A Study of Interactions among Ambiguity Tolerance, Classroom Work Styles, and English Proficiency

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Abstract

This article presents a preliminary investigation of the inter-relationships between English learners' tolerance for ambiguity, their classroom work styles, and their level of English proficiency. The study population comprised 46 English as a foreign language (EFL) students attending a technical college in Taiwan. The findings indicated that a large percentage of these students had moderate to high levels of tolerance for ambiguity. In contrast to the findings of previous studies, our results showed no significant relationship between ambiguity tolerance and classroom work styles. The relationship between ambiguity tolerance and English proficiency in terms of the Test of English for International Communication (TOEIC) scores was almost statistically significant. However, tolerance for ambiguity and classroom work styles showed a statistically significant association with English proficiency. Recommended extensions of the study are discussed, and general directions for future research are suggested. Teaching implementations are also proposed.

Keywords: ambiguity tolerance, classroom work style, English proficiency, learning style

1. Introduction

The process of learning English may involve ambiguity to some extent because it involves unfamiliar linguistic and cultural patterns that are likely to create confusion among new learners of the language (Abbe, Gulick, & Herman, 2007; Chapelle & Roberts, 1986; Ehrman & Oxford, 1990; Kamran, 2009; Kazamia, 1999). Success in this complex process involves several individual components, including the level of tolerance for the ambiguity encountered while learning a new language. Studies have frequently shown that ambiguity tolerance (AT) in learning English, particularly as a foreign language (EFL) (Kamran, 2009), has a significant impact on a learner's ability to acquire the language. Investigating the factors related to this psychological phenomenon is important because awareness of how it affects the language learning process may aid the development of appropriate lesson plans and the identification of ways to overcome psychological obstacles to learning.

One learning objective in student-centered EFL and English as a second language (ESL) classrooms is to provide suitable tools that better assist students in learning the language (Atef-Vahid, Kashani, & Haddadi, 2011). An awareness of the individual differences among students and suitable teaching approaches is crucial for ESL/EFL instructors seeking to facilitate successful language learning. It is necessary, albeit challenging, to gain a sufficient understanding of students' individual differences to allow them to adapt to different teaching environments (Mamchur, 1996). Therefore, the purpose of this study is to explore AT, primarily in relation to proficiency levels and classroom work styles (CWSs).

Studies of AT have been typically based on ESL contexts and have focused on parameters such as learning achievement, learning motivation, and reading comprehension. Few studies have focused on EFL learning. Additionally, researchers undertaking cognitive studies have examined cognitive variables more than other aspects of individual differences (Keshavarz & Assar, 2009). Although some positive effects have been found in the area of AT and ESL/EFL, very few studies have addressed the concept of AT among Chinese EFL university students in relation to their English proficiency and CWSs. Thus, this study focuses on the relationships between AT, CWSs, and Test of English for International Communication (TOEIC) scores. The following research questions are addressed in this study:

1) What are the levels of AT among EFL learners attending technical colleges in Taiwan?

2) Is the AT level related to CWSs?

3) Is the AT level related to English proficiency?

4) How do AT levels and CWSs interact with English proficiency?

2. Literature Review

Language learning classrooms are strongly guided by the beliefs, perceptions, attitudes and motivations of learners. This understanding of language learning that is focused on the learner has evolved gradually. Prior to the focus on learners, language classrooms were primarily based on the preferences of the teacher. However, as language learning success improved, a different philosophy evolved, with a focus on students' preferences and experience. Because learners are the most important part of the learning equation as the individuals who actually partake in the language learning process, this change in teaching style to focus on learners made sense. Learning a foreign language can be a difficult process. EFL can be particularly difficult because it can require the English language learner to process an inordinate amount cultural input. Success in learning English can often depend on several factors about the learner that can vary from the instructional style to distinct personality traits.

To meet the needs of English language learners, teachers must use effective teaching methods and understand the individual differences in learning styles among students. Learning styles have attracted considerable interest in psychology, but research in this topic in the language learning and teaching fields was initiated only in the 1960s. A learning style refers to "an individual's natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills which persist regardless of teaching methods or content area…[and] is a biological and developmental set of 4 characteristics" (Kinsella, 1995, p. 171). Learning styles have been classified into dichotomous pairs, some of which overlap (Oxford, 1999). More than 20 different dimensions have been categorized (Duda & Riley, 1991). The most significant models for ESL and EFL include the following: field-independence/field-dependence models (Hashemian, Roohani, & Fadaei, 2012; Ramirez & Castaneda, 1974); AT models (Ely, 1995; Norton, 1975); models based on holistic-analytic and verbal-imagery dimensions (Riding, 2002); environmental, physical, emotional, sociological, and psychological models (Kinsella & Sherak, 1993); and models of multiple intelligences (Gardner, 1993).

