
More Than Meets the Ear: Individual Differences in Trait and State Willingness to Communicate
as Predictors of Language Learning Performance in a Chinese EFL Context

Jiayi Zhang
Beijing Normal University, China
jiayizhang@bnu.edu.cn

Nadin Beckmann
Durham University, UK
nadin.beckmann@durham.ac.uk

Jens F. Beckmann
Durham University, UK
j.beckmann@durham.ac.uk

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ABSTRACT

Chinese students are frequently seen as passive learners because of their apparent reluctance to speak, particularly in English classrooms. However, this impression seems to reflect a stereotype which is likely to confound willingness to communicate (WTC) and communication behaviour. In this article we argue for more attention to be paid to individual differences to complement culture-related explanations of differences in WTC. Self-report data on WTC at both trait and state levels and personality characteristics were analysed in relation to L2 language learning performance in a sample of 103 university students. Individual differences in WTC_{L1} were found to be strongly related to extraversion; whilst individual differences in WTC_{L2} were associated with openness to experience, conscientiousness, and agreeableness, rather than extraversion. Moreover, this study differentiates state WTC_{L2} from communication behaviour, and provides evidence for both trait and state WTC_{L2} being important predictors of L2 learning performance despite being differently related to personality. Our results overall suggest that exclusively relying on observable communication behaviour is likely to overlook effective antecedences of learning and performance. This study pleads for a more differentiated perspective on WTC and its personality correlates at both trait and state levels. It provides further evidence that WTC is a useful construct in working towards a better understanding of language learning processes.

Keywords: willingness to communicate; individual differences; Big-Five personality traits; trait-relevant states; language learning performance

1. INTRODUCTION

As an individual difference construct, willingness to communicate (WTC) was originally introduced into the first language (L1) communication literature as a trait-like predisposition that remains relatively stable across different situations (McCroskey & Richmond, 1990). When applied to the field of second language (L2) learning, WTC was conceptualised as displaying “dual characteristics at both trait and state levels” (MacIntyre, Dörnyei, Clément, & Noels, 1998; Peng & Woodrow, 2010, p. 835). At the trait level, WTC is seen as a typical communication *tendency* that is rooted in personality; at the state level, WTC reflects the communication *intentions* that might fluctuate across time and situations. More recently, attention has shifted from the relatively stable, trait-like components of WTC to the more dynamic, state-like components of WTC, and in a recent review paper, Zhang, Beckmann and Beckmann (2018) summarised the situational antecedents that may cause fluctuations in state WTC over time.

In the L2 literature, Chinese students are commonly seen as passive learners reluctant or even unwilling to communicate in English (e.g. Chu, 2008; Liu & Jackson, 2008). Research in support of such claims reported that Chinese students’ trait WTC in English (trait WTC_{L2}) is low and lower than WTC in Mandarin (trait WTC_{L1}). For instance, in an investigation of a sample of 547 non-English major undergraduates in Beijing, Liu and Jackson (2008) found that these students displayed low trait WTC_{L2} in English classes, although they were relatively willing to engage in interpersonal communication in Mandarin. Similarly, with a sample of 364 non-English major undergraduates in Taiwan, Chu (2008) found the sample’s average level of WTC_{L2} to be low and lower than the sample’s mean trait WTC_{L1} .

These and other stereotype-serving findings seem at odds with research findings suggesting that Chinese learners prefer active learning and are eager to question their teachers and engage in

communication activities (e.g. Cheng, 2002; Liu & Littlewood, 1997; Shi, 2006). Arguably, Chinese students have many personal characteristics in common with their Western counterparts, and a perceived reluctance to communicate in a L2 is not a phenomenon that exclusively applies to Chinese students. Lee's (2009) 27-hour observation of six Korean postgraduates in the US showed that although the participants were attentive listeners, they rarely spoke during class discussions and none initiated conversations. Moreover, Asmalı, Bilki and Duban (2015) compared 65 English major university students in Turkey with a comparable sample in Romania and found neither of them were overly keen to communicate in English. The Turkish group showed an average level of trait WTC_{L2} as low as 3.55 out of 10. By referring to effects of teachers' pedagogical approaches, Freiermuth and Huang (2012, 2018) further challenge the validity of a primarily culture-related "explanation" of lower trait WTC_{L2} .

