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The Level of Ambiguity Tolerance as a Determinant of Accuracy in Non-Instructed FL Pronunciation. Report on a pilot study

1. Introduction

The main aim of this paper is to present the outcomes of a pilot study, which begins a long-term research on the level of ambiguity tolerance (LAT) as a predictor of accuracy in foreign language (FL) pronunciation. The first part of the project, which this pilot study precedes, is devoted to examining the influence of the students' LAT on their FL pronunciation when being deprived of any (or having received very little) formal instruction and conscious practice focused on this particular FL aspect. The second part of the project will be devoted to observing the correlation between LAT and pronunciation accuracy resulting from explicit formal training received during a course of phonetics. Assessing the learners' pronunciation after a relatively short period of instruction and practice (one semester) should enable to see if and how LAT affects the rate of progress. Analogous data gathered after a one-year-course (and if possible also after two years) of phonetics will provide us with information about the possible influence of LAT on pronunciation accuracy in the long run.

There are at least three major reasons why conducting such a project is worth-while. First of all, so far most of the experiments examining the predictive strength of LAT have been focused on other language aspects and skills than pronunciation. Secondly, it is usually a traditional classroom setting, i.e. one in which students are provided with formal instruction rather than deprived of it, that has attracted SLA researchers looking for potential relationships between LAT and

FL proficiency. Finally, complementing the list of determinants of success in FL pronunciation, such as field independence (Baran 2004), auditory perceptive style (Baran 2000), attributional style (Baran-Łucarz 2008) with a new factor would be yet another step forward in making our teaching of this language aspect more effective and efficient.

The paper offers a short presentation of the concept of Ambiguity Tolerance (AT)/Intolerance (AIT)[1] and a review of some studies showing its influence on FL learning. What follows is a detailed description of the experiment, i.e. its subjects, data collecting procedures and instruments, results of statistical analyses of data (Pearson product-moment correlations) and conclusions. Finally, limitations of the study and places for improvement are briefly discussed.

2. The concept of Ambiguity Tolerance

The concept of AT is not a new one. It was already in the 1940s that it drew the attention of psychologists. While some consider it one of the dimensions of cognitive/learning style (e.g. Ehrman 1999), others treat it as an affective factor or a personality variable (e.g. Frenkel-Brunswik 1949; Budner 1962). Due to the global character of AT, its influence can be traced in many spheres of everyday life, among others in learning.

Chapelle and Roberts (1986: 30) introduce AT as "a person's ability to function rationally and calmly in a situation in which interpretation of all stimuli is not clear." People revealing a low level of AT feel anxiety, frustration, psychological uneasiness or threat when being confronted with ambiguous situations, thus they tend to avoid them (Budner 1962). When confrontation with such situations is unavoidable, various defense reactions are used. One of them is neglecting grey aspects of a situation and looking for black-white solutions. This is related with their preference for categorizing phenomena rather than ordering them along a continuum (Frenkel-Brunswik 1949). Another subconscious strategy of people being AIT is ignoring or modifying those features of reality that are uncomfortable or may constitute a threat to an individual's ego (*ibidem*).

On the other hand, individuals having a high level of AT are "not cognitively or affectively disturbed by ambiguity or uncertainty" (Knibbeler 1989: 29). They seek for ambiguous situations, treating them as a challenge rather than threat, during which they can show innovation and creativity (MacDonald 1970).

As Budner (1962) clarifies, a situation may be considered by an individual ambiguous from the following three different perspectives:

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[1] Most SLA researchers use the term Intolerant of Ambiguity in reference to individuals revealing a low level of AT. In the present paper, the two expressions are used interchangeably. When the term Intolerance/Intolerant of Ambiguity is mentioned, it is abbreviated to AIT.

- when it is novel, i.e. it lacks any familiar clues or there are too few of them;
- when it is complex, i.e. it is filled with too many cues that ought to be taken into account;
- when it is insoluble, i.e. its cues are contradictory.

Another ambiguous situation that people with a low level of AT tend to see as a threat has been suggested by Norton (1975). This time ambiguity is said to be caused also by unstructured situations, i.e. such which contain cues difficult to organize and interpret.

