on SIs have attracted relatively little attention in psycholinguistics, despite their prominent place in theoretical linguistic literature.

The present study was an attempt to replicate two previous studies conducted by Noveck (2001) and Slabakova (2010) (reviewed in detail in section 2 below) in the Indonesian context. It had two goals: first, to further investigate to what extent the pragmatic effects of the acquisition of SI by second language learners are robust; second, to find out whether such variables as language proficiency (measured by the students' Grade Point Average), gender and previous English learning experience, which were not controlled in the previous studies, can affect the interpretation of SI.

There are at least two reasons for the need to replicate studies on SI. To begin with, as studies on this topic are still in their infancy, replication assists us not only in testing, but also in extending the robustness and generalisability of previous studies conducted. Moreover, as studies often produce mixed results, replication allows us to further scrutinise them and to eventually provide correctives if, for example, any methodological flaws are found. In essence, replication in social sciences, be they quantitative and qualitative in approach, has become "a requirement of scientific inquiry" (Porte & Richards, 2012, p. 284).

Thus, despite its replicative nature, the present study offered a useful insight into the acquisition of SI by second language learners. In addition, the findings of the present study have enriched the findings of previous studies by either confirming their findings or highlighting the need for further research. Generalisability of the previous

studies can be extended if the results of the present study confirm those of the former; in contrast, the findings of the former can be nullified if the present studies dispute them.

SCALAR IMPLICATURES

As mentioned previously, SI is not a new notion in pragmatics. It has in fact been used as one particular type of Gricean inference (Geurts, 2009). In its development, neo-Griceans like Horn have treated SI not as restricted to quantifiers such as *<all, most, many, some, few>* but also including connectives *<and, or>* and modals *<impossible, unlikely, uncertain>*, all of which constitute informational scale (Papafragou, 2002; Verbuk, 2007).

SI arises when the speaker qualifies or scales what he/she intends to convey without necessarily using a stronger or more informative term. Linguists like Yule (1996) subsumes SI under generalised conversational implicatures, a kind of implicature that requires no special background knowledge in calculating the additional conveyed meaning. It is not uncommon to hear a speaker communicate on the basis of a scale of values. By uttering *Anne had some of the oranges*, the speaker uses a weaker scale *some*, and as such invites the hearer to infer what he intends to convey. In this respect, the speaker intentionally avoids using a more informative or stronger term on the same scale. This is probably motivated by the speaker's reasoning that none of the stronger term in the scale holds. The

relation between the weaker and stronger terms of the same scale can be easily understood using the entailment relations (Noveck, 2001). The stronger term entails the weaker, but not the otherwise. *All* is a stronger quantifier than *some* because the former entails the latter, not vice versa.

The computation of SI has been recently investigated from a developmental perspective and cognitive processing theory *a la* Chomskyan. Most studies on SIs are more interested in examining the status of the scalar *some*, which lies in the interface between semantics and pragmatics, by comparing children's and adults' cognitive processing of SIs (Slabakova, 2010; Barner, Brooks, & Bale, 2010; Foppolo, Guasti, & Chierchia, 2013). The subsequent section further discusses what research on SIs in the field of second language acquisition has revealed.

Previous Related Studies

To date, however, there seems to be growing interest in investigating SI from the vantage point of second language acquisition and psycholinguistic processing. These studies are undoubtedly beginning to enrich research literature on SIs in especially the field of applied linguistics. In this section, I shall review what research on SIs with a specific reference to SLA has revealed. These include the study by Noveck (2001), Papafragous (2002), Verbuk (2007) and Slabakova (2010). It should be noted that all of these studies, albeit different in their foci (i.e. they investigated Laurence

Horn's different informational scales), share a common goal, namely, the acquisition of SI by second language learners.

Noveck (2001), in an attempt to unravel the implicatures process described by contemporary post-Gricean linguistic-pragmatists, investigated linguistically competent children's developmental processes in acquiring scalar implicatures. To accomplish this goal, Noveck designed three experiments. Experiment 1 employed a reasoning scenario, which served as a background for a puppet uttering a series of statements with a modal *might*, which under certain circumstances can express necessity, non-necessity, possibility and impossibility. In this experiment, children ranging in ages and adult native English speakers were asked to evaluate a statement expressing the conversationally-infelicitous *Might be x*, which could be understood logically (i.e. compatible with *Must*) and pragmatically (i.e. exclusively means *Must*). Experiment 2, designed simply as an attempt to verify the findings of Experiment 1, tested the hypothesis that a more thorough understanding of a task would encourage logical interpretations. The tasks were provided in training sessions. Experiment 3 sought evidence of the developmental pragmatic effect with the French existential quantifier *certain* (*some*). In general these experiments demonstrated that SIs are present in adult inference-making, and that, as far as cognitive development is concerned, they occur only after logical interpretations have been well established. Based on

the results of these experiments, Noveck concludes that the representations of weak scalar terms tend to be treated logically by linguistically competent children and more pragmatically by adults.