WTC levels might be influenced by culture; however, cultural impact only partially explains why some students are less willing to communicate than others (Marlina, 2009). Simply reducing differences in culture to learner stereotypes creates the risk of overlooking the importance of individual differences and contextual factors (Shao & Gao, 2016). As low WTC_{L2} levels have been found among L2 learners from different countries or cultural backgrounds, we should pay attention not only to differences *between* cultures, but also to individual differences *within* learners' cultural backgrounds. As Shao and Gao pointed out, "simplistic cultural interpretations" should be avoided, and the vast range of differences in individuals' thoughts, feelings and observable behaviour should not be ignored (2016, p. 116). Hence, we suggest studying the potential links between individual differences related to personality and perceived WTC in a more differentiated manner. Adopting such perspective when looking at their effects on L2 learning will beneficially extend our research and understanding beyond culture-focused

explanations of WTC_{L2} .

By investigating individual differences in WTC in both the learners' native and additional languages, and by exploring the relationships between WTC and personality in both linguistic contexts, this study aims to make three contributions. Firstly, it aims to raise awareness of the role of individual differences in WTC_{L1} and WTC_{L2} , and, by comparing WTC_{L1} 's and WTC_{L2} 's relationships with personality traits, allows for a more differentiated perspective on WTC. Previous studies have predominantly examined the correlations between personality traits and WTC_{L2} (e.g. MacIntyre & Charos, 1996; Öz, 2014). These studies, however, have rarely discussed these correlations in relation to those between personality traits and WTC_{L1} . Such contrasting is important because WTC_{L2} is not simply another manifestation of WTC_{L1} (MacIntyre et al., 1998). L2 communication may involve more uncertainty than L1 communication and thus may be related differently to personality. Secondly, this study explores the relationship between personality and WTC_{L2} not only at the trait level (i.e. correlations between personality traits and trait WTC_{L2}), but also at the state level (i.e. correlations between personality states and state WTC_{L2}). Previous research has predominantly focussed on trait-level relationships, without considering the state characteristics of personality and WTC_{L2} (i.e. possible fluctuations over time and across situations). To our knowledge, this is the first study to examine the relationships between personality states and state WTC_{L2} , using a high-density repeated measurement approach. Thirdly, this study aims to investigate the potential contribution of WTC in predicting L2 performance in terms of communication behaviour and exam scores. In the literature, several studies have reported significant correlations between WTC_{L2} and L2 performance (e.g. Mahmoodi & Moazam, 2014; Öz, 2014). Our study aims to extend this further in two ways: (1) in terms of whether WTC_{L2} as an intention to communicate contributes to the

prediction of L2 performance over and above individual differences in personality and actual communication behaviour, and (2) by considering WTC_{L2} at the state level and its variation in L2 performance predictions. Such investigations help to better anchor WTC conceptually within a nomological network, that is, to establish whether WTC as a construct has the potential for being a useful and meaningful component in explanatory models for L2 performance.

2. WTC AND BIG-FIVE PERSONALITY TRAITS

Personality, i.e. learners' thoughts, feelings, and behaviours, is regarded as one of the most fundamental and enduring variables influencing both WTC_{L1} and WTC_{L2} . The Five Factor Model (FFM) of personality is a well-established conceptualisation of personality. It describes personality at the level of the population, as it is based on an analysis of differences between people. FFM assumes personality to be dimensional (rather than categorical), that is that an individual's personality can be described by their standing on each of the five major personality dimensions or traits, namely extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (e.g. Goldberg, 1992; McCrae & Costa, 1987). According to McCrae and Costa (1987) the core of *extraversion* (E) is lively sociability, the enjoyment of being accompanied by others; other researchers (e.g. Hogan, 1983) state that this dimension should be understood in terms of sociability and assertiveness factors. *Agreeableness* (A) refers to being cognitively trustful, affectively sympathetic, and behaviourally cooperative (McCrae & Costa, 1987). Conscientiousness (C) has "both proactive and inhibitive aspects", including such traits as "need for achievement and commitment to work," and "moral scrupulousness and cautiousness" (Costa, McCrae, & Dye, 1991, p. 887). *Neuroticism* (N) includes "not only negative affect, but also the disturbed thoughts and behaviours that accompany emotional distress" (McCrae & Costa, 1987, p. 87). *Openness* (O) "is best characterised by original, imaginative, broad interests,

and daring” (McCrae & Costa, 1987, p. 87). FFM was originally developed based on an analysis of the English lexicon (i.e. adjectives used to describe people) which was later extended to other languages.

