Ambiguity Tolerance as a Psychological Factor of Foreign Language Communicative Competence Development

Inna Atamanova\textsuperscript{a*}, Sergey Bogomaz\textsuperscript{b}

\textsuperscript{a, b} National Research Tomsk State University, 36, Lenin Ave., Tomsk, 634050, Russia

Abstract

The paper focuses on non-language-majoring students’ communicative competence development, taking into account ambiguity tolerance as an explanatory factor of foreign language learning. This study was aimed at exploring possible relationships between engineering students’ ambiguity tolerance and their communicative competence in English as a foreign language. The study findings revealed that this parameter of personal potential determines rather the qualitative nature of students’ communicative competence development. In addition, it was found that some other variables of the students’ personal potential could contribute to the process under study, namely commitment, challenge, persistence, orientation to present and self-worth.

© 2014 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/3.0/).

Peer-review under responsibility of National Research Tomsk State University.

Keywords: Ambiguity tolerance; English as a foreign language (EFL); communicative competence development; psychology of language learning; personal potential

1. Introduction

Enhancing university students’ English learning has been one of the main issues of professional training in higher educational settings in non-English-speaking countries (Smit, 2003; Hyland, 2009). English as the lingua franca of higher education, science and technology provides its speakers of different nationalities with a tool which makes international cooperation in these spheres possible (Muresan & Pérez-Llantada, 2014).
For this reason, addressing the idea of communicative competence can contribute to our better understanding of non-language-majoring students’ personal and professional development in higher educational settings because, from the psychological perspective, this concept is viewed as an integrated personal characteristic allowing people to communicate (in its wider meaning as interaction) effectively in a foreign language (Zymnaya, 2006, 2008; Kopylova, 2005; Atamanova, 2007, 2009; Atamanova & Bogomaz, 2011a). The key aspect of such an interpretation of communicative competence is its complexity and multifacetedness, i.e. being inseparable in its cognitive, behavioral, emotional, motivational and axiological components.

Obviously, learning a foreign language is abundant in ambiguous situations dealing with a new language system as well as cultural issues of the target language community (Ely, 1989, 1995; White, 1999; Atamanova & Bogomaz, 2011a; Kamran, 2011), so ambiguity tolerance is likely to be one of the core factors of learners’ progress in the language being studied. It has been recognized that those who can tolerate moderate levels of ambiguity are able to achieve more success in language learning (Ely, 1986; Ehrman, 1993; Brown, 2000). Nevertheless, more research is needed on tolerance for ambiguity as an explanatory factor in learning (Carver, 2006) as well as foreign language learning, in particular (Kamran, 2011). In our opinion, a deeper understanding of the relationship between foreign language learners’ communicative competence and their ambiguity tolerance as a parameter of their personal potential can help their teachers develop learner-friendly educational environments.

Thus, this paper discusses the results of the study aimed at examining possible relationships between engineering students’ communicative competence in English as a foreign language and their ambiguity tolerance. It also focuses on the role of some other personal potential parameters in developing these students’ communicative competence.

2. Ambiguity tolerance and foreign language learning: Theoretical background

It is known that the origin of ambiguity tolerance as a scientific concept is tightly connected with the name of Else Frenkel-Brunswik (1949) who addressed intolerance of ambiguity in her attempt to explain the nature of authoritarianism. She concluded that tolerance or intolerance of ambiguity as a personality variable could predict one’s behavioral features in ambiguous situations. In other words, this parameter “generalises to the various aspects of emotional and cognitive functioning of the individual, characterising cognitive style, belief and attitude systems, interpersonal and social functioning and problem solving behaviour” (Furnham & Marks, 2013, p. 717).

It should be noted that there has been a variety of terms regarding attitudes towards ambiguous or/and uncertain situations, namely tolerance (intolerance) of ambiguity (Frenkel-Brunswik, 1949; Budner, 1962; Furnham, 1994; Ely, 1989, 1995; Kamran, 2011), tolerance for ambiguity (McLain, 1993; Dubikovsky, 2014), ambiguity tolerance (McLain, 2009; Atamanova & Bogomaz, 2011a; Kamran, 2011), tolerance (intolerance) for uncertainty (Kornilova & Kornilov, 2010; Chumakova & Kornilov, 2013).