Learners differ in their levels of strength and preferences in different learning tasks. Notably, the understanding of individual learning styles facilitates the selection of appropriate techniques and strategies to use in the classroom rather than labelling or stereotyping learners. Kinsella (1995) stated that learning styles "should serve as a concrete mechanism for introducing the topic of learner differences and lead students to a more heightened understanding and appreciation of their individual learner characteristics" (p. 187). Thus, learning styles "should be understood to refer to an individual set of differences that include not only a stated personal preference for instruction or an association with a particular form of learning activity but also individual differences found in intellectual or personal psychology" (Riding, 2002, p. 51).

2.1 Classroom Work Styles

CWSs focus on the approach and teaching methodology used in the classroom to convey information to students. The chosen CWS is important because it affects how students perceive and process information (Jalali & Samadi, 2013). In developing a CWS, the teacher should consider the personality, cognitive skills and any other pertinent characteristics or tendencies of the student body (Noguera & Wageman, 2011).

Specifically, the selected CWS can affect whether language learners will absorb and comprehend the second language being taught. In determining the most appropriate CWS, a teacher should consider frameworks such as field independence-dependence, AT, visual and auditory needs, and reflective and impulsive styles (Noguera & Wageman, 2011, p. 77). The learners' preference for a particular CWS can be affected by the teaching and academic environment (Noguera & Wageman, 2011).

Riding (2002) further classified learning styles into four models according to the learning process, study orientation, instructional preference, and cognitive skill development. A CWS is a sociological aspect of instructional preferences, which focus on the manner of learning with peers, in pairs, in groups, or by oneself (Dunn & Dunn, 1987). Learning with others is referred to as cooperative learning. Compared with all other types of learning, cooperative learning is considered "more structured, more prescriptive to teachers about classroom techniques, more directive to students about how to work together in groups…" (Oxford, 1999, p. 443). More specifically, Olsen and Kagan (1992, p. 8) described cooperative learning as a "group learning activity organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which each learner is held accountable for his or her own learning and is motivated to increase the learning of

others." In other words, cooperative learning is a teaching and learning approach that involves the organization of students into small cooperative teams. Researchers suggest that students can benefit from this type of learning (as cited in Oxford, 1999); in fact, Johnson, Johnson, and Holubec (1990, p. 5) claim that "what we know about effective instruction indicates that cooperative learning should be used when we want students to learn more, like school better, like each other better, like themselves better, and learn more effective social skills." Cooperative learning is believed to enhance students' learning by making them feel safer, increasing opportunities for participation, reducing the likelihood of competitiveness, and offering a more student-centered dimension (Richards, Platt, & Platt, 1992). Riding (2002) stated that student performance may be affected by learning styles and by the structure of the material, modes of presentation, and content types.

However, some researchers have found that cooperative learning may not be suitable for all students (Huber, Sorrentino, Davidson, Epplier, & Roth, 1992; Li & Adamson, 1992), especially gifted students. Li and Adamson (1992) conducted a study on the preferred learning styles of gifted secondary students that involved comparing the cooperative, competitive, and individualistic styles, and they found that the students performed better with the individualistic learning approach than with cooperative learning and that cooperative learning and achievement were not correlated.

The concept of cooperative learning has given rise to several types of educational activities (Oxford, 1999). Cooperative learning activities include peer tutoring, jigsaw activities, cooperative projects, cooperative/individualized work, and cooperative interaction. Peer tutoring involves students taking turns tutoring or practicing with others. Jigsaw is a puzzle-like activity in which each team member has a piece of information that is needed to complete the group task. Cooperative projects can be presented in written or oral form, with students needing to work together to finish a team project. Cooperative/individualized learning activities involve the completion of individualized learning materials at the student's own pace and participation in a team activity. Cooperative interaction is similar to cooperative projects in that students work as a team to complete a learning unit, typically an experiment (Richards et al., 1992).

Previously, CWSs were defined in terms of learning style models based on instructional preferences and the involved sociological elements. CWSs are based on the concept of student-centered and small-group learning, which is widely believed to be one of the most beneficial approaches for student learning (Kinsella & Sherak, 1993). This approach includes tasks such as cooperating with classmates to solve a problem, research an issue, or work on a project, all of which enhance the development of students' communication skills and subject knowledge (Kinsella & Sherak, 1993; McGroarty, 1992).

2.2 CWSs in English as a Foreign Language Classrooms

EFL learners have varying characteristics that teachers must consider when determining the CWS for their EFL classroom (Noguera & Wageman, 2011, p. 77). Several research studies have indicated that learning EFL is more successful when the classroom style matches the preferred learning style of the students (Jalali & Samadi, 2013).

Students' learning preferences can influence the teacher's success because a good fit between learning preferences and learning environment can reduce anxiety and other negative effects that may impact student learning. Research has indicated that anxiety in the classroom can interfere with foreign language learning (Mohammadi, Biria, Koosha, & Shahsavari, 2013). Language anxiety has had deleterious impacts on students' learning of second languages (Liu & Chen, 2013). The assessment of anxiety in the language classroom can affect development in the areas of input, processing and output (Liu & Chen, 2013, p. 932). For this reason, CWSs have greater significance because they may resolve or at least reduce this anxiety to a manageable level for language learners. Foreign language learners must be given the tools to adapt their learning strategies to be able to not only learn the foreign language but also cope with the anxieties that learning a foreign language may evoke (Mohammadi et al., 2013).

