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An Analysis of Anaphora Resolution in English Listening Comprehension by Undergraduates in Hazara University

Akbar Zeb

M.Phil. Scholar English Department Hazara University Mansehra Pakistan

akbarzebkhanx@gmail.com

Muhammad Aslam Khan

Lecturer, Department of English The University of Veterinary and Animal Sciences, Swat

m.aslam@uvasswat.edu.pk

Adnan Ahad

Lecturer, Department of English The University of Veterinary and Animal Sciences, Swat

adnan.ahad@uvasswat.edu.pk

ABSTRACT

This present study is concerned with analysis of anaphora resolution in English listening comprehension by undergraduates in Hazara University. The study has specifically focused on the problems faced by students in learning the correct use of English pronouns and their link with the antecedents in the preceding sentences. The study investigates the comprehension level of undergraduates in term of anaphora resolution. The study is highly significant in terms of finding out the problems for students of pronouns and antecedent matching in listening comprehension which is important element of every test. The data was collected from thirty students enrolled in 7th and 8th semester in five department in Hazara University. For this purpose, IELTS listening practice tests 2023 samples, available online was adapted as data collection tools. Along the test, a survey questionnaire measuring the perceptions of these students was also used. After the survey, the same students were interviewed for problems in the use of the anaphora resolution strategies in the given test. A survey descriptive research design was used to collect and analyze the data. The sequenced model of anaphora resolution proposed by Lappin (2005) was used as a theoretical framework. The findings of the study showed the resolution strategies and the problems for learners in mastering English listening skills. The metacognitive strategies were used more than cognitive and social/affective strategies in solving the test. The findings suggested that these strategies are positively correlated with better scores in the test. Those who used these strategies performed better in test. In the light of the findings, recommendations were suggested for pedagogical practices and future researches in the field.

Keywords: Anaphora, English, problems, undergraduates, resolution strategies, listening comprehension, agreement, knowledge.

INTRODUCTION

English in Pakistan is usually preferred by many people for communication in academic environment in spite of many other regional languages (Ashraf, Turner & Laar, 2021). Some functions of language like innovative,

interpersonal and regulative are performed by using English (Pathan, Shahriar & Mari, 2010). Similarly, the significance of English in instructing the curriculum in academia is well established (Imran & Wyatt, 2015). Any second language use in academic environment demands the mastery of both comprehension and production. Its learning is a complex task, involving many interrelated aspects like phonological, morphological, lexical, syntactic, semantic and pragmatic ones. The current study has focused on one of these aspects, i.e., syntactic aspect in English listening comprehension. In comprehending English sentences, establishing correct syntactic relations (for example, determining the coreference among words agreeing with each other) are important. These are commonly established through different resolutions both in reading and listening. They become particularly significant in listening because of limited time available and many possibilities of referents in sentences. Two types of possibility are available by listeners, i.e., either, they look for matching in the preceding or following sentences and the link between the anaphor or cataphor and antecedent is established. The anaphora serves to establish the link with the already mentioned referents while deixis introduces new referent in discourse. In other words, the deixis, in one sentence (the referent mentioned for the first time) becomes antecedent to the following referent (anaphora) in the following sentences (Fossard, Garnham & Cowles, 2012). In the presence of many possible candidates for anaphor to co-refer to antecedents available, the listeners try to figure out the most suitable candidate among these. The present study tried to find out these possibilities for English language learners.

Anaphora resolution being one of the processes of determining the antecedent of pronouns can be impacted by many languages' specific properties (Reuland 2011). Anaphora resolution is one of the difficult tasks in sentence comprehension. It becomes more difficult in listening comprehension because of many other possible candidates working as antecedent and limited time of communication and the nature of the medium involved. To find out whether noun phrases are antecedents of another noun phrases (subsequent anaphors), one needs to combine many components in processing various types of information. For example, morphological information for person, gender and number's determination. Similarly, syntactic information for part of speech's tags and parser to find out grammatical function along the depth and nature of NPs. The semantic information is needed to tackle the most difficult tasks like bridging the anaphora. It is the nominal anaphora, where the heads of the NPs don't match commonly. Most of these types of information are provided by some resources but these resources do not provide exhaustive and complete information. The co-reference is established through these links depending on the quality of resources or the units used for processing them. So, a failure to resolve anaphor may be because of many resources out of these available resources and no single resource or lack of it can be blamed. That is why, sometimes, it is difficult to differentiate anaphoric use of nouns from other types giving rise to anaphoricity problem for classification (Reuland, 2011). There are many ways to establish this resolution called Anaphora resolution which refers to the process of finding out the antecedent of the pronoun in the precedent sentence (Fotiadou, Ana, Muñoz, & Tsimpli, 2020). The process of anaphora resolution commonly involves three steps.