Research into personality has provided evidence that Big-Five personality traits correlate with performance, with conscientiousness being the most significant and consistent predictor of both academic performance (e.g. Furnham, Chamorro-Premuzic, & McDougall, 2003; Poropat, 2009) and job performance (e.g. Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001). The Big-Five personality traits have also been widely used as markers of personality in research into the relationship between personality and WTC (MacIntyre et al., 1998).

Among the Big Five personality traits, extraversion receives particular attention in research on WTC. Extraversion is thought to play a dominant role in predicting WTC_{L1} and WTC_{L2} . When introducing WTC to the L1 communication context, McCroskey and Richmond (1990) suggested that extraversion strongly correlates with WTC_{L1} , suggesting that being outgoing and talkative is reflected in higher levels of WTC. In addition, a number of questionnaire-based studies with relatively larger samples have provided evidence for a relationship between extraversion and WTC_{L2} . For example, studying a group of 92 adult French learners in Ottawa, MacIntyre and Charos (1996) found that, among the Big-Five personality traits, the highest correlation was between extraversion and WTC_{L2} ($r = .39$). Similarly, using a sample of 168 English learners in Turkey, Öz (2014) found WTC_{L2} to be significantly correlated with extraversion, agreeableness, and openness to experience, with extraversion showing the strongest association in this study ($r = .51$). It has been suggested that those scoring higher on an extraversion scale tend to be more confident in their L2 proficiency, enabling them to demonstrate behaviour indicative of higher levels of WTC (e.g. Çetinkaya, 2005; Fu, Wang, & Wang, 2012). Whilst extraversion may not

have a strong relationship with written language production, it bears strong associations with oral language production in both L1 and L2 (Dewaele & Furnham, 1999).

By contrast, Chu (2008) reported slightly different results after testing WTC_{L1} 's and WTC_{L2} 's relationships with shyness (defined as being "low in extraversion") among 364 English learners in a university in Taiwan. Chu (2008) found that, although shyness negatively correlated with both WTC_{L1} and WTC_{L2} , its relationship with WTC_{L2} ($r = -.31$) was weaker than its relationship with WTC_{L1} ($r = -.53$). This suggests that unlike WTC_{L1} , which seems to mainly reflect one's extraversion or (lack of) shyness, WTC_{L2} may also be associated with other personality characteristics. MacIntyre and Charos (1996) reported that all five major personality traits directly or indirectly correlated with WTC_{L2} .

3. TRAIT-RELEVANT PERSONALITY STATES

The concept of personality traits builds on the notion of stability of individual differences in personality across situations and over time. However, fluctuations in thoughts, feelings, and behaviours *within* a person (i.e. within-person variability over time and across situations) have received increasing attention in recent years (e.g. Beckmann, Minbashian, & Wood, 2011; Beckmann & Wood, 2017, 2020; Cervone & Little, 2019; Fleeson, 2017). As Epstein (1994) pointed out, the trait approach merely describes a general behavioural tendency, rather than the process of individual behaviour generation. For instance, whilst a trait approach allows someone to be described as an extravert or being talkative *in general*, questions regarding what makes this person decide to engage in active forms of verbal communication in *a specific* situation, or why this person appears to change communication intentions and behaviours over time remain unanswerable from a trait perspective.

The concept of personality *states* has been introduced to capture thoughts, feelings, and

behaviours at a given moment in time (e.g. Fleeson, 2001; Fridhandler, 1986; Patrick & Zuckerman, 1977). Researchers have increasingly realised that both traits and states are crucial for a more comprehensive understanding of personality that goes beyond mere description. They therefore promote an integration of both trait and state principles when studying personality and individual differences (e.g. Beckmann, Beckmann, Minbashian, & Birney, 2013; Beckmann & Wood, 2017, 2020; Wood, Beckmann, Birney, Beckmann, Minbashian, & Chau, 2019; Debusscher, Hofmans, & De Fruyt, 2017; Fleeson, 2001; Fleeson & Jayawickreme, 2015; Fleeson & Leicht, 2006; Mischel & Shoda, 1998).

The variations of a person's thoughts, feelings, and behaviours over time and across situations, can be operationally captured in form of a density distribution (Fleeson, 2001, 2017). To model individuals' density distributions of trait-relevant states, Fleeson (2001) employed an experience sampling methodology (ESM), capturing participants' personality states five times per day for up to three weeks. Evidence has been provided by Fleeson (2001) as well as others (e.g. Judge, Simon, Hurst, & Kelley, 2014; Minbashian, Wood, & Beckmann, 2010; Sherman, Rauthmann, Brown, Serfass, & Jones, 2015) of large within-person variation in Big-Five personality states that is reliable and characteristic for individuals.