Teachers must adjust their CWS to ensure an effective interplay with students' learning styles (Link, Dursun, Karakaya & Hegelheimer, 2014). Learning strategies and techniques that deliberately facilitate the learning and recall of linguistic content are the best methodologies for EFL classrooms (Mohammadi et al., 2013). When teachers fail to make this adjustment to their CWS, learners' attitudes and motivations toward learning English are likely to be adversely impacted (Jalali & Samadi, 2013).

2.3 Cognitive Style of AT

The concept of AT was first promoted by Frenkel-Brunswick (1949) approximately 65 years ago, when it was defined as "a general personality variable relevant to basic social orientations" (p. 268). Subsequently, Budner (1962, p. 29) described AT as "the tendency to perceive ambiguous situations as desirable." With respect to the

origin of AT, Norton (1975, p. 608) defined it as "a tendency to perceive or interpret information marked by vague, incomplete, fragmented, multiple, probable, unstructured, uncertain, inconsistent, contrary, contradictory, or unclear meanings as actual or potential sources of psychological discomfort or threat." Later, Chapelle and Roberts (1986, p. 30) described it as "a person's ability to function rationally and calmly in a situation in which interpretation of all stimuli is not clear." In a subsequent study, McLain (1993, p. 184) defined AT as "a range, from rejection to attraction, of reactions to stimuli perceived as unfamiliar, complex, dynamically uncertain or subject to multiple conflicting interpretations."

More recently, Furnham and Marks (2013, p. 717) explained that Frenkel-Brunswick's concept generalized AT "to the various aspects of emotional and cognitive functioning of the individual, characterizing cognitive style, belief and attitude systems, interpersonal and social functioning and problem solving behavior." In other words, individuals with AT are more likely than those lacking AT to remain comfortable in uncertain situations (Erten & Topkaya, 2009). Tolerant individuals tend to react to ambiguity or complicated situations in more measured ways and with greater flexibility (Atef-Vahid et al., 2011).

In contrast, individuals lacking AT are more likely to have negative responses to ambiguous situations because they find it difficult to take risks and make correct judgments in the absence of information—a situation that they view as a "threat and source of discomfort" (Furnham & Marks, 2013, p. 718). In addition, people with lower levels of AT tend to react to risk-taking as a type of stress by escaping, delaying, postponing, or rejecting (Furnham & Marks, 2013; Furnham & Ribchester, 1995; McLain, 1993). Intolerant learners find it easier to escape from or avoid ambiguous situations (Kazamia, 1999). Research has shown that learners with AT tend to perform better than those without AT when confronting complicated new tasks. However, each style has advantages and disadvantages: "the person who is tolerant of ambiguity is free to entertain a number of innovative and creative possibilities and not [to] be cognitively or affectively disturbed by ambiguity and uncertainty" (Atef-Vahid et al., 2011, p. 150). Hence, there is no optimal level of AT; rather, it depends on the types of tasks involved.

Another factor that could contribute to an individual's level of AT may be his or her learning style (Ehrman & Oxford, 1990; Nishimo, 2007), and most learners can tolerate ambiguity at least to some degree (Erten & Topkaya, 2009). Ehrman (1999) further categorized AT into three levels: intake, proper, and accommodation. Learners with AT at the intake level are able to receive linguistic input even if it includes new information with unknown elements. Those with AT at the proper level not only absorb new information but also manage contradictions or incomplete messages; for example, some individuals are capable of inferring unknown words in an article. Those with AT at the level of accommodation can not only receive and manage contradictions or fragmented messages but also restructure what they have input and adapt the new information for themselves (White, 1999).

The AT concept has been applied in numerous related studies, such as the following areas of research: psychometrics (Furnham & Ribchester, 1995; McLain, 1993), situational perception and decision making (McLain, 2009; Yurtsever, 2001), sociological variables (Hofstede, 1984), anxiety (Birrell, Meares, Wilkinson, & Freeston, 2011; Ladouceur, Gosselin, & Dugas, 2000), correlational studies in curiosity (Litman, 2010), ethical norms (Weisbrod, 2009), openness (Bardi, Guerra, & Ramdeny, 2009; Caligiuri & Tarique, 2012; Rajagopal & Hamouz, 2009), cultural phenomena (Abbe et al., 2007; Caligiuri & Tarique, 2012; Tapanes, Smith, & White, 2009), decision making (Iyer, McBride, & Reckers, 2012), worry (Buhr & Dugas, 2006), safety competencies (Ironside, Jeffries, & Martin, 2009), identity conflict (Leong & Ward, 2000), thinking styles (Ie, Haller, Langer, & Courvoisier, 2012), financial performance (Westerberg, Singh, & Hackner, 1997), and novelty (Rajagopal & Hamouz, 2009) (for detailed reviews, see Furnham & Marks, 2013). AT has attracted considerable attention in research fields, and a considerable number of studies have explored various aspects of AT.