- 1) Anaphor's identification
- 2) Antecedent candidates' identification
- 3) Choosing the most likely antecedent candidate (Nobre, 2011)

When the anaphor is identified, the possible antecedent for this anaphor is identified by listener. If there are more than one candidate for antecedent, the most likely antecedent is chosen and the link is established. This process is affected by linguistic and non-linguistic factors, for example, the interpretation of the anaphoric pronouns is influenced by language specific properties (Reuland 2011), differences between two

languages spoken by listener (Sorace & Filiaci, 2006) and cognitive control and/or working memory load (van Rij, van Rij & Hendriks, 2013). The antecedent is also linked with a particular anaphor because of its linguistic properties like its position in a sentence (Stevenson, Crawley & Kleinman, 1994), discourse status and antecedent's information (Colonna, Schimke & Hemforth, 2012), its thematic (Schumacher, Roberts & Järviö, 2017) and grammatical roles (Bosch, Katz & Umbach, 2007). The possibility that which antecedent can be the most probable candidate for an anaphor is further complicated by discourse relation (Kaiser, 2011), the meaning of verbs (Schumacher, Backhaus & Dangl, 2015) and the parallelism between the object and subject role of the pronoun and antecedent (Stevenson, Nelson & Stenning, 1995). This process is even further complicated by the type of anaphoric expressions hindering a comprehensive description and prediction, particularly, when the referring expressions have all pronominal nature (Fotiadou, Ana, Muñoz, & Tsimpli, 2020). The distance between anaphor and co-referring antecedent matters in establishing the link between the two on the basis of the available information (Poesio & Kabadjov, 2004). This distance could be in term of distance among entities in the text (words, sentences, paragraphs etc.) or could be the distance in discourse, i.e., the entities in discourse (Goecke & Witt, 2006). As a result, the information either textual or contextual (in discourse) is practically important (Mitkov, 2002).

Listening comprehension strategy is a controlled process that is consciously used by a learner for facilitating his/her listening comprehension and learning of a target language (Vandergrift & Goh, 2012). These strategies assist a learner during their comprehension problems by helping them for improving their understanding and reducing mental load to enhance his/her ability for retaining and simultaneously facilitating the development of listening comprehension. These strategies include social/affective, metacognitive and cognitive strategy (White, 2008), each strategy further divided into sub strategies. Every learner uses any of these strategies according to his own situation and needs.

PURPOSE OF THE STUDY

For successful communication, the listeners work out cognitive maps. This process of making cognitive map, allows the listener to move forward or backward in order to comprehend the message completely. During this process, the parts are re-considered in relation to each other in very limited time. This cognitive representation is a kind of guiding tool for dealing with meaning in discourse. Various listening strategies are used by listeners, who like navigators try to find out their way out (understanding meaning in discourse). For this purpose, all available cues are processed by listeners (Rameshsharma & Mowat, 2001) to arrive at the ultimate meaning. Most of the previous studies have focused on various aspects of anaphora resolution from different perspectives. Most of these have also focused on particular age group and particular linguistic communities. Some of these have focused on the properties in first language or cross linguistic comparison. These like interesting aspects have always attracted researchers to do research in the issues of ambiguity in language (Singh et al., 2014), either for online or offline activities (Fotiadou, Ana, Muñoz & Tsimpli, 2020). The present study focuses on the resolution of anaphora in English for undergraduates in their listening comprehension. Because of the limited time available in face to face (or through other medium), the need for proper comprehension of the arguments (antecedents) and its linking with the pronouns following them is highly significant for successful communication. This study tried to fill this gap by investigating the pronouns' resolution in English listening comprehension for undergraduates. The topic has not been researched thoroughly in our context. That is why the present study tried to fill the gap by finding out the problems for students in listening comprehension in terms of linking the antecedent and pronouns in actual discourse. The study tried to find out the strategies used by undergraduates for resolving the issues.