Papafragous (2002) investigated the aspectual expressions such as *start* and *finish* and degree modifiers such as *half* using the data from Modern Greek. The goal of the study was twofold: to offer further data on the development of scalar inferences in children and to compare the behaviour of different scalar expressions at early stages. Involving a group of Greek-speaking children aged 5 and adult native speakers of Greek, Papafragous compared children's and adults' derivation of non-completion inferences from *arxizo* ('start'), *ksekino* ('begin') and *miso* ('half'). To familiarise children with the task of detecting pragmatic infelicity (a pragmatic judgment task), Papafragous provided a training phase for children. Adult participants, on the other hand, were randomly assigned to perform the same tasks. They were given a leaflet which contained in written form the instruction verbally given to children. It was expected that adult participants would overwhelmingly correct the children's statements. Results showed that the adults rejected the students' statements, leading Papafragous to conclude that adults regularly computed scalar inferences during language comprehension and readily drew non-completion inferences from aspectual verbs and proportional modifiers in contexts that support such inferences. By contrast, children failed to compute scalar

inferences of non-completion triggered by aspectual verbs in the same contexts.

Finally, Slabakova (2010) investigated how three groups of participants (i.e. Korean natives, English natives and advanced and intermediate learners of English) acquired SIs with English quantifiers such as *some*, *most*, *all*. To achieve this, Slabakova conducted two experiments: one replicated Noveck's (2001) on French *certaines* ('some') and the other used a context in the form of a series of pictures with written sentences below them. This context was used for judging under-informative sentences. Findings indicated that without context, Korean learners resorted to more pragmatic interpretations to SI than they do in their native Korean and more than English adults. Within context, they also exhibited a similar tendency by attributing to pragmatic interpretations. Thus, with or without context, second language learners behave more pragmatically than they do in their native language. With this finding, Slabakova concluded that SIs presented no problems to second language learners and that linguistic pragmatic principles are universal.

METHOD

Participants

The participants of this study were 28 Indonesian undergraduate learners (24 females and 4 males) of English studying at the English Department, Faculty of Education, Atma Jaya Catholic University. Their ages ranged from 21 to 25. They can be considered as young adult students.

The students had been studying English at this university for about two years. Before enrolling in the university, some of them had taken English courses, while others had not. Their current level of proficiency was measured using their Grade Point Average (GPA), which ranged from 2.23 to 3.94. Thus, they had mixed language proficiency. All of this background information (gender, GPA and experience in learning English prior to the enrolment in the university) was used as the controlled variables.

Materials and Procedure

As the present study was an attempt to replicate both Noveck's (2001) and Slabakova's (2010) studies, the test items used as an instrument were adopted from these scholars. They included factually universal and factually existential statements. In this test, students were asked to choose simply by putting a tick to either *Agree* or *Disagree* to the statements given. The test items were composed of eight universally true sentences (True *all*), eight infelicitous sentences with *some* (infelicitous *some*), eight sentences with all statements being both logically false and pragmatically improper (False *all*), and eight absurd statements. As has been commonly used in scalar implicature research, such test items were felt to be neutral (Slabakova, 2010). Like Noveck (2001) and Slabakova's (2010) studies, this study considered pragmatically infelicitous but logically correct sentences with *some* as the crucial test items. This is because such test items could trigger the learners

to draw inferences. Student responses to the test times were coded for logical interpretations: answering 'I agree' to 'True *all*' statements, 'I disagree' to 'False *all*' statements, 'I agree' to felicitous *some* and 'I agree' to infelicitous *some*. The absurd statements were deliberately not included in the calculation here as almost all of the participants had no problems detecting the absurdity of these statements. All the responses were analysed using descriptive statistics. This analysis was used to describe the data and could give us confidence that the description of the data was correct (Hatch & Lazaraton, 1991).

RESULTS

This section reports the results from the descriptive analysis techniques. The students were grouped under those whose GPA ranged from 2.23 to 2.99 and those who had the GPA between 3.14 and 3.94. These

two groups were further classified in terms of gender and previous English learning experience. What is of great interest here is the acceptance of pragmatically felicitous *some* and the rejection of pragmatically infelicitous *some* of the under-informative statements. This is because overall we can see a consistently striking difference in students' interpretations of these two regardless of their GPA, gender and English learning experience (see also Slabakova, 2010 for another reason for paying attention to both acceptance and rejection of under-informative *some* statements). It is also revealing that the judgments between True *all* and False *all* showed no striking results when the three variables were controlled.