2.4 AT in Language Learning

In language learning, tolerance can be defined as an impartial and objective disposition toward those who have differing opinions, perceptions or beliefs (Nezhad, Atarodi & Khalili, 2013, p. 1490). Tolerant individuals are more likely to be open to new and different experiences because of their open attitudes toward unique or different situations.

Individuals encounter incomplete information on a daily basis (Shou & Smithson, 2015, p. 1). Individuals are often sensitive to this lack of information and tend to employ personal judgment in their decision making to compensate for the ambiguous information (Shou & Smithson, 2015, p. 1). Individuals commonly apply their own knowledge when processing ambiguous information (Shou & Smithson, 2015, p. 1). The process of learning a language involves not only learning scholastic material but also being willing to learn about cultural aspects.

Consequently, AT is a capability that some language learners need to develop.

The research on language learning has focused on cognitive psychology and the identification of common patterns or practices that help individuals learn a second language (Mohammadi et al., 2013, p. 637). Ambiguity can be defined as uncertainty in language learning situations, and it is usually caused by an inability to determine the appropriate context for cues or other stimuli provided in specific situations (Nezhad et al., 2013, p. 1490). Ambiguous situations can arise in new situations, complex circumstances, or contradictory situations (Nezhad et al., 2013, p. 1490). If the number of cues available is insufficient, an individual may be unable to determine the underlying meaning (Nezhad et al., 2013, p. 1490).

ESL/EFL research suggests that AT is positively related to performance in the learning process and is correlated with learning styles. Ambiguity refers to "the state of being difficult to understand or explain because of involving many different aspects" (Oxford Learners dictionaries). Ambiguity is characterized by "novelty, complexity, insolubility and lack of structure" (Kazamia, 1999, p. 69). According to Budner (1962, as cited in Kazamia, 1999), ambiguity can be divided into three different categories: first, completely new situations that lack established clues; second, situations that are complex but include many clues that can be considered; and third, situations with contradictory components that give various indications that may propose different formations. Tolerance is associated with the idea of ambiguity and reflects an acceptance of uncertainties (Ely, 1995). It can be described as "an ability to address ambiguous new stimuli without frustration or without appeals to authority. It allows for indeterminate rather than rigid categorization" (Ellis, 1994, p. 518). Tolerance is the ability to feel comfortable when handling new ambiguous situations in language learning environments (Ellis, 1994).

In language learning, ambiguous situations are frequently encountered during cooperative learning in the classroom or in self-study environments (White, 1999) and are very common in the language classroom (Ely, 1995). More specifically, ambiguous situations can arise in any language learning context, whether in formal classroom learning or informal self-learning. Through basic linguistic forms ranging from text structures in articles and reading comprehension to intercultural communication and cultural differences, learners encounter different pronunciations, unknown words, synonyms, antonyms, homophones, homonyms, polysemy, and other language elements. Additionally, differences in cultural norms between learners' own cultures and the target cultures may raise issues of ambiguity (Lustig & Koester, 1993). To understand the target language successfully, learners must employ their limited background knowledge and cope with ambiguous and incomplete words, sentences, or structures (Alderson, 2000; Grace, 1998). Ambiguity in language learning may evoke frustration or anxiety among learners (Ehrman, 1999; Oxford, 1999). As stated by Oxford (1999, p. 136), "language learners are often overwhelmed by too much newness, different writing systems, unfamiliar vocabularies, confusing rules." To some extent, all students will encounter ambiguities when learning a language (Erten & Topkaya, 2009).

Most AT-related studies pertaining to language learning have focused on personality traits (Ehrman & Oxford, 1990), learning achievement (Ely, 1995; Erten & Razi, 2009; Kondo-Brown, 2006; Lori, 1990), learning motivation (Kondo-Brown, 2006), reading comprehension (El-Koumy, 2000; Lori, 1990), reading strategies (Keshavarz & Assar, 2009), and learning strategies (Nosratinia, Niknam, & Sarabchian, 2013). These studies indicate a positive correlation between the degree of AT and language achievement and other variables of language learning. For example, AT has been found to be related to performance on grammar and dictation tests (Chapelle & Roberts, 1986), listening comprehension (Naiman, Frohlich, Stern, & Todesco, 1978), reading comprehension (El-Koumy, 2000; Kondo-Brown, 2006), and English achievement (Lori, 1990).

When considering AT in relation to acquiring a new language, Reiss (1985) found that good language learners seem to be more comfortable with ambiguity than those who struggle with language learning. Budner (1962, p. 29) claimed that learners with low tolerance levels may view ambiguous situations as "sources of threat." Therefore, higher AT levels seem to be associated with better language learning. However, this claim is uncertain case. According to Ely (1995), greater sensitivity to ambiguous language input may actually prevent language acquisition, although fossilization in language acquisition may occur when learners are not sufficiently sensitive to ambiguous language elements. Such research shows that moderately tolerant learners may be more successful than learners with high or low levels of tolerance (El-Koumy, 2000). Further studies are thus necessary to interpret the role of AT in language learning, especially in the EFL context.