LITERATURE REVIEW

Anaphora resolution being one the processes of determining the antecedent of pronouns can be impacted by many languages' specific properties (Reuland, 2011). This process is affected by linguistic and non-linguistic factors, for example, the interpretation of the anaphoric pronouns is influenced by language specific properties (Reuland 2011), differences between two languages spoken by listener (Sorace & Filiaci, 2006) and cognitive control and/or working memory load (van Rij, van Rijn & Hendriks, 2013). A successful communication needs the same share information from the speaker and listener. Listening comprehension strategies (LCSs) are defined by Vandergrift and Goh (2012) as 'goal directed and conscious behaviours, social and cognitive in nature, which the learner uses to assist his/her learning and comprehension'. These strategies are conscious plans for dealing with input to compensate for incomplete understanding of the input (Rost, 2013). Every learner uses any of these strategies according to his own situation and needs. Some learners favour personal and analytical learning style in class room while performing certain tasks.

This anaphoric reference has been investigated in many previous studies from neurological perspective where its proper use goes awry in mental diseases like aphasia suggesting its neurological basis (Peristeri, & Tsimpli, 2013). Different anaphoric forms are guided by different factors constrained by different conditions (Reuland, 2001, Kaiser, 2011). The hierarchy of level is proposed in different studies where reference is established. The hierarchy Syntax<Semantics <discourse is proposed for anaphoric reference (Peristeri, & Tsimpli, 2013). The highest in hierarchy is the syntactic aspects. The syntactic structure sometimes gives rise to ambiguity which is even problematic for computers in resolving the anaphora. The computer disambiguates this through different strategies (Anjali & Babu, 2014). The ambiguity for real human beings in learning English was found out in passive constructions (Xu, 2015). These like interesting aspects have always attracted researchers to do research on such complex issues in linguistics (Singh et al., 2014). For some researchers, the overt and null NP demanded different positions (Mathieu, 2016). The information structure and interaction of cohesion relation is predicted for anaphora resolution (Fuente & Hemforth, 2012). This resolution is done by pragmatic and syntactic strategies (Nand, 2012), even for use of web for the relationship between definiteness and anaphora (Li, 2010). Anaphora resolution indicates different language processes. Different speakers of different languages use different types of strategies that have some common ambiguity between antecedents and pronouns (Román, 2020). Similarly, Kamune and Agarwal (2015) study was about resolution in the texts of newspaper.

Previous studies about anaphora resolution show various factors affecting this resolution. Here we find both linguistic and non-linguistic factors. These factors appear in the form of strategies. One of the most prevalent strategies appear in the form of subject pronoun co-referring with the first mentioned antecedent because of its being the first entity to which the rest of the following information is mapped (Gernsbacher & Hargreaves, 1988). The linguistic factor like the grammatical role of subject in preceding sentence regardless of its position is also claimed for this resolution (Crawley, Stevenson & Kleinman, 1990). The parallelism approach argues the same grammatical role for both pronoun and antecedent. The subject pronoun agrees with the subject antecedent and the non-subject one with the non-subject antecedent. According to this account, the first mentioned preference and parallelism account (Smyth, 1994). Because of such like accounts, no single model is preferred for disambiguation of anaphora resolution but instead an interplay of all these factors is suggested (Kaiser & Trueswell, 2008).

Along these syntactic factors, semantic factors like implicit causality have been suggested to influence anaphora resolution. It refers to provision of bias in favour of one of the arguments deduced from internal