In Table 1, for instance, we can see that both groups of students responded less to infelicitous *some* than they did to felicitous one, suggesting that they accepted fewer logical answers.

TABLE 1
Percentage of Logical Interpretations of Student Based on the GPA

Groups	True <i>all</i>	False <i>all</i>	Felicitous <i>some</i>	Inflects <i>some</i>
Students with a range of GPA of 3.14-3.94 (n=12)	90.6		85.4	100 38.5
Students with a range of GPA of 2.23-2.99 (n=16)	87.5		88.3	95 32.4

Similarly, when gender variable was controlled, a striking difference between both pragmatically felicitous and infelicitous statements could be seen. Both male and female students, as shown

in Table 2, gave fewer logical answers, but more to pragmatic interpretations, the exception being the male student with the GPA of above 3, who tended to be logical and pragmatic.

TABLE 2
Percentage of Logical Interpretations of Students Based on Gender

Groups	True <i>all</i>	False <i>all</i>	Felicitous <i>some</i>	Inflects <i>some</i>
Male (from the GPA of 3.14-3.94) (n=1)	100	100	100	100
Female (from the GPA of 3.14-3.94) (n=11)	89.8	84.1	100	32.0
Male (from the GPA of 2.23-2.99) (n=3)	91.7	100	100	25.0
Female (from the GPA of 2.23-2.99) (n=13)	88.5	85.6	96.5	30.4

TABLE 3
Percentage of Logical Interpretations Based on Previous English Learning Experience

Groups	True <i>all</i>	False <i>all</i>	Felicitous <i>some</i>	Inflects <i>some</i>
No previous experience (male with the GPA of 3.14-3.94) (n=1)	100	100	100	100
With previous experience ranging from 3 months-6 year (male with the GPA of 3.14-3.94) (n=5)	85.0	90.0	100	42.5
No previous experience (female with the GPA of 3.14-3.94) (n=6)	93.8	79.2	100	25.0
With previous experience ranging from 1-3 years (male with the GPA of 2.23-2.99) (n=3)	91.7	100	100	25.0
No previous experience (female with the GPA of 2.23-2.99) (n=5)	80.0	70.0	72.5	17.5
With previous experience ranging from 4 months – 3 years (female with the GPA of 2.23-2.99) (n=8)	93.8	95.3	95.3	12.5

TABLE 4
Number and Percentage of “Pragmatic” and “Logical” Individual per Participant Group

Groups	Number who chose pragmatic answers over 75%	Number who chose logical answers over 75%
Students with a range of GPA of 3.14-3.94 (n=12)	9 (75%)	3 (25%)
Students with a range of GPA of 2.23-2.99 (n=16)	13 (81%)	3 (19%)

Finally, as Table 3 shows, when the previous English learning experience variable was controlled, and again with the exception of the same male student with the GPA of above 3, the students’ responses demonstrated consistent results, with pragmatic interpretations dominating logical interpretations.

When individual results were calculated, following Slabakova’s (2010) 75% point (six out of eight items), the present study found that the participants could be classified as “pragmatic” individuals, and those who chose 25% and less could be classified as “logical” individuals. However, as Table 4 shows, the individuals (in both groups) exhibited a strong tendency of being pragmatic rather than logical. Thus, this individual result revealed that the consistency in the choice of being pragmatic was not haphazard behaviour.

In summary, the results above have shown that despite an attempt to control such variables as language proficiency, gender and previous English learning experience, the participants of the present study had the tendency of thinking more

pragmatically than logically, the exception here being one male student with a GPA above 3.14 and with no previous English learning experience. The consistency in judging the under-informative sentences of the group result has been strengthened by the individual results, suggesting that the choice was not haphazard behaviour.

DISCUSSION

The result of the present study confirms the assumption held in the previous studies reviewed above that the pragmatic effects of the interpretation of scalar implicatures are robust. That is, adult second (language) learners show a tendency to interpret infelicitous *some* pragmatically rather than logically, thus further extending the findings of the previous studies. Of interest from the present findings is that the controlled variables above have no effects on the choice between felicitous *some* and infelicitous *some*, as indicated by the students’ consistent tendency of accepting the former and rejecting the latter. This consistent tendency, as the individual result has shown, is not haphazard behaviour, but instead systematic behaviour. Thus,

language proficiency, gender and previous English learning are irrelevant to account for the rejection of the under-informative statements *some*, and can therefore be disqualified at the outset as the potential explanatory candidates for accounting for the results of the present study. There are several factors that help explain this finding.