2.5 AT and English Proficiency

Lee (1999) investigated how the degree of AT (low AT, LAT; high AT, HAT) and proficiency levels (low, intermediate, and high) affected task-based writing performance. More specifically, by studying 95

undergraduate students at Seoul National University, Korea, Lee attempted to determine how AT influences the writing structures of EFL college students and what levels of writing proficiency are most influenced by AT. The findings indicated that the majority of the participants belonged to the LAT group (n=53). ANOVA results showed that AT did influence the writing proficiency of EFL college students (F=234.1, df=1, p<.05) and that no significant relationship was noted between the participants' AT and writing abilities (in terms of scores for content, organization, structure, vocabulary, and mechanics). The number of LAT and HAT students in the low-proficiency group was significantly different, whereas there was no difference in the number of students in these AT levels in the high-proficiency group.

Recent studies of AT and EFL proficiency have shown that AT is linked to achievement in listening comprehension and imitation for English language learners (Arias, 2015, p. 30). AT has also been shown to be a significant factor in reading comprehension for EFL learners (Nezhad et al., 2013, p. 1490). Although AT is an important factor in the ability to learn languages, students with AT were also more likely to have other intrinsic or personality traits, such as heightened analytical awareness and longer endurance when working on or attempting to master comprehension of certain language areas (Nezhad et al., 2013, p. 1490).

Research has demonstrated that students with a higher level of openness and AT have a higher proficiency in their second language (Oz, 2014, p.1473). However, it is important to distinguish tolerance for ambiguity from an over-tolerance for ambiguity. An over-tolerant language learner may simply accept any deviations without an understanding or awareness of certain distinctions. The goal for EFL learners is to develop a moderate degree of AT that is helpful for language learning while enabling awareness and recognition of linguistic subtleties (Nezhad et al., 2013, p. 1490).

2.6 Gaps in CWS, AT, and English Proficiency

AT arises in language learning because the combination of linguistic knowledge and cultural knowledge collide. As a result of this collision, ambiguous situations are likely to arise (Nezhad et al., 2013). Additionally, students in language learning classrooms may be required to manage new lexical or grammatical structures without sufficient background information on the potential multiple meanings that may be involved (Nezhad et al., 2013). Such situations can create a certain level of anxiety within students if they not have developed some degree of tolerance for the ambiguity involved in foreign language learning.

Learning a foreign language requires the student to master the comprehension of certain text structures inherent to the language being learned (Nezhad et al., 2013). Understanding these text structures enables the student to comprehend instructional texts and other foreign language learning materials. However, many languages require a particular knowledge of the background and culture of the language to truly comprehend the meaning of the words or phrases presented in language textbooks (Nezhad et al., 2013).

In many instances, learning a language requires learning a great deal about the culture that uses that particular language (Mitsutomi & McDonald, 2005, p. 230). Such cultural learning cannot result from simply memorizing the words and phrases that are used in a particular language (Bright & Mahdi, 2012, p. 86). This intangible aspect of language learning—the need to gain an understanding of the culture—is where a student's tolerance for ambiguity becomes relevant.

Differences in cultural norms and the need to make sense of these differences when learning a foreign language require students to tolerate ambiguity (Nezhad et al., 2013). In fact, many scholars would argue that ambiguity inevitably arises during the process of learning a new language (Oz, 2014). Research on AT has focused on its relationship with certain personality traits in students (Arias, 2015).

During the language learning process, tolerance for ambiguity is a skill that must be acquired (Bright & Mahdi, 2012, p. 86). In many ways, well-developed AT allows the student not only to learn the language but also to be more open to the complex and interdependent issues that may arise during conversations in their non-native language (Bright & Mahdi, 2012, p. 86).

Further research in ESL/EFL has shown that AT should be regarded as a significant aspect of English learning (Chapelle & Roberts, 1986, p. 114). As Brown (2000) stated, the factors involved in AT are "significant contributors to successful acquisition" of a second language. Tolerance of uncertainty is necessary to facilitate the language learning process (Ely, 1995)

3. Method

3.1 Setting and Participants

The study was conducted at a science and technology college in the central part of Taiwan. Fifty-six students

were invited to participate in the study; they were evaluated in class using the Second Language Tolerance of Ambiguity Scale (SLATS), and their CWSs were investigated. The data were collected from questionnaires distributed to the students during regular class hours during the fall semester of the 2014-2015 academic year. Of the 56 students who initially participated in the study, 46 returned completed and valid questionnaires; these students included 40 female students and 6 male students.

The students were told that the purpose of the questionnaires was to help the teachers better understand their language learning and CWSs. The students were assured that their responses would not affect their grades.

Students at the college are required to take the official TOEIC during their freshman year to demonstrate their English proficiency. Accordingly, the TOEIC scores used for the students participating in this study were obtained from the official language tests conducted at the center between January and May 2015.