3. Ambiguity Tolerance and FL learning

There is no doubt that a FL situation is filled with ambiguity. It seems that the context which shares features of each of the four ambiguous situations presented above is the informal, natural setting. Consequently, we may expect mastering a target language (TL) in a natural informal environment to be particularly difficult for people with little AT.

We can speculate that the differences between FL progress of AT and AIT learners are less significant in a traditional formal classroom environment. What should be beneficial for students with low LAT is support of the authority, and the fact that elements of the TL are isolated and presented sequentially in a clearly structured and organized manner. The anxiety of the AIT students can also be lowered by making the stages of the lesson predictable, and aims of the tasks clear. However, it is impossible to completely eliminate ambiguity accompanying FL learning. The learner might be overwhelmed, for example, by too much new TL information delivered by the teacher in teacher talk used for classroom management, maintaining discipline, opening and closing the lesson, and when giving instructions and feedback. Frustration might also arise when numerous novel TL items are introduced at a time or when the tempo is too fast. Furthermore, though the FL material can be presented in smaller portions clearly and sequentially, the fact that some of its elements are contradictory or incompatible with the learners' previous knowledge, beliefs and prior experience might result in the individuals with little AT having difficulty with perceiving, taking them in, internalizing, and retrieving them. Finally, even if the students with low LAT take in the ambiguous TL data, they may need time to come emotionally to terms with these areas of the language and to start using them properly in their output.

Consequently, it is encouraging to assume that the level of AT can constitute an important predictor of success also in the formal setting. However, the meaningfulness of the relationship between LAT and progress in FL learning may vary significantly depending on several classroom factors, such as the teaching approach and methodology used, type of feedback and error correction techniques

applied by the teacher, or pace of the lessons. We may also expect the strength of correlation to depend on how long the students have been attending the FL course, i.e. the longer the learning experience, the less meaningful LAT is.

Finally, the relation between the degree of AT and FL proficiency resulting from classroom learning can be expected similar to the correlation resulting from acquisition in a natural surrounding if implicit and incidental teaching, characterized by little or no formal instruction and conscious focus on form, is offered.

As remarked earlier, in most of the studies devoted to examining the possible relation between LAT and success in mastering an L2, researchers have focused on the formal classroom setting. In Pimsleur's experiment this individual learner difference proved to have no influence on FL attainments (e.g. Pimsleur et al. 1966). However, as some claim (e.g. Ehrlich 1965) the outcomes of that study might have been distorted by serious problems with the instrument applied to measure the LAT, i.e. Walk's A Scale.

In another research, in which an attempt was made to identify the characteristics of a good language learner, the level of AT was found to correlate positively with success in FL learning measured by an imitation and listening task (Naiman et al. 1975).

The concept of Ambiguity Tolerance captivated the interest of Chapelle and Roberts (1986), who observed its influence on FL proficiency of 61 adult learners of English before and after a one-semester course. The study showed that LAT was not correlated with results of a proficiency test taken before the course. However, it appeared to be a significant predictor of success in learning. The results proved that "students with higher levels of AT had an advantage in acquisition of English structure and listening comprehension" (Chapelle and Roberts 1986: 43). It surprised the researchers that highly AT learners were not found to be better at oral tests of communicative competence, in which grammatical, pragmatic and sociolinguistic competence constituted the criteria of assessment. Finally, it was also reading comprehension skills that proved to be independent of LAT.

Additionally, some studies have shown that AT individuals tend to use learning strategies more frequently and effectively (e.g. Chapelle 1983). One of the reasons why the AT students are better at listening than their AIT friends is that they are more willing to guess the meaning from context and ignore the words they do not understand, and continue listening without any frustration (e.g. Wed and Johnson 1997). There may, however, be some dangers in showing too much tolerance towards novelty in receptive skills. While such strategies are useful to grasp the gist of the text, their overusage might hinder the development of the ability to understand a written or oral text in a deeper and detailed manner. Furthermore, successful surface listening and reading due to the usage of those strategies may discourage a learner from mastering new vocabulary and structures.