Another terminological issue is concerned with an effort to distinguish between ambiguity and uncertainty, as Furnham and Marks (2013) pointed out. Most of the researchers, referring to the phenomenon in question, suppose tolerance of ambiguity and tolerance of uncertainty to be interchangeable. However, Krohne (Krohne, 1989, 1993) emphasized that ambiguity deals with a stimulus while uncertainty characterizes one’s emotional state in response to this stimulus. Grenier et al. (Grenier et al., 2005) believed that tolerance of ambiguity and tolerance of uncertainty differ in their time-related mode (a present-oriented or future-oriented trait, respectively). It was also found out that these concepts have different areas of research focus, i.e. tolerance of ambiguity is relevant for the cognitive and experimental literature whilst tolerance of uncertainty is used in the clinical one (Furnham & Marks, 2013). In addition, Kornilova and Kornilov (Kornilova and Kornilov, 2010) suggested distinguishing between tolerance for uncertainty and intolerance for uncertainty, defining the former as “readiness to make decisions and act in uncertain situations, openness to new ideas, changing stimuli and changing thinking strategies”. The latter was interpreted as “willingness to achieve clarity in the world (including the world of ideas), rejection of uncertainty in judgements, rigidity and rationality (as directed towards acquiring maximum information required for making a decision)”. It should be noted that their interpretation of tolerance for uncertainty is similar to that of ambiguity tolerance since the key aspects of the two constructs deals with openness, novelty, change and taking risk.

In our study we refer to ambiguity tolerance based on McLain’s definition of tolerance for ambiguity and his scale for measuring it (McLain, 1993) since this tool was translated into Russian and psychometrically checked by Lukovitskaya (Lukovitskaya, 1998) and then included in a set of questionnaires for studying one’s personal potential.
(Leont’ev et al., 2007). Ambiguity tolerance, as defined by McLain (McLain, 1993), deals with “a range, from rejection to attraction, of reactions to stimuli perceived as unfamiliar, complex, dynamically uncertain or subject to multiple conflicting interpretations”. Viewing ambiguity tolerance as a parameter of one’s personal potential (Leont’ev et al., 2007; Bogomaz & Matsuta, 2010; Bogomaz & Karakulova, 2010; Atamanova & Bogomaz, 2011b) can contribute to our better understanding of its role in university students’ personal and professional development in higher educational settings, as well as their foreign language communicative competence development.

Learning a new language is similar to exploring a terra incognita. Foreign language learners constantly encounter a great variety of ambiguous stimuli ranging from confusing sounds to exact meaning of vocabulary items or idioms, as well as grammar aspects or sociocultural issues of the language being acquired (Ely, 1989). However, if this ambiguity is not tolerated in a reasonable way, language learners may get confused and stressed and feel uncomfortable when having some trouble with this language (White, 1999). As a result, ambiguity tolerance can be regarded as a factor impeding or facilitating foreign language learning (Kamran, 2011). Therefore, low ambiguity-tolerant students need more support from their teachers to cope with their difficulties in foreign language learning.

Ellis (Ellis, 1994) refers to this construct in the language learning context as “an ability to deal with ambiguous new stimuli without frustration and without appeals to authority”. According to Brown (Brown, 2000), ambiguity tolerance can be viewed as “the degree to which you are cognitively willing to tolerate ideas and propositions that run counter to your own belief system or structure of knowledge”. It is well recognized that moderate ambiguity tolerance helps language learners to achieve more success in language acquisition (Ely, 1986; Ehrman, 1993). Further research interest, in our opinion, may focus on what contributes to ambiguity-intolerant students’ progress in language learning because such knowledge can be beneficial to educators for developing learner-friendly educational environments.

Our pilot study (Atamanova & Bogomaz, 2011a) revealed that the ambiguity-tolerant and -intolerant students differed in the range of their English communicative competence scores. In the group of ambiguity-tolerant students this interval varied within 2.5 to 5.0, the ambiguity-intolerant students’ scores ranging from 3.0 to 4.0. Moreover, qualitative analysis of the students’ responses on the adjectives associated with the English language showed that the ambiguity-tolerant students’ associations were emotionally colored and sounded positive. By contrast, the ambiguity-intolerant students characterized English less positively. Based on these findings, it was supposed that ambiguity tolerance should be rather viewed as a student’s qualitative characteristic in foreign language learning, i.e. a parameter determining the dynamics of learners’ communicative competence development in a foreign language.