3.2 Second Language Tolerance of Ambiguity Scale (SLATS/AT)

The SLATS, which was developed by Ely (1995), is the only ambiguity scale designed for language learners and has a high level of internal consistency according to Cronbach's alpha (.84). This questionnaire comprises 12 items with responses graded on a four-point Likert scale to measure students' reported levels of AT in various aspects of language learning, including listening, speaking, reading, writing, pronunciation, and grammar. Statements such as the following are provided: "It is frustrating that sometimes I don't completely understand some English grammar." Students must choose the response closest to their experiences: strongly agree, agree, disagree, or strongly disagree. To reduce the possibility of confusion caused by English words, this study used the Chinese version of the SLATS (Lin, 2011). Low SLATS scores indicate a high level of AT tolerance, whereas high scores indicate a low level of AT.

3.3 Classroom Work Styles

The CWS evaluation was developed by Kinsella and Sherak (1993). The original version was written in English with two responses, agree and disagree, for a total of 24 statements. To avoid biased language in this study, the CWS instrument was translated into Chinese. Back-translation measures were used by two Chinese-English experts to avoid misunderstanding.

3.4 Test of English for International Communication (TOEIC)

The TOEIC is an English language proficiency test for EFL learners designed by the ETS, a private nonprofit organization devoted to educational measurement and research. TOEIC scores indicate how well foreign language learners can communicate in the global workplace, and they measure students' progress in English learning and proficiency (program effectiveness). The test measures English proficiency in the workplace context and requires no specialized knowledge or vocabulary to complete it. The TOEIC Listening and Reading Test, which was selected for this study, contains 200 questions. The TOEIC is one of the most widely accepted English proficiency tests for international communication throughout the world, and testing locations are available in more than 165 countries (please refer to the TOEIC website at http://www.ets.org). Evidence obtained over the past 10 years has demonstrated that the TOEIC is both reliable and valid (Powers, 2010).

4. Results

4.1 Demographic Characteristics of Chinese University EFL learners and AT levels

Descriptive statistics were generated to describe the demographic characteristics of the study population, which included the number of participants, their English proficiency (TOEIC), and the percentages of students with each AT level and CWS. As Table 1 shows, approximately 87% of the participants were female, and the remaining 13% were male.

Table 1. Descriptive statistics for the participants and variables

Variables	N	Percentage (%)
Gender		
Male	6	13.0
Female	40	87.0
English Proficiency (TOEIC)		
Low	15	32.6
Medium	16	34.8
High	15	32.6
Tolerance of Ambiguity (AT)		
Low SLAT Score (High AT)	18	39.1
Moderate Score (Moderate AT)	15	32.6
High SLAT Score (Low AT)	13	28.3
Classroom Work Style (CWS)		
Independent	5	10.9
Cooperative	41	89.1

N=46.

The table shows that the participants were almost evenly distributed in their levels of English proficiency (i.e., the TOEIC score), with those at the medium level being the most common (34.8%). Most of the participants favored the cooperative CWS. The SLAT score cutoff point used in this study was adapted from that used in a study by Atef-Vahid et al. (2011), who divided participants into three levels using 33% and 67% as cutoffs. Students with scores under 33.3% were recognized as having high AT levels, those with scores from 33.4% to 66.6% were considered to have a moderate level of AT, and those with scores above 66.7% were regarded as having low AT levels. As Table 1 shows, for the levels of AT (SLAT scores), the greatest percentage of participants had high tolerance (39.1%), while the lowest AT levels were observed in a relatively small percentage of the sample (28.3%). Therefore, although nearly one-third (28.3%) of the students had low AT levels, most students had moderate (32.6%) to high (39.1%) levels of AT.

4.2 Correlation between Tolerance for Ambiguity (AT) and Classroom Work Styles (CWS)

To determine whether AT in learning a second language correlates with CWSs, we applied Fisher's exact test to the SLATS and CWS evaluations. This test was preferable to the chi-square test for determining whether there were any correlations between the SLATS and TOEIC scores and CWSs; it was suitable because the sample was small and because more than 20% of the cells in a contingency table contained fewer than five cases (Punch, 2009). The result of Fisher's exact test (p=.999>.05) indicated a statistically non-significant relationship between the SLATS scores and CWSs, as Table 2 shows. Thus, these results revealed no statistically significant relationship between the AT levels and CWSs of EFL learners.

Table 2. Fisher's exact test between AT and CWSs

	Classroom Work Style (CWS)					
	Independent style		Collaborative style			
Variables	N	%	N	%	χ^2	*p-value*
AT Levels					---	0.999a
High	2	11.11	16	88.89		
Moderate	2	13.33	13	86.67		
Low	1	7.69	12	92.31		

aFisher's Exact Test; *p<0.05; **p<0.01; ***p<.001.