semantic information of the main verbs (Hartshorne, 2014), sometimes supported by non-linguistic information like pragmatic expectations and inference to strengthen the bias further (Román, 2020). The overt and covert subject pronouns also affect the resolution (Cardinaletti & Starke, 1994). Anaphora resolution can be impacted by many other factors like L1 and L2 differences, working memory and control at cognitive level (van Rij, van Rijn & Hendriks, 2013). The linguistic properties for anaphora resolution can regulate prominence through thematic and grammatical roles, their position in sentence, discourse status and information of the antecedent (Schumacher, Roberts & Järvikivi, 2017). But later or earlier effects of these factors during the process are not exactly known (Ellert, 2013). This process is further affected by roles of the pronouns and antecedents being subjects or objects, the meaning of the verb and discourse relations (Schumacher et al., 2017), further complicated by types of anaphoric expressions (Schumacher et al., 2015). Anaphora resolution has been studied from the perspective of null subject languages as well. These studies have focused on the issues like comparison between various types overt pronoun in null and non-subject languages, though not researched in great number. The previous studies have focused on whether the phonological, syntactic and lexical properties of anaphoric expressions have contributed to anaphora resolution or not and how can these properties interact with other factors affecting the prominence of antecedent (Gürel, 2004). Along these linguistic factors, some other non-linguistic factors like cognitive skill were also analyzed in anaphora resolution. Some of these studies focused on the interface between discourse and language (Sorace & Filiaci 2006), affected by bilingualism and mental decline of ageing (Hendriks, 2014), which may not be the same for all anaphoric expressions (Kaltsa, Tsimpli & Rothman, 2015). Recent studies have also focused on the interpretation of ambiguous pronouns (Hendriks, 2014), the role of and working memory and cognitive load in resolving anaphora (Vogelzang, Hendriks, & van Rijn, 2016), suggesting a decline in its use among the young and elderly because of working memory (Fraundorf, Hourihan, Peters, & Benjamin, 2019). Previous studies have also researched it from the perspective of intra-sentential anaphora context (Filiaci, 2010). The findings in these studies suggest the most salient entities, the most reduced anaphoric expressions are used. What it means is the reduced anaphoric expressions are used for the most salient entities like the null noun or pronouns. The findings of these studies suggest that the choice of the expression of particular linguistic items in particular language is related to the discourse salience of the entities expressed by them. The more salient entities in discourse are expressed with the more reduced form of expression. This process complicates the learning process of second language learners because if the same is not found in their first language, they have to deal with many issues at the same time. These issues will be morphological, lexical, syntactic and discourse pragmatic in nature. The learners have to grapple with all these issues at the same time which make a second language more difficult (Filiaci, 2010). That is why, anaphora resolution also takes into account various types of information like grammatical form and function and agreement constraint and collocation pattern. Similarly, the distance between anaphora and antecedent is also very significant in anaphora resolution. The distance could be the distance among textual levels, among discourse entities, among paragraphs, sentences and words (Poesio & Kabadjov, 2004).

RESEARCH METHODOLOGY

The data for the present study was collected through a survey descriptive design to find out the problems for learners in anaphora resolution. A proficiency test was adapted for collecting data. The participants were asked to answer the questions during oral comprehension of the text (Fotiadou, Ana, Muñoz, & Tsimpli, 2020). The population of this present study were all undergraduates of Hazara University. A representative sample of thirty students was selected from five different departments. These students were selected from

English, IT, Management, Chemistry and Architecture departments. From each department, six students from 8th and 7th semesters were selected. These students were selected through non-random convenient sampling technique. The data was collected only from those students who were willing to participate in the study. The sample had both male and female students. The data was collected in the form of proficiency test. For this purpose, IELTS listening practice tests 2023 samples available online were adapted as data collection tools. These sample tests were freely available online which were adapted for the present study. Keeping in view, the authenticity of these tests, they were adapted for the purpose of the present study. The reliability of the test showed the internal consistency of collected data and tables. The students were then interviewed for the resolution of anaphora. The interviews helped in identifying anaphora resolution strategies. In this way, the most and least used anaphora resolution strategies were calculated. A survey questionnaire was used to collect data about the types of strategies used by undergraduates for anaphora resolution. The participants were asked to listen to recording and provide the appropriate responses about anaphora resolution. The procedure would last for 25 minutes. The questions were only asked about the sentences containing anaphora and its antecedent ignoring other elements of the test. The answers of the students were recorded in the designed answer sheets for the same purpose. The responses of the students being recorded in the designed answer sheet were analyzed for correct and incorrect responses. The researchers administered the test and interviews and the test conducted were marked for correct and incorrect responses. Along the test, the students were also distributed a survey questionnaire about the types of strategies used for anaphora resolution. After the test and questionnaire, the same students were interviewed about the use of different strategies during the test. The present study followed mix method approach, comprising qualitative and quantitative approaches. The correct and incorrect responses about correct identification of anaphora were quantitatively analyzed. The correct and incorrect responses were shown in the form of percentages to show whether the students could resolve anaphora or not. The data was presented in the form of tables and graphs. The sequenced model of anaphora resolution proposed by Lappin (2005) was used as a theoretical framework. This quantitative approach of data analysis led to qualitative analysis of anaphora resolution strategies. The data of the interview was then analyzed for the types of problem and the types of strategy used for anaphora resolution. The analysis in the light of the framework showed the most and least frequently used strategies for anaphora resolution and relative problems in the use of different forms of anaphora. At the end of the analysis, a correlation between test score and types of strategies used was measured. The data was analyzed statistically for percentage and mean score and then compared with the test score. The score of the test was measured in the form of percentage marks for correct and incorrect replies.