Although originally tested with Big-Five personality states, Fleeson and Leicht (2006) indicate that the density distribution approach extends to variables beyond the five major factors of personality. As both WTC_{L2} and personality display state characteristics, a study taking advantage of experience sampling to investigate the relationships between WTC, personality and L2 performance will likely offer new insights into the dynamic nature of WTC. This is what this study aims to achieve.

4. WTC AND LEARNING PERFORMANCE

We hypothesise that students who are (generally) more willing to communicate tend to engage more often in active, observable communication behaviours in class and, hence, are more likely to score higher in language exams and teacher judgments of language performance (e.g. McCroskey & Richmond, 1991). This expectation is based on the assumption that active classroom communication is beneficial for learning, particularly language learning (e.g. Sprague, 1992). In the L2 literature, WTC is regarded as a powerful predictor of L2 communication behaviour, which is underpinned by the notion that the acquisition of linguistic competence is facilitated by the active use of the language in communication (Kang, 2005). Interestingly, few studies have explicitly tested the relationship between WTC and L2 performance, and the results have been inconsistent. Some (e.g. Mahmoodi & Moazam, 2014; Öz, 2014) have found significant positive correlations between WTC_{L2} and L2 performance, whilst others (e.g. Joe, Hiver, & Al-Hoorie, 2017; Yashima, 2002) reported no effects. Hence, the relationship between WTC and L2 performance still requires further investigation.

To our knowledge, few studies (e.g. Mystkowska-Wiertelak & Pawlak, 2014) have tested the associations between WTC and frequency of communication behaviour in L2 contexts. Research, however, does not always distinguish between WTC as an intention, particularly relating to state characteristics of WTC_{L2} , and actual communication behaviour. For example, Cao (2013) conducted a longitudinal case study to understand the dynamic nature of WTC_{L2} through classroom observation using counts of communicative turn-taking in English classes as indicators. One may argue, however, that the observed frequency of actual communication *behaviour* insufficiently represents the subjective *intention* to communicate (i.e. WTC). Such a perspective renders WTC an “internal phenomenon” which is not readily observable.

Consequently, self-reports, rather than behaviour observations, would be a more appropriate method to measure WTC. A counter-argument might be that what “really matters” is the actual use of the language to communicate (i.e. communication behaviour) rather than the mere intention (i.e. WTC). In accordance with MacIntyre et al.’s (1998) pyramid model of WTC, we argue that in order to gain a better understanding of the role of WTC in L2 contexts, WTC needs to be distinguished from communication behaviour and that such conceptual differentiation needs to be also reflected in the approaches to measurement.

The study reported here focuses on individual differences in WTC and investigates the associations of WTC with personality at both trait and state levels. Following the distinction between communication intention and communication behaviour, we test their respective relationships with L2 performance from a trait as well as a state perspective. We also explore the association between L2 performance and the stability in state WTC, as one might expect that learners who are more variable in their state WTC throughout the course of their learning might be less successful. The following research questions were addressed:

RQ 1. What are the relationships between Big-Five personality and WTC, both at trait and state levels?

RQ 2. What is the relationship between communication intention (i.e. state and trait WTC) and communication behaviour?

RQ 3. Are trait and state WTC, communication behaviour, and Big-Five personality traits and states predictors of L2 performance? What is the contribution of WTC at trait and state levels in the prediction of L2 performance?

RQ 4. Is the variability in state WTC predictive of L2 performance?

5. METHOD

5.1 Overview

This study was designed as an investigation of WTC and its correlates at both trait and state levels. To that end participants completed a series of questionnaires both at the beginning of and repeatedly during one semester of study. Self-report data on L2 performance were also collected.

5.2 Context

The study was conducted in the context of a College English course at a national university in Beijing. At this university, all non-English major undergraduates were required to take this course. The course consisted of two types of lessons: reading and writing lessons, and oral lessons. Whilst the reading and writing lessons were relatively teacher-centred, concentrating on grammar and vocabulary, the oral lessons provided students with more opportunities to communicate in English, using activities such as discussions, projects, role-plays, and mock interviews. This study focussed only on the oral lessons (running for about four months throughout the semester). Each lesson lasted for one hundred minutes, with a five-minute break halfway.