4. Ambiguity Tolerance and FL pronunciation

At first glance, the profiles of AT and AIT individuals provided above encourage to hypothesize that the lower the level of AT, the lower the degree of accuracy in FL pronunciation. Such a tendency might be expected to appear particularly in a natural setting or in classroom learning deprived of formal instruction and focus on form. The extent of learners' AT should be less important, though not completely insignificant, if pronunciation aspects are explicitly presented and practised sequentially.

Despite the fact that having a high level of AIT is marked by many inconveniences, in certain circumstances this style might be considered advantageous. It is probable that new stimuli seeming odd, e.g. FL sounds, are particularly captivating, salient and attention drawing for such individuals. Although the stimuli may not be accepted at first sight (hearing), their strangeness may consciously or subconsciously push towards their careful and detailed analysis and interpretation. Eventually, we may expect data processed so thoroughly to be encoded, stored and retrieved more successfully. Consequently, in the long run, once the AIT learners finally come to terms and accept the strangeness of the TL phonological system and their new FL identities, their accuracy in this language aspect may be at a higher level than that of the AT students.

Furthermore, it has been observed that individuals with little AT do not accept themselves making mistakes. On the one hand, this prevents them from taking risks and being innovative and creative in FL learning. On the other, however, such an approach can lead to more accurate production, among others, in pronunciation.

Being too tolerant of ambiguity might involve the risk of accepting every new stimulus, concept or rule without approaching it with meaningful analysis, which in turn may result in its incomplete understanding and lower retention. Poor analysis might also cause oversimplified pigeonholing (perceiving and producing FL sounds as L1 counterparts) and early fossilization of different FL aspects of grammar, vocabulary and also pronunciation. Moreover, since it is meaning that attracts AT individuals, their attention to form, particularly to pronunciation, can be very limited. Finally, accepting oneself producing errors as long as the message is comprehensible, appears to be another factor influencing the formation of bad language habits and inhibiting accuracy in all FL aspects.

Complementing the profiles of AT and AIT learners with the advantages of AIT individuals and difficulties of AT people makes the direction of the potential correlation between LAT and non-instructed pronunciation questionable.

5. Research design

5.1. Subjects

In order to find out whether there is a relation between the level of AT and accuracy in FL pronunciation and what type of relation (of what direction and strength) it is, an empirical study was carried out. It involved 45 young adults who were just beginning their studies at the English Philology of Wrocław University. While 19 of them were day students, 26 of them were extramural learners. Since they were accepted to study English philology, we may assume their level of language to range from upper-intermediate (most of the extramural students) to advanced (day students).

The use of a survey composed of a few open questions and a short interview with each of the subjects allowed to control several variables. The first question concerned the accent the subjects were in favour of and would like to improve. It turned out that while 83% wanted to speak with a British English accent (RP), the rest were more attracted to American English (GA). What proceeded was an inquiry concerning the motivation level of the participants. They were asked to write a number from 1 to 5 that would represent their strength of motivation, where 1 meant very little concern for speaking with an English native-like accent, while 5 stood for very high motivation to achieve a native-like level in this aspect. The majority of the participants had very high or high motivation to speak with native-like perfection as far as pronunciation was concerned. Only a few subjects showed an indifferent attitude. The exact distribution of answers was as follows:
- 24 subjects wrote the digit '5'
- 19 learners wrote the digit '4'
- 2 people wrote the digit '3'

The next few questions concerned the subjects' TL learning background. Firstly, the participants were asked how long they had been learning English and where they were studying it (public school, language course, one-to-one lessons). Secondly, they were to reveal whether and how long they had been taught by native speakers of English. Finally, information about stays in English speaking countries was elicited. Answers to each of these questions were transformed into points, by following a key the researcher had designed. Eventually each subjects' learning experience was represented by one digit, which constituted the sum of points for each of the questions. In short, the participants' learning experience was as follows: the majority of the participants were learning English in public schools – primary, junior high school and high school – and additionally attended courses run by language schools, in which the teachers were often native speakers; around 50% of the participants spent a few weeks or months in Great Britain or the USA, 23% were there from 6 to 12 months; almost 27% did not have a chance to go

to an English-speaking country. Finally, since 2 students spent a few years in the United Kingdom, they were excluded from the study.