RESULTS

The anaphora in the test was resolved by undergraduates and their tests were checked for such occurrences. The correct uses of anaphora were identified in these tests and the number of correct responses were noted. The gender agreement was found in the sentences like in 1 below. The same sentence when becomes ambiguous (as in 2), it becomes difficult for students to resolve the anaphora.

- 1) John helped Kathy when she was in trouble.
- 2) John visited Robert when he was twelve.

The ambiguous sentences were made from the sentences given in the test in order to confirm the role of agreement clues for students and so, their use in sentence processing. The same students were then asked about the correct use of these possible resolutions and their responses were recorded. Similarly, the

responses for number agreement (for example 3) were also noted. When the same sentence was made ambiguous (in example 4), the resolution became difficult for students.

- 3) Jasmine and John wanted to buy the tickets but they had all been sold out.
- 4) Jasmine and John wanted to buy tickets but they did not get any.

The respondents resolved the anaphora with the help of the following types of agreement which helped them in recognizing the correct antecedent for the anaphor and the link was established. When the agreement clues were made ambiguous, the correct responses of the students reduced to a great extent. The following table shows the results for this resolution.

Table 1: Anaphora resolution through number and gender agreement

Resolution	Incorrect	Correct
Through Number	30%	70%
Through Gender	10%	90%

The above table shows that most of the students resolved anaphora through the clues of number agreement. The greater number of correct responses for anaphora resolution (70%) showed that students easily resolved this phenomenon by linking the number agreement of the anaphor and antecedent. But the responses of the students were even greater when gender agreement clues were available. The correct responses for gender were even more than agreement number (90%). The students even more easily resolved the anaphor with the clues for number when available. Anaphora was also resolved through different sources of knowledge utilized by the participants. Among these sources included the source of syntactic knowledge, semantic knowledge, discourse knowledge and real-world knowledge. The syntactic knowledge is confirmed from the use of the syntactic clues (in example 5). When the same sentence was ambiguous (in example 6), the correct responses reduced because the syntactic clues were no longer available and the students found it difficult to arrive at the correct interpretation.

- 5) Gravin told Samuels to take care of himself.
- 6) Gravin told Samuels to take care of him.

The semantic clues particularly, helped the students in resolving the anaphora (in example 7). The semantic clue of cookies being eaten helped them a lot in interpreting the sentence correctly. But when the same sentence was made ambiguous (in example 8), the interpretation became difficult for them.

- 7) The labourers ate cookies. They were tasty.
- 8) The labourers ate cookies, although they were few available that day.

Similarly, the real-world knowledge helped them in understanding the sentences correctly (in example 9). The same sentence when ambiguated became difficult for them (in example 10).

- 9) The policemen ran after the thieves but could not catch them.
- 10) The policemen ran after the thieves and fell after running for long.

In similar way, the students performed quite well when the discourse clues were provided to them. The correct responses increased quite a lot when these clues were provided to them. The following table shows the results for resolution through different sources of knowledge.

Table 2: Anaphora resolution through knowledge

Resolution	Percentage
Through syntactic knowledge	36%
Through semantic knowledge	31%
Through discourse knowledge	10%
Through real-world knowledge	23%