Thus, the paper presents the study aimed at examining possible relationships between engineering students’ ambiguity tolerance (as a parameter of their personal potential) and their communicative competence in English. In addition, the research focus was on three more dimensions of personal potential (namely hardiness, self-organization of activity and basic beliefs) in their relation to the students’ English communicative competence.

3. Research methodology

Personal potential (Leont’ev et al., 2007; Bogomaz & Matsuta, 2010; Bogomaz & Karakulova, 2010) is defined as an integral characteristic which “simultaneously combines in itself resilience and flexibility and … is responsible for initiating one’s intellectual or creative activity and enables to achieve meaningful purposes” (Atamanova & Bogomaz, 2011b). It consists of a number of parameters, including hardiness, ambiguity tolerance, self-organization of activity and basic beliefs (Bogomaz, 2014). Hardiness was introduced by Kobasa (Kobasa, 1979) and further elaborated by Maddi and his colleagues (Kobasa et al., 1985; Maddi, 2004, 2006). According to the researchers, this parameter is responsible for strengthening a person’s stress resistance resources and helps people deal with changes successfully. It comprises three related dispositions, namely commitment, control and challenge. The concept of ambiguity tolerance was discussed in detail in the previous section. Self-organization of activity (Mandrikova, 2007) enables to evaluate to what extent a person is able to define the goal, to draw up a plan for achieving it and put this plan into operation as well as how persistent and flexible he or she can be on the way to this goal. A person’s basic beliefs are a system of his or her assumptions about the world (Janoff-Bulman, 1989), including benevolence of people, benevolence of the world, justice, randomness, control, self-worth, self-control and luckiness.
From the psychological perspective, foreign language communicative competence is viewed as a dynamic integral personal characteristic providing effective interaction with others in a foreign language (Atamanova, 2009; Atamanova & Bogomaz, 2011a). The core of such an interpretation is complexity and multifacetedness of the construct, i.e. foreign language communicative competence is inseparable in its cognitive, behavioral, emotional, motivational and axiological components.

3.1. Sample

The study sample was made up of 131 university students whose majors were technical physics, applied mechanics and applied mathematics. The participants were first-year (51) and second-year (56) undergraduates as well as master’s students (24) of Tomsk State University. They ranged in age from 17 to 25 years old (M = 19.87; SD = 1.87). The gender proportion was the following: 78 male and 53 female students. All the students were studying English as part of their educational curriculum at university.

3.2. Data collection and data analysis

The students were offered to fill in several paper-and-pencil forms in Russian to examine parameters of their personal potential. This set of questionnaires included a number of scales to measure one’s ambiguity tolerance, hardiness, self-organization of activity and basic beliefs (Bogomaz & Matsuta, 2010; Bogomaz, 2014). Ambiguity tolerance was assessed by means of McLain’s MSTAT-I instrument (McLain, 1993) translated into Russian and psychometrically checked by Lukovitskaya (Lukovitskaya, 1998). The participants’ hardiness was evaluated by Maddi’s Hardiness Test, translated into Russian and psychometrically checked by Leont’ev and Rasskazova (Leont’ev & Rasskazova, 2006). To estimate the students’ tendency to self-organization of activity we apply the Self-Organization of Activity Questionnaire developed by Mandrikova (Mandrikova, 2007). The World Assumptions Scale (Janoff-Bulman, 1989) translated into Russian and adapted by Kravtsova (Soldatova et al., 2003) enabled to measure a person’s worldview components as a system of his or her basic beliefs.

The participants’ communicative competence in English as a foreign language was assessed by their English teachers who rated its level using a 7-point grading scale from very low (2) to very high (5) with an interval of 0.5.

The data collected were statistically treated by applying descriptive analysis, correlation analysis and analysis of variance.