The most important part of the survey and interview concerned controlling the amount and quality of formal instruction and practice focused on English pronunciation that the subjects had received before entering the university and starting a course in phonetics. All of the subjects taking part in the study acknowledged to being offered no formal teaching of pronunciation. Most of the participants claimed that focus on this aspect took place only when serious mistakes were made, and that practice in this area was limited to occasional repetition of new vocabulary considered difficult. When asked about whether and how the students tried to improve their FL pronunciation, they explained that it was mainly through watching original English films and listening to music sung by British or American bands. Consequently, we may assume that their accuracy in pronunciation resulted from what they had managed to pick up (intentionally or unintentionally) and/or learnt by themselves.

5.2. Instruments and data gathering procedures

The first two classes of phonetics had the form of individual meetings of the phonetics course instructor (the author of this paper) with each of the students. They were devoted to recording them while performing a few tasks and to evaluating their pronunciation.

A few weeks later, during one of the classes of phonetics, a questionnaire aimed at measuring the subjects' level of AT was distributed.

5.2.1. Measuring the level of AT

The level of AT was measured by applying a 25-item Likert-type scale designed by Brown (1991). The first 18 statements were taken directly from a standardized battery, i.e. from Norton's MAT-50 (Norton 1975). They were concerned with general AT that reveals itself when reflecting about basic philosophical issues, and also in everyday situations or at work. The remaining 7 statements added by Brown were related to FL learning.

The subjects' task was to decide to what extent they agree/disagree with the provided statements by marking their choice on a 5-point scale. So as to avoid any problems the respondents might have had with understanding the questions, a translated version of the questionnaire prepared by Anna Czura (2007) was used, with the exception of a few questions (e.g. 21, 25) that the author of this paper translated by herself.

The answers were credited following a key prepared by Brown (*ibidem*). Each subject's level of general Ambiguity Tolerance, FL Ambiguity Tolerance and the overall score for AT was measured. For the first part of the test, the scores could range from 18 to 90 points; for the second part – from 7 to 35 points. Thus,

the minimum overall score was 25 points, while the maximum overall score was 125 points. In each of the parts of the survey and in the case of the overall result, the higher the score, the higher the level of AT. Using Brown's scale (1991) it was also possible to classify the subjects as quite or moderately AT, and as quite or moderately AIT.

5.2.2. Evaluating pronunciation

The FL pronunciation of the subjects was evaluated on the basis of two tasks – reading aloud a one-page-long passage (Task 1) and reading aloud a list of 36 words that are commonly mispronounced by Poles (Task 2) (Appendix 1). While the text on FL pronunciation learning was borrowed from the book written by Celce-Murcia et al. (2000: 398), the vocabulary items appearing on the list were chosen by the author of this paper on the basis of her own experience as a teacher of English and phonetics, and that of her colleagues and other phoneticians working with Polish learners of English (e.g. Sobkowiak 1996). It is vital to clarify that most of the vocabulary items appearing on the list come from the pre-intermediate or even beginner's level.

In Task 2 the learners received 1 point for each word that was properly pronounced. In Task 1 an atomistic approach to assessment was used. The participants were given from 0 to 2 points for 4 pairs of consonants – /θ ð/, /ʃ ʒ/, /tʃ dʒ/, /t d/ – and /ŋ/, and for 4 vowels – /ʌ/, /ɪ/, /iː/, /ɜː/ and the diphthong /əʊ/. Consequently, each subject could get a maximum score of 10 points for consonants and 10 points for vowels. The choice of these particular segments was based on three criteria – their appearance in the text the subjects were reading, the tendency to mispronounce them by Poles, and the fact that they annoy native speakers of English more than other incorrect pronunciations (Gonet and Pietroń 2004). The points for the segments were distributed depending on how consistently the subjects articulated them correctly or incorrectly. When in all contexts the sound/s was/were produced properly (without replacing it/them with L1 counterpart segment/s), 2 points were given. When the segment/s was/were mispronounced in all the cases, the subject scored 0 points. When the proper articulation appeared in a few examples, the learners got 1 point.