4.3 Correlation between Tolerance for Ambiguity (AT) and English Proficiency (TOEIC scores)

Fisher's exact test was applied to the SLATS and TOEIC scores to determine whether AT in a second language

correlates with English proficiency. The result of Fisher's exact test (p=.106>.05) indicates a statistically non-significant relationship between the two variables, as demonstrated in Table 3. Hence, the findings do not indicate a statistically significant relationship between EFL learners' AT and their English proficiency. This result is not consistent with the findings of Erten and Topkaya (2009), who reported that students' AT increased as their English proficiency improved. Thus, there is no significant relationship between these levels and the English proficiency of learners. One key factor that may have affected this result is the small number of participants in the study.

Table 3. Fisher's exact test between AT and the TOEIC

| | Second Language Tolerance of Ambiguity (AT) | | | | | | | |
| | High | | Moderate | | Low | | | |
Variables	**N**	**%**	N	%	N	%	χ^2	*p* value
English Proficiency (TOEIC)							---	0.106a
Low	3	20.00	7	46.67	5	33.33		
Medium	5	31.25	5	31.25	6	37.50		
High	10	66.67	3	20.00	2	13.33		

aFisher's Exact Test; *p<0.05; **p<0.01; ***p<0.001.

4.4 Relationship between English Proficiency (TOEIC) and Classroom Work Style (CWS)

Subsequently, Fisher's exact test was used to determine the relationship between English proficiency among the Chinese EFL students and their CWSs. The result of Fisher's exact test (p=.069>.05) indicates a statistically non-significant relationship between the two variables, as Table 4 shows. Therefore, no statistically significant relationship was noted between the participants' English proficiency and their preferred CWS. However, the result of Fisher's exact test is very close to being significant, as the percentages in Table 4 show. Notably, a trend toward an association between higher proficiency and a preference for an individual CWS was noted, although this association was not significant. This trend could imply that students with better English proficiency are more inclined to learn independently. Further investigations are necessary to confirm this finding.

Table 4. Fisher's exact test between the TOEIC and CWSs

| | Classroom Work Style (CWS) | | | | | |
| | Independent | | Cooperative | | | |
Variables	N	%	N	%	χ^2	*p value*
English Proficiency (TOEIC)					---	0.069a
Low	0	0.00	15	100.00		
Medium	1	6.25	15	93.75		
High	4	26.67	11	73.33		

aFisher's Exact Test; *p<0.05; **p<0.01; ***p<0.001.

4.5 Effects of the Interaction between Ambiguity Tolerance (AT) and Classroom Work Style (CWS) on English Proficiency (TOEIC)

Two-way ANOVA testing was used to assess how the interaction between students' SLATS and CWSs affects their English proficiency scores (TOEIC). The test subjects were divided into three groups according to their level of AT (low, moderate, and high AT) and into two groups according to their preferred CWS (independent or cooperative learning). The interaction between AT and CWS (AT×CWS) was investigated in light of the relationship with TOEIC scores. This methodology provides verification not only for the main effects of AT and CWS but also for the interaction effect of AT×CWS.

If the interaction effect was significant, this result would indicate a need to examine the main effect rather than the simple main effect. That is, the main effects of CWSs must be tested on the basis of AT levels, and the main effects of the SLAT must subsequently be tested with respect to the different CWSs. However, if the interaction

effect was not significant, it would be sufficient to directly test the main effects of both AT and CWSs.

Finally, post hoc comparisons using the least significant difference (LSD) were performed on items with significant main effects or simple main effects. The comparison results were used to answer the questions posed in this study and to initiate discussion.

The variance results for the influences of AT and CWSs are shown in Table 5. The interactive effect of these two variables on TOEIC scores was statistically significant (F=3.31, p=.47).

Table 5. Overview of two-way ANOVA testing for AT and CWSs

Source of variance	SS	df	MS	F	p-value	LSD post hoc comparison
AT	1311.11	2	655.56	0.15	0.860	
CWS	29615.67	1	29615.67	6.86*	0.012	---
AT × CWS	28571.23	2	14285.61	3.31*	0.047	Simple main effect
Error	172636.86	40	4315.92			
Total after correction	260771.74	45				

N=46; * p<0.05; **p<0.01; ***p<0.001. Levene's test of homogeneity of variance: F=1.57; p>0.05, no violation.

The simple main effect and LSD post hoc comparison (Tables 6 and 7) indicate that in the CWS group, those with low SLAT scores scored significantly higher on the TOEIC (M=331.25) than those with moderate and high AT levels (M=263.85, 255.83). Both tables illustrate that those who have higher AT levels (low AT scores) perform better than those with low to moderate AT levels.

Table 6. Simple main effect of AT and CWSs on TOEIC scores

Source of variance	SS	df	MS	F	p-value	LSD post hoc comparison
AT						
For independent learners	10957.50	2	5478.75	0.71	0.586	
For cooperative learners	49928.08	2	24964.04	6.04**	0.005	Low-AT group > moderate-AT group, high-AT group
CWS						
For low-AT group	802.78	1	802.78	0.11	0.746	
For moderate-AT group	38303.14	1	38303.14	13.32**	0.003	Independent learners > cooperative learners
For high-AT group	15400.64	1	15400.64	9.74*	0.010	Independent learners > cooperative learners

N=46; * p<.05; **p<.01; ***p<.001.