4. Study results and discussion

Table 1 provides the basic descriptive statistics of the participants’ communicative competence for the total sample and the groups analyzed, including first-year and second-year undergraduates and master’s students as well as males and females. Accordingly, it can be seen that the master’s students’ level of communicative competence was higher than that of the undergraduates. The female students also showed higher scores in their communicative competence than the male ones. There were statistically significant differences between the groups mentioned: the first-year undergraduates and master’s students (t-value = -4.653, p = 0.000); the second-year undergraduates and master’s students (t-value = -4.589, p = 0.000); the female and male students (t-value = 2.958, p = 0.004).

Table 1. The study participants’ communicative competence: basic descriptive statistics.

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Communicative competence in English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Total sample</td>
<td>131</td>
<td>3.51</td>
</tr>
<tr>
<td>First-year undergraduates</td>
<td>51</td>
<td>3.38</td>
</tr>
<tr>
<td>Second-year undergraduates</td>
<td>56</td>
<td>3.38</td>
</tr>
<tr>
<td>Master’s students</td>
<td>24</td>
<td>4.06</td>
</tr>
<tr>
<td>Male students</td>
<td>78</td>
<td>3.37</td>
</tr>
<tr>
<td>Female students</td>
<td>53</td>
<td>3.71</td>
</tr>
</tbody>
</table>
In addition, correlation analysis revealed statistically significant positive relationships between the participants’ communicative competence scores and their age ($r = 0.279$, $p = 0.001$) as well as their year at university ($r = 0.389$, $p = 0.000$). The two correlations may be interpreted as evidence of the dynamic nature of communicative competence.

Analysis of the participants’ personal potential parameters showed that their scores in hardiness and ambiguity tolerance were higher than the standard values for these scales. This probably means that engineering students tend to take risk and seek for novelty, as well as believe that they are able to cope with unexpected and uncertain situations. The participants’ tendency to self-organization of activity and their basic beliefs were within the standard values.

Correlation analysis did not reveal any statistically significant relationships between the communicative competence level and hardiness dispositions in the total sample. However, there were statistically significant in-group correlations in the male and female students. For example, in the group of male students their communicative competence scores were positively related to challenge ($r = 0.306$, $p = 0.007$) and hardiness total index ($r = 0.227$, $p = 0.048$). By contrast, there was a negative correlation between the female students’ communicative competence level and their challenge scores ($r = -0.341$, $p = 0.012$). Taking into account that these groups statistically differed in their communicative competence scores, one may assume that female engineering students make use of some other learning strategies which help them cope with risk and novelty when learning English and achieve more progress in their communicative competence development.

Furthermore, there were statistically significant differences between the master’s students’ (higher scores) and undergraduates’ hardiness dispositions, namely commitment, challenge and hardiness total index. As mentioned above, these groups also statistically differed in their communicative competence level. This probably means that engineering master’s students are more involved in their educational process and able to cope with difficulties to a larger extent than their undergraduate counterparts. They are likely to be prone to take more risk and better able to control unexpected situations for achieving their meaningful goals, including language learning.

Analysis of the participants’ self-organization-of-activity parameters showed that there was a statistically significant negative in-group correlation between the communicative competence scores and orientation to present in the group of female students ($r = -0.462$, $p = 0.000$). Probably, female engineering students are more oriented to the future in their educational process, considering communicative competence development in English from their further career perspective. It should be also noted that the master’s students statistically differed from the undergraduates in their persistence scores. Moreover, they exceeded the total sample in this parameter by 19.5 percent. In turn, this may be interpreted as one of the reasons for their progress in language learning, regarding the statistically significant difference between the master’s students’ and undergraduates’ communicative competence scores, as described above.

Table 2 shows the mean scores and standard deviations of the participants’ ambiguity tolerance. As seen, the master’s students had the highest scores in this variable, but there were no statistically significant differences between the groups analyzed. Also, correlation analysis did not reveal a statistically significant relationship between the participants’ communicative competence and their ambiguity tolerance in the total sample.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>100.88</td>
<td>18.67</td>
</tr>
<tr>
<td>First-year undergraduates</td>
<td>101.20</td>
<td>17.60</td>
</tr>
<tr>
<td>Second-year undergraduates</td>
<td>99.33</td>
<td>17.52</td>
</tr>
<tr>
<td>Master’s students</td>
<td>103.71</td>
<td>23.26</td>
</tr>
<tr>
<td>Male students</td>
<td>101.39</td>
<td>19.28</td>
</tr>
<tr>
<td>Female students</td>
<td>100.17</td>
<td>17.94</td>
</tr>
</tbody>
</table>

However, in the group of female students there was a statistically significant negative correlation between the parameters examined ($r = -0.291$, $p = 0.034$). In other words, female engineering students are rather prone to use some strategies for coping with new and ambiguous situations than to take risk and seek for novelty in their
educational process. This, in turn, can help them make some progress in their English communicative competence development.