5.3 Participants

A total of 103 first-year non-English major undergraduates from two classes taught by the same teacher were recruited. In general, participants can be described as intermediate learners of English. They had learned English for about ten years before entering university. However, as English teaching in Chinese schools tends to be primarily exam-oriented, focussing on grammar and vocabulary, the participants were not yet proficient in English communication, particularly

oral communication. All participants were majoring in natural science, and there were far more males than females (i.e. 85 males, one participant did not report his or her gender). Their age ranged from 17 to 21 years, with an average of 19 ($SD = 0.85$). Data from one participant were excluded from analysis because, consistently across all measurement occasions, this participant responded “not at all” to all odd numbered items and “extremely” to all even numbered items regardless of item content.

5.4 Research design

To investigate how momentary thoughts, feelings, and behaviours related to L2 communication fluctuate over time, the present study used a repeated measurement approach. We collected state data on Big-Five personality and WTC_{L2} on thirteen measurement occasions during a four-month semester. Hence, we were able to track fluctuations in Big-Five personality states and state WTC_{L2} from session to session. This method of intensive repeated data collection is also referred to as experience sampling in the field of personality science. Experience sampling methods (ESM) assess momentary, or short-term cognitive, affective and behavioural responses in the same group of participants repeatedly (often several times per day) for several days or weeks (see Barrett & Barrett, 2001; Bolger & Laurenceau, 2013; Hektner, Schmidt, & Csikszentmihalyi, 2007; Hormuth, 1986). In the current study, we use a wider time window than is typically used, that is, measurement occasions were spread out more widely to capture all oral English lessons during one semester. However, and in line with ESM, participants were asked to reflect on their *momentary* experience (rather than how they typically think, feel, and behave), as they responded to questionnaire items on each measurement occasion.

5.5 Materials

Trait measure. With the exception of demographic items (e.g. subject major, age, and gender), all items were statements (e.g. “I am willing to participate in group discussions.”), to which the participants were asked to provide a rating on a 7-point scale ranging from “very inaccurate” (scored as 1) to “very accurate” (scored as 7). These were based on validated scales commonly employed in the literature (e.g. Cao & Philp, 2006; Goldberg, 1992; Macintyre, Baker, Clément, & Conrod, 2001; McCroskey & Richmond, 1990) although adaptations were made to adjust these to the specific context of this study. As indicators of internal consistencies of the subscales, Cronbach’s alphas are presented in Table 1 in the diagonal.

Participants reported their *Big-Five personality* traits by completing the 50-item IPIP version of the Big-Five Factor Inventory (see Goldberg, 1992; available at <http://ipip.ori.org/>). The IPIP scale is a ready-to-use measure of personality traits that assesses five dimensions of personality, that is, extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience, with ten items for each dimension.

To measure *trait WTC_{LI}*, Cao and Philp’s (2006) 25-item WTC questionnaire was used. This questionnaire was originally adapted from McCroskey and Richmond’s (1990) 20-item scale (the most frequently used scale for WTC) by adding five items that specifically focus on WTC in class activities. Items referring to communication situations considered not applicable to this specific context were modified or omitted. For example, the situation of “talk with a stranger on the bus” was replaced by “talk with a stranger on campus”. Three additional communication situations that the participants might commonly encounter were added to this questionnaire (e.g. “talk with a fellow student when engaging in extracurricular activities”). The final questionnaire consisted of 26 items covering four broad dimensions, i.e. communicate with strangers,

acquaintances, friends, and communicate in class activities (see Appendix A).

As the College English class is the most common, if not the only, situation for non-English major students in China to communicate in English, Macintyre et al.'s (2001) Willingness to Communicate in the Classroom scale, rather than the more widely used McCroskey and Richmond's (1990) scale, was used to measure *trait* WTC_{L2} . However, MacIntyre et al.'s (2001) items were originally developed for French learners in Canada, which is a context significantly different from the one at hand. Additionally, some of the communication situations described by MacIntyre et al. (2001) were deemed somewhat out of date. Hence, the questionnaire was adjusted to include new items that were more suitable to the current context (e.g. "write a piece of status or a comment in English on social network sites"). A 36-item questionnaire was developed with items targeting three dimensions, 15 items related to speaking and listening, 13 items related to writing, and eight items related to reading (see Appendix B).