As Table 7 shows, the TOEIC scores for independent learners in the group with moderate SLAT scores (M=412.50) were significantly higher than the scores for cooperative learners (M=263.85). Similarly, independent learners in the group with high SLAT scores had higher TOEIC scores (M=385.00) than the cooperative learners with high SLAT scores (M=255.83). Independent learners with either moderate or low AT levels (high SLAT scores) tended to have higher TOEIC scores than the cooperative learners did.

Table 7. Descriptive statistical summary of the relationship between TOEIC scores and SLAT and CWSs

Group	Independent learners ($N = 5$)		Cooperative learners ($N = 41$)		Total ($N=46$)	
	M	SD	M	SD	M	SD
Low-AT group ($N = 18$)	310.00	14.14	331.25	88.57	328.89	83.55
Moderate-AT group ($N = 15$)	412.50	123.74	263.85	42.87	283.67	73.52
High-AT group ($N = 13$)	385.00	---a	255.83	39.76	265.77	52.28
Total ($N = 46$)	366.00	81.35	287.80	71.95	296.30	76.12

aThere was no standard deviation, as there was only one subject.

In addition, this result suggests that independent learners tend to obtain higher TOEIC scores irrespective of their AT level (Figure 1). These higher scores are observed because independent learners may be capable of learning on their own without relying on group activity.
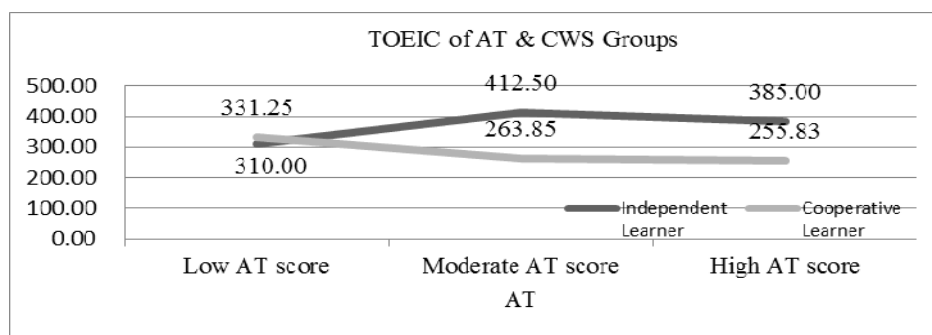

Figure 1. TOEIC scores of AT and CWS groups

5. Discussion and Conclusion

The current study investigates the relationship among AT, CWSs, and English proficiency as measured by the TOEIC. Our findings indicate that the Chinese EFL learners participating in this study had primarily high (39.1%) to moderate (32.6%) levels of AT. Although nearly one-third of the students had low AT levels, most students had moderate to high levels of AT. This result is consistent with the findings of Atef-Vahid et al. (2011), who found that most third-year Iranian high school students had moderate to high AT levels. Our findings also agree with the findings of Erten and Topkaya (2009), who reported low to moderate levels of AT among most tertiary-level Turkish EFL learners at a state university in Turkey.

Furthermore, our study showed that most students had a medium level of English proficiency. Although most students preferred the cooperative CWS, the study results also showed a tendency to prefer the independent CWS among those with medium to low levels of AT and high levels of English proficiency.

An analysis of the individual effects of AT levels and CWS types showed that neither parameter had any significant association with the level of English language proficiency. These findings are not consistent with those of previous research indicating that AT was a significant factor influencing the success of learning French (Naiman et al., 1978). One possible reason for this discrepancy could be the small sample size in our study. However, tests of the combined effects of learners' AT levels and CWSs on English proficiency levels (TOEIC scores) found a statistically significant effect. The results indicated that independent learners with moderate or low AT levels tended to achieve higher levels of English language proficiency. This result is similar to that obtained in the study by Atef-Vahid et al. (2011), who showed that learners with good tolerance for ambiguity were likely to achieve higher scores on language proficiency tests.

On the basis of our findings, we can make some pedagogical recommendations. EFL teachers should be aware of the possible influences of AT on the English learning process. Early in the process of EFL learning, students should be encouraged to tolerate as much linguistic input as possible. EFL teachers should also plan lessons that encourage learners to effectively address confusion arising from unfamiliar linguistic and cultural patterns. Furthermore, given the present study's finding that AT is closely related to CWS and English proficiency, we

suggest that EFL teachers design well-informed classroom procedures and methods for raising consciousness (Başöz, 2015) to help cooperative learners work successfully with others and obtain the maximum benefits of cooperative learning.

In conclusion, our study, although preliminary, showed that our study group of Chinese learners had moderate to high levels of AT. Our results also showed that AT levels and CWSs had a significant interactive effect on language proficiency levels. We believe that our findings can help educators plan lessons in a way that encourages EFL learners to handle ambiguity and choose appropriate work styles.

Acknowledgments

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