To begin with, as has been the case with Slabakova's (2010) subjects, the participants of the present study relied on their knowledge of the world in giving their judgment on the test items. The students who responded by choosing agree to the infelicitous *some*, despite low in percentage, conjured up alternative contexts, viewing it as plausible statements. An example of this is the male student who argued for the logical interpretation of all infelicitous *some* in the test items. He said that his preference to regard the under-informative *some* as acceptable was because in a certain context they hold true. Consider, as he further said, that some cats because of physical defects from birth have no ears. In this case, the integrative account as discussed by Slabakova (2010) gains further support in that the derivation to logical answers is more effortful than to pragmatic answers.

Nevertheless, such a theory may not be adequate to account for the students' rejection of the informative *some*. Although it has been proposed that the lack of processing resources of L2 learners to undo automatic pragmatic interpretations can be deemed a credible explanation of this

rejection, it is not entirely clear why this is so. Another viable alternative account of the finding above is the students' state of bilinguality (see Hamers & Blanc, 2000). A well-cognitive functioning (cognitive flexibility and metalinguistic awareness) has been suspected to contribute to the superiority of young adult second language learners' pragmatic competence. This is to say that the more flexible the learners' cognition and the more metacognitive awareness they have, the more pragmatic competence they will develop.

To fully account for the consistently striking difference of the felicitous and infelicitous *some* in the present study, we need to appraise the status SI in the light of the UG-based theory. Three plausible options are proposed:

1. SI is part of young adults' innate knowledge.
2. SI is not part of UG, whereas conditions on scalehood (e.g. entailment, adherence to semantic field) are part of UG.
3. Neither SI nor conditions of scalehood are part of young adults' UG-based innate knowledge. (taken from Verbuck, 2007 with slight modification)

As the result of the present study has shown, the second option seems to be the most plausible. This is due to the fact that SI is highly dependent on world knowledge, and is unlikely to be part of innate knowledge. However, the way the students consistently showed high percentage for accepting felicitous

some and lower percentage for rejecting infelicitous *some* as in the present study and other studies involving learners from different languages indicate that conditions on scalehood are innate. This further corroborates Slabakova's (2010) conclusion that "scalar implicatures present no problem to L2 learners, and that linguistic principles (the cognitive mechanism for calculating SIs) are universal".

Finally, the young adult participants' tendency to reject under-informative statements can be best explained in terms of what I shall propose here as the Blocking Hypothesis. To interpret SIs, one needs to resort to different semantic-pragmatic calculation; hence, the interface between semantic and pragmatic. The fact that the pragmatic effects (especially in the case of young adults and adults) are always robust suggests that cognitive blocking is taking place. If the prediction of the Integrative Account Theory, discussed by Slabakova (2010), is correct and remains constant as a credible explanatory factor in other studies (with other controlled variables) of SIs, then the effortfulness of the logical answer to infelicitous *some* statements has the potential to block the learners' processing mechanism. As a consequence, it inhibits the logical answer in favour of the pragmatic one.

Nevertheless, the effortfulness of the logical answers, and hence the blocking, cannot always be the basis for interpreting that adults are less logical than children, as Noveck's (2001) study seems to suggest. A

study on the acquisition of SIs by Feeney *et al.* (2004), quoted in Hendricks *et al.* (n.d.), has revealed that adults also exhibit the tendency to opt for logical response to under-informative *some* as adults' logical responses to infelicitous *some* take significantly longer to make than their logical responses to felicitous *some*. This suggests that the logical response to infelicitous *some* is accompanied by additional cognitive processing, viz. generating as well as subsequently inhibiting the implicature. The model by Feeney *et al.* (2004) assumes that people start out with logical interpretation, which can be strengthened into pragmatic interpretation, which can then be inhibited to yield a logical interpretation again. With the insight of this finding, the Blocking Hypothesis predicts that adults' logical cognitive processing is covert, and is thus blocked by the dominance of pragmatics.

CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH

This study has demonstrated that despite an attempt to control variables such as students' language proficiency, gender and previous English learning experience, the pragmatic effects of SIs turn out to be robust. It thus not only confirms, but also extends the claims of the previous studies. Various explanations have been proposed to account for this robustness. Nevertheless, as the result of this study can at best be considered as an initial validation of the previous studies of the acquisition SIs, and as the precise mechanisms responsible for

the computation of SIs in second language acquisition are not really clear, future studies need to address this same topic to take another look. For instance, to what extent is the dominance of linguistics here with respect to scalar inference using negative sentences. It has been hypothesised that negated expressions are more complex than their positive counterparts as the former are longer to process, cause more errors and are harder to retain (see Pouscoulous, Noveck, Politzer, & Bastide, 2007) than the latter. Of particular interest here is the need to test the extent to which the Blocking Hypothesis generated in the present study holds true when applied to the negated expressions of SIs.

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