Additionally, in the case of Task 1, what was also assessed was the subjects' consistency in using one of the accents, i.e. British or American English, which the participants believed they were approximating and wanted to improve. The students could score from 0 to 3 points depending on how consequently they were using typical characteristics of the two norms. In the case of learners who opted for the British accent, it was important to remember about such features as non-rhoticity, using /ɑː/ instead of /æ/ in appropriate contexts, and /ɔː/ or /ɒ/ rather than /ɑː/ where necessary, and not overusing flapping. The students who claimed their accent was closer to American English were expected, among others, to pro-

duce /r/ in all contexts and to articulate it as a retroflex sound, to use flapping consistently, and produce the vowels as they are said to be pronounced in American English (see e.g. Celce-Murcia et al. 2000: 363–370). Altogether, each subject could score a maximum of 23 points for Task 1.

6. Presentation and discussion of results

The table below (Table 1) presents how many subjects of this study were found to be quite and moderately AT and how many represented a quite and moderately AIT style. Although the participants of this experiment were not randomly chosen but represented a specific group of FL learners who are at least good at FLs, the scores are normally distributed.

Table 1. The number and percentage of subjects classified as QAT (quite AT), MAT (moderately AT), MAIT (moderately AIT) and QAIT (quite AIT); GAT – general AT, LLAT – language learning AT, TAT – total AT

	QAT	**MAT**	**MAIT**	**QAIT**
GAT	7 (16%)	13 (29%)	18 (40%)	7 (16%)
LLAT	4 (9%)	18 (40%)	14 (31%)	9 (20%)
TAT	4 (9%)	16 (36%)	17 (38%)	8 (18%)

The mean scores for particular aspects of pronunciation achieved by the subjects in Task 1 show that both in the case of day and extramural students there is still a lot of space for improvement (see Table 2). This seems to be particularly true in reference to consonants. Additionally, it appears that there is very little consistency in the participants' usage of the accents. One of the reasons of such a difficulty is undoubtedly the lack of knowledge on the features of RP and GA.

Table 2. Basic statistics for results of Task 1 and Task 2 achieved by day students (Day), extramural students (Ext), and all the subjects (Total)

		T1 Consonants max. 10 pts	**T1 Vowels** max. 10 pts	**T1 Consistency** max. 3 pts	**T2 Words** max. 36 pts
Day	Mean	7.000	8.000	1.053	22.000
	SD	1.944	1.563	1.026	5.667
Ext	Mean	6.269	7.885	1.154	16.654
	SD	2.273	1.966	0.613	6.209
Total	Mean	6.578	7.933	1.111	18.911
	SD	2.148	1.789	0.804	6.494

It is also Task 2 that proved to be difficult for many students. Despite the fact that undoubtedly most of the vocabulary items have been known and used by them for several years, only about 50% of the vocabulary items were pronounced correctly. Such a poor outcome may result from FL teachers ignoring mispronunciations of their learners during the lessons.

After making sure that all four assumptions underlying the Pearson r (the scales assumption, independence assumption, normality and linearity assumptions) are met, the Pearson product-moment correlations have been calculated. The outcomes are presented in the Table 3 below.

Table 3. Pearson product-moment correlations between the level of Ambiguity Tolerance/language learning background and accuracy in pronunciation

	GAT	LLAT	TAT	LLB
T1 – Consonants	−0.3872*	−0.1694	−0.3554**	0.1475
T1 – Vowels	−0.3732*	−0.3439**	−0.4004*	0.3817*
T1 – Consistency	−0.1319	−0.0736	−0.1262	0.0720
T1$_\Sigma$	−0.4275*	−0.2765	−0.4209*	0.2816
T2 – Words	−0.1368	−0.1335	−0.1492	0.3136**

*$p < 0.05$; **$p < 0.01$; GAT – general AT; LLAT – language learning AT; TAT – total AT; LLB – language learning background; T1 – Task 1; T1$_\Sigma$ – Task 1 total; T2 – Task 2

Interestingly, in all the cases a negative correlation between LAT and pronunciation can be observed. Many of the obtained values are statistically significant when compared with the critical values of the Pearson product-moment correlation coefficient (r) for two-tailed tests (Fisher and Yates 1963). The correlation is of moderate strength, ranging from $r = −0.34$ ($p < 0.01$) for the relation between LLAT and vowels, to $r = −0.43$ ($p < 0.05$) in the case of general AT and T1 total.