The above table shows that anaphora was also resolved through different knowledge sources. The clues available also helped the participants in the use of these sources making the participants able to resolve anaphora. The table shows that anaphora was mostly resolved through syntactic knowledge. The correct responses of participants (36%) were based on these syntactic clues which originally came from the syntactic knowledge of the students. The grammar and use of correct English structure helped the students in recognizing the correct use of anaphora. The anaphor was correctly resolved and linked to the preceding antecedent. The semantic clues were also used along these syntactic clues. The meaning of the anaphor and its possible linkage with the antecedent was also observed. The semantic knowledge of the students helped them in resolving the issues. The correct responses based on semantic clues available (31%) though less than the structural (syntactic) clues were used resulting in the correct use of anaphor. The syntactic and semantic clues were also accompanied by real-world knowledge clues for anaphora resolution. The real-world knowledge though less used than semantic and syntactic knowledge were used by the participants. The students mostly focused on the structure of the sentences and the meaning of the words to arrive at the meaning of the sentences as a whole. The real-world knowledge was only used when there were no syntactic and semantic clues available while listening to the instructions. The discourse knowledge was the least used knowledge for anaphora resolution. As the anaphora was resolved while listening to recorded passages, the students did not use the discourse clues available in the test. The students mostly ignored these clues and they were used on rare occasions when there were no other clues. The correct responses based on discourse knowledge (10%) were that is why less than the correct response for anaphora resolution through other sources of knowledge. The results, as whole, suggest that students tried to comprehend by listening to questions and linking them with the statements given in the passages by utilizing different types of knowledge. They exploited all available clues to them starting with the structural ones, reaching out to semantic ones. The real-world knowledge clues were also used by them followed by discourse clues available in the context of the discourse.

The problems for students in resolving the anaphora were confirmed from the students after the test. The students were asked why some of the anaphors could not be linked to their appropriate antecedents. This resolution is so important that in every test measuring listening proficiency, if the anaphora is not resolved correctly, the answer is incorrect affecting the score of the students in such tests. Some types of problem were identified in anaphora resolution in the data. The following table lists the types of problem according to the perceptions of the students.

Table 3: Problems in anaphora resolution

Problems	Percentage
Lack of Certainty	29
Lack of Measuring Test	21
Lack of Detailed Observability	19
Adaptability	13
Missing Description	11
Limited Knowledge	8

The table above shows that most of the problems were because of lack of certainty on the part of respondents. The participants were not sure about link or clues available (29%) and so, they could not correct resolve anaphora. The same was also accompanied by the lack of properly measuring anaphora in the test. The participants also highlighted some flaws in the test (21%) which in their opinion did not help them in resolving the anaphora. The students also complained about the lack of details for certain questions (19%) which made it difficult for them to resolve the anaphora. When such difficulties exist; the students could not adapt themselves in so short time to answer correctly in listening comprehension. The listening portion of the test asks questions which could not be repeated like the possibility in reading comprehension, making it a bit difficult and the students had no time for adaptability (13%) to answer properly. The problems were also considered to be because of lack of description in the presence of many possible candidates for anaphora resolution (11%). The participants complained about the lack of detailed description and sometimes the proper names were not clearly pronounced even. Lastly, the students had very limited knowledge about anaphora resolution. They did not know properly about the concept (8%). When they were asked, some of them replied that they did not have any idea about anaphora resolution. The participants as a whole correctly identified the anaphora in spite of the problems highlighted by them. Anaphora was resolved through different strategies while listening to listening comprehension portion of the test. The students after attempting the test were asked about the anaphora resolution strategies. Their responses were categorized into different strategies and the results were deduced from the data. The broader strategies, the participants highlighted were cognitive, metacognitive and social/affective strategies. The cognitive strategies were all those strategies which assist the learning in processing the information through organizing and inferring the information. Metacognitive strategies on the other hand, helped the students to identify the problems in listening through monitoring, evaluating and planning. The social/affective strategies were used for lowering the anxiety of the test by recollecting oneself and assumed cooperation of others (Xiao, 2018). The following table shows the results for the use of these strategies during listening comprehension according to the participants of the study.

Table 4: Anaphora resolution strategies for problems' solution

Strategy	Mean
Metacognitive	3.5
Cognitive	2.9
Social/Affective	2.1

The table above shows that metacognitive strategy was the most used strategy by the participants for anaphora resolution. The students when asked about the use of any strategy for anaphora resolution acknowledged that they planned, monitored, evaluated and identified the problems during comprehending the text suggesting the use of metacognitive strategy. The higher mean (3.5) shows the higher use of this strategy. The students were not sure about their correct responses in the test because they did not know about their responses, whether they were correct or incorrect. The metacognitive strategy was followed by cognitive strategy with the mean of 2.9, less than for metacognitive strategy. The students replied that they used their previous knowledge to anaphora resolution. They were able to do substitution and grouping. Along these two strategies, social/affective strategy was also used by participants to lower their test anxiety. They encouraged themselves when they felt nervous. But this strategy was the least used strategy (with 2.1 mean) in the test. The lack of cooperation and time in the test did not allow them to focus on the use of this strategy.