In addition, the sample was divided into two groups based on the ambiguity tolerance median score (102.00), as described in (Carver, 2006), and coded as being ambiguity-tolerant (M2 = 116.23) and ambiguity-intolerant (M1 = 86.70). These groups were statistically different from each other (t-value = -14.547, p = 0.000), but did not show any statistically significant difference in their communicative competence mean scores.

However, in-group correlation analysis revealed some statistically significant relationships between the students’ communicative competence scores and a number of the sample characteristics. So, in the group of ambiguity-intolerant students there was its negative correlation with gender (M = 1, F = 0; r = -0.438, p = 0.000) and its positive correlation with year at university (r = 0.319, p = 0.009). The ambiguity-tolerant students’ communicative competence was positively related to their age (r = 0.411, p = 0.001) and their year at university (r = 0.462, p = 0.000). Based on this, it can be concluded that ambiguity tolerance determines rather the qualitative side of engineering students’ communicative competence development. Ambiguity-intolerant female engineering students demonstrate higher scores in their English communicative competence than their male peers. Probably, they use some other strategies to cope with unfamiliar and ambiguous situations in language learning. The results from both groups have also confirmed the dynamic nature of communicative competence.

Finally, analysis of the participants’ basic beliefs and their relationships with communicative competence has shown that self-worth can be an essential parameter for our understanding of engineering students’ communicative competence development. It was found that the master’s students had higher scores in their self-worth than the undergraduates and in their communicative competence level as well. It seems reasonable to assume that this more positive belief about self helps engineering master’s students be more persistent and flexible on their way to meaningful goals dealing with language learning.

5. Conclusion

The challenge of enhancing university students’ communicative competence development in English as a foreign language makes researchers and educators in non-English-speaking countries combine their efforts to seek for a solution. Viewing foreign language communicative competence in the context of non-language-majoring students’ personal and professional development in higher educational settings enables to address the phenomenon in question from the psychological perspective. This competence, thus, is defined as a dynamic integral personal characteristic providing effective interaction with others in a foreign language.

The study was aimed at exploring possible relationships between engineering students’ communicative competence in English and their ambiguity tolerance as an explanatory factor of foreign language learning. The role of ambiguity tolerance in facilitating language learners’ progress has been well recognized by the researchers of this personality variable. However, the present study findings revealed that this parameter (referring to as that of personal potential) determines rather the qualitative nature of foreign language learning. It should be emphasized that the relationship between the participants’ communicative competence and their ambiguity tolerance seems to be non-linear. The effect manifested itself only in the groups analyzed but not in the total sample. The study results also confirmed the dynamic nature of communicative competence.

In addition, the study focused on three more parameters of personal potential (hardiness, self-organization of activity and basic beliefs) in their relation to engineering students’ communicative competence. It was found that their most important variables for a better understanding of these students’ communicative competence development in English can be the following: commitment, challenge, persistence, orientation to present and self-worth. Nevertheless, further research is needed on the dynamics of communicative competence development in the groups of ambiguity-tolerant and -intolerant students.

6. Acknowledgments

This paper was prepared within the governmental project “Psychotechnical support for developing cognitive and communicative potential” № 2014/233 financed by the Ministry of Education and Science of the Russian Federation.
References


Bogomaz, S. A. & Matsuta, V. V. (2010). Otsenka lichnostnogo potentsiala i vyavlenie osnovnykh tipov orientatsii na professional’nyu deyatelnost’ u sovremennoy vuzovskykh molodezhi [Assessment of university students’ personal potential and determination of basic types of their orientations to professional activity]. Psikhologiya obucheniya [Educational Psychology], 12, 77-88.