As the table shows, the level of AT did not prove to be correlated with the subjects' consistency in using one of the accents.

What might also surprise is that higher significant values were found in the case of general AT (GAT) than language learning AT (LLAT). An explanation for this may be found in the construction of the AT instrument. While the first part of the test – GAT – used 18 statements borrowed from a standardized version of an AT battery, the second part was composed only of 7 direct statements referring to FL learning. It is also the observer's paradox (i.e. the subjects' assumption that they are expected to be highly AT in FL learning situations) that might have influenced the learners' responses.

What seems intriguing is also the lack of relationship between AT and scores for individual word reading. It is, however, possible that the outcomes are distorted by the fact that most probably pronunciation errors were frequently ignored in the subjects' FL classrooms, a setting in which most learners expect and assume to

be competently guided by their FL teachers and to learn proper forms. When not being explicitly told how to pronounce vocabulary correctly, learners may come up with their own hypotheses about the phonetic form of FL words and test them in the formal environment by pronouncing the vocabulary in the way they think is correct. The lack of teacher's feedback on the incorrect pronunciation and accepting by them the erroneous forms is sure to mislead the students in their hypotheses testing, in which AT and AIT students seem to differ significantly.

Finally, as it might be expected, the proper pronunciation of vocabulary is positively correlated with the subjects' FL learning background, which encompassed such factors as visits and stays in English-speaking countries and being taught by native FL teachers.

7. Conclusions and limitations of the study

The outcomes of the pilot research presented in this paper are surprising and exhibit a completely new tendency when it comes to the issue of whether and how the level of AT affects success in FLs. It has been shown not only that AT learners are not better than AIT students in the case of non-instructed FL pronunciation, but that actually it is more advantageous to have a lower level of AT in this language situation. Thus, it seems indeed probable that novel ambiguous stimuli, such as segmental features of a FL, consciously or subconsciously draw the attention of those who are more dogmatic and AIT. Such a style might in fact help learners to notice the gap (Schmidt 1990) between L1 and TL sounds, and make the perception, processing and storage of the new TL features more successful. However, before drawing such clear-cut conclusions, the experiment must be replicated with a larger group of subjects and, if only possible, with the use of a standardized AT battery, e.g. MAT-50 (Norton 1975).

It may be also worth reconsidering the assessment and distribution of points for consistency in using one of the accents. It is possible that allowing the subjects to score more than just 3 points for this aspect might bring statistically significant and meaningful results. Furthermore, it would be interesting to add a few other criteria for evaluating pronunciation, e.g. word stress of cognates whose stressed syllable is in a different position in L1 and the TL. Additionally, what might be examined is the relation between LAT and the level of phonological competence represented, for example, by the subjects' performance and grades on theoretical tests and transcription tests. Finally, the pronunciation instrument could be complemented by a subtest measuring the learners' perceptive abilities.

As stated earlier, further interesting data might be obtained in the second part of the project, i.e. when observing relations between LAT and accuracy in FL pronunciation resulting from explicit formal instruction and regular form-focused practice.

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Appendix 1

Task 2. Read the following words aloud.

1. computer	13. please	25. bought
2. development	14. cheese	26. thought
3. area	15. parents	27. south
4. abroad	16. money	28. southern
5. saw	17. police	29. certain
6. Warsaw	18. chocolate	30. mountain
7. law	19. climate	31. captain
8. comfortable	20. key	32. blood
9. Madrid	21. fruit	33. journey
10. Japan	22. surface	34. catastrophe
11. Turkey	23. said	35. certificate
12. half	24. says	36. foreign