The test scores were compared with the use of anaphora resolution strategies. The use of the anaphora resolution strategies could be positively or negatively be related to the test score. The relationship was measured through Pearson Correlation test. The two variables (test score and anaphora resolution strategies use) were hypothesized to be positively correlated. It was assumed in the present study that the students who used some sort of anaphora resolution strategy also performed better in the test. The listening test commonly has no time for students to reconsider what they listen to; that is why those who beforehand use some strategy for anaphora resolution perform better than those who do not use any strategy. The strategic attempt of such test always helps those who appear in such tests. The following table shows the results of the correlation between test score and the use of anaphora resolution strategies.

Table 5: Correlation between anaphora resolution and test score

Pearson Correlation	Sig. (2-tailed)
.41	.031

$(r(98) = .41, p = .031.)$

The above table shows that the test score and anaphora resolution strategies were moderately related to each other. The data suggests that those who use anaphora resolution strategies also scored well in the test. The moderate correlation (.41) could have been greater if the students were all aware of the use of these strategies and were familiar with listening comprehension tests.

DISCUSSION OF RESULTS

The respondents resolved the anaphora with the help of different types of agreement clues which helped them in recognizing the correct antecedent for the anaphor and the link was established. When the agreement clues were made ambiguous, the correct responses of the students reduced to a great extent. The students resolved anaphora through the clues of number agreement. The students easily resolved this phenomenon by linking the number agreement of the anaphor and antecedent. But the responses of the students were even greater when gender agreement clues were available. The students even more easily resolved the anaphor when the clues for number were available. The resolution of anaphora is upheaval task in both natural and computational linguistics. The presence of number and agreement clues make this task far easier for students. When these clues were made ambiguous, the students' responses were not correct like their responses in the actual test.

The anaphora was also resolved through different knowledge sources. The clues available also helped the participants in the use of these sources making the participants able to resolve anaphora. The anaphora was mostly resolved through syntactic knowledge. The grammar and use of correct English structure helped the students in recognizing the correct use of anaphora. The anaphor was correctly resolved and linked to the preceding antecedent. The semantic clues were also used along these syntactic clues. The meaning of the anaphor and its possible linkage with the antecedent was also observed. The semantic knowledge of the students helped them in resolving the issues. The semantic clues available were used less than the structural (syntactic) clues. The syntactic and semantic clues were also accompanied by real-world knowledge clues for anaphora resolution. The real-world knowledge though less used than semantic and syntactic knowledge were used by the participants. The students mostly focused on the structure of the sentences and the meaning of the words to arrive at the meaning of the sentences as a whole. The real-world knowledge was only used when there were no syntactic and semantic clues available while listening to the instructions. The correct responses (21%) of the total correct responses show the use of this type of knowledge along with other types of knowledge. The discourse knowledge was the least used knowledge for anaphora resolution. As the anaphora was resolved while listening to recorded passages, the students did not use the discourse clues available in the test. The students mostly ignored these clues and they were used on rare occasions when there were no other clues. Anaphora resolution through discourse knowledge was the least used anaphora resolution strategy than other sources of knowledge. The results, as whole, suggest that students tried to comprehend by listening to questions and linking them with the statements given in the passages by utilizing different types of knowledge. They exploited all available clues to them starting with the structural ones, reaching out to semantic ones. The real-world knowledge clues were also used by them followed by discourse clues available in the context of the discourse.

The results show that the participants used all kinds of clue to arrive at the correct interpretation of sentences by resolving the anaphora and linking them with the appropriate antecedent. The syntactic clues were used more than semantic clues which in turn were used more than real-world knowledge clues and the discourse clues. The discourse clues would have been used more if there would have been actual conversation in the form of dialogue but the nature of the test was such that the participants had to listen to the conversation not being part of it making it difficult for them to use discourse clues. The data, as whole, suggested a few problems for anaphora resolution for students which were confirmed from them when the sentences containing instances of anaphor were asked. Almost the same results were found for these problems (Shahab, & Evawati, 2021).