State measure. The state questionnaire measured state WTC_{L2} , communication behaviour, and Big-Five personality states. It directed participants to reflect on their experiences during the communication activity they just completed and to report their thoughts, feelings, and behaviours at that specific moment in time. All items were on a 7-point scale, from "not at all" (scored as 1) to "extremely" (scored as 7). The variables derived from these measures are (a) the mean state WTC_{L2} which represents the average across the 13 measurement occasions for each learner, and (b) the relative variability in state WTC_{L2} , which describes the observed variability around a given learner's mean across the 13 measurement occasions in standard deviation (SD) units taking the boundedness of the scale into account. The relative variability index (Mestdagh et al., 2018) was introduced to respond to a widely recognised problem when studying person-level variability over time (e.g. Baird, Le, & Lucas, 2006) that is, that variability indices are often

confounded with the mean (e.g. a high mean score on a scale indicates low variability, i.e. consistency in endorsing items). The relative variability index reflects “the proportion of variability that is observed, relative to the maximum possible variability that can be observed given a certain mean” (Mestdagh et al, 2018, p. 694). The relative variability index can be computed for various measures of variability; in the current study we use a relative SD to describe variability at the person level.

The items used for capturing *personality at the state level* were sourced from Fleeson’s (2001) adjective-based Big-Five scales. Due to feasibility constraints, for each dimension we used the three items that were deemed most relevant to L2 learning situations (Extraversion: talkative, energetic, assertive; Agreeableness: cooperative, trustful, warm; Conscientiousness: organised, hardworking, responsible; Neuroticism: insecure, optimistic, vulnerable; Openness to experience: intelligent, inquisitive, creative). The variables used to represent state personality are the averages across the 13 measurement occasions per dimension, resulting in mean state Extraversion, mean state Agreeableness, mean state Conscientiousness, mean state Neuroticism and mean state Openness. Internal consistencies of the subscales are reported in Table 1.

It is important to note that traits captured with conventional trait measures, such as the IPIP questionnaire used here, reflect the more construed components of personality as instructions require individuals to aggregate and indicate how they *typically* think, feel and behave; whilst state measures used in experience sampling designs refer to a person’s actual, *momentary* experience. Construed and experiential components of personality (i.e. mean states) are related (e.g. Fleeson & Gallagher, 2009), but not identical. For example, a person may hold a self-view that suggest a heightened level of anxiety, but this self-view may not be particularly strongly reflected in their reports of actual experiences at the momentary level (e.g. when repeatedly

asked about their momentary level of anxiety).

Two items were included in the state questionnaire that tap into communication related to a particular English classroom activity. One item concerned communication *intention*, that is, state WTC_{L2} (“I was willing to communicate in English in the activity”). By comparison, the other item was included to assess self-reported communication *behaviour* (“I did communicate in English in this activity.”). The averages across the 13 measurement occasions per item represent an indicator for a student’s communication intent and communication behaviour, respectively.

L2 performance. Participants were asked to report their final grades in the College English course on a hundred-point scale, with scores below 60 considered as fail and above 80 as distinction. The College English score, composed of results of the end-of-term exam (weighted with 70%) and the teacher’s evaluation of a student’s performance during the semester in terms of language use, delivery, and topic development (weighted with 30%), was regarded as a relatively objective assessment of the participants’ L2 performance. The end-of-term exam was a paper-based language exam emphasising grammar and vocabulary, whilst the teacher judgment reflected class participation and language performance in communication activities emphasising oral communication in English. The individual raw scores on the paper-based exam or the teacher evaluations were not available for this study (see limitation section for details). The overall end-of-term English score, however, represents a typical outcome measure of a language course.

5.6 Procedure

In the first week of the semester under study, participants signed a consent form and completed the trait questionnaire. From the following week onwards, students took part in the

College English course as usual, and responded to the state questionnaire in each oral lesson (i.e. twice every fortnight). To obtain immediate responses on state variables without interrupting normal learning and teaching, the state questionnaire was distributed either during the break, or at the end of a lesson. The participants were asked to reflect on their momentary thoughts, feelings, and behaviours during the specific activity they had just completed, respond to the items in the questionnaire as soon as possible based on their reflections, and hand in their responses within five minutes. The state questionnaire was distributed 13 times during the semester. However, complete data were available from only 45% of the participants (mainly due to class attendance). Altogether, 1,118 responses were received, corresponding to an average of 11 responses per person ($SD = 3.09$; response rate = 84%). At the end of the semester, the participants took the final exam and then reported their end-of-term English scores.

5.7 Data analysis

Data were aggregated to scale or subscale level; state data were aggregated across occasions within individuals so as to represent an individual's averaged or mean Big-Five personality states, state WTC and self-reported communication behaviour during the semester. Responses to negative items were reverse scored