The students were asked why some of the anaphors could not be linked to their appropriate antecedents. This resolution is so important that in every test measuring listening proficiency, if the anaphora is not resolved correctly, the answer is incorrect affecting the score of the students in such tests. Most of the problems were because of lack of certainty on the part of respondents. The participants were not sure about link or clues available and so, they could not correct resolve anaphora. The same was also accompanied by the lack of properly measuring anaphora in the test. The participants also highlighted some flaws in the test, which in their opinion did not help them in resolving the anaphora. The students also complained about the lack of details for certain questions, which made it difficult for them to resolve the anaphora. When such difficulties exist; the students could not adapt themselves in so short time to answer correctly in listening comprehension. The listening portion of the test asks questions which could not be repeated like the possibility in reading comprehension making it a bit difficult and the students had not time for adaptability

to answer properly. The problems were also considered to be because of lack of description in the presence of many possible candidates for anaphora resolution. The participants complained about the lack of detailed description and sometimes the proper names were not clearly pronounced even. Lastly, the students had limited knowledge about anaphora resolution. The participants, as whole, correctly identified the anaphora in spite of the problems highlighted by them. These problems were because of different reasons like the lack of face-to-face interaction in the listening portion, the problems because of medium involved, lack of appropriate details, not adapting oneself to such situations and the like. In the presence of so many problems, different strategies were used by students to resolve the anaphora.

The metacognitive strategy was the most used strategies for anaphora resolution unlike the findings suggested by Nha and Dung (2019) where cognitive strategies were used more than metacognitive strategies. The students acknowledged that they planned, monitored, evaluated and identified the problems during comprehending the text suggesting the use of metacognitive strategy. The metacognitive strategy was used more than cognitive and social strategies unlike the findings reported by Abdal (2012). The students replied that they used their previous knowledge to anaphora resolution. Along these two strategies, social/affective strategy was also used by participants to lower their test anxiety. They encouraged themselves when they felt nervous. The results suggest that students mostly focused on identify the problems in listening through monitoring, evaluating and planning. The previous knowledge though was used during listening comprehension but it was less than the use of the strategy before the preparation of the test (Román, 2020). The test scores when compared with the use of anaphora resolution strategies showed moderate correlation suggesting that the students who used some sort of anaphora resolution strategy also performed better in the test. This moderate correlation could have been greater if the students were all aware of the use of these strategies and familiar with listening comprehension tests (Kazemi & Kiamarsi, 2017) unlike the findings suggested by Shahab and Evawati (2021).

CONCLUSION

The presented study investigated English anaphora resolution strategies used by undergraduates in listening comprehension. The study looked for into the strategies used by these students and the problems found therein. The study also found out the problems for students in resolving anaphora. Lastly, the study analyzed the relationship of use of these strategies and their impact of the test scores in terms of anaphora resolution. The results suggest that respondents resolved the anaphora with the help of different types of agreement clues like agreement and number clues which helped them in recognizing the correct antecedent for the anaphor and the link was established. The ambiguity is sentences made the resolution difficult for students. The results also suggested that anaphora was also resolved through different knowledge sources like syntactic, semantic, discourse and real-world knowledge. The results, as whole, suggest that students tried to comprehend by listening to questions and linking them with the statements given in the passages by utilizing different types of knowledge. They exploited all available clues to them starting with the structural ones, reaching out to semantic ones. The real-world knowledge clues were also used by them followed by discourse clues available in the context of the discourse. The data, as whole, suggested a few problems for anaphora resolution for students. Most of the problems were because of lack of certainty on the part of respondents, lack of properly measuring anaphora, lack of details for certain questions, lack of adaptability, limited knowledge about anaphora resolution and lack of description in the presence of many possible candidates for anaphora resolution. In the presence of so many problems, different strategies were used by students to resolve the anaphora. The metacognitive strategy was the most used strategies for anaphora

resolution The students acknowledged that they planned, monitored, evaluated and identified the problems during comprehending the text suggesting the use of metacognitive strategy. The metacognitive strategy was used more than cognitive and social strategies. The test scores when compared with the use of anaphora resolution strategies showed moderate correlation suggesting that the students who used some sort of anaphora resolution strategy also performed better in the test. This moderate correlation could have been greater if the students were all aware of the use of these strategies and familiar with listening comprehension tests. The study found out moderate positive correlation between anaphora resolution strategies and test scores. In the light of the findings of the present study, it is suggested that anaphora resolution strategies are quite helpful for students in resolving many issues in listening comprehension. Listening skill can be improved if such measures are taken into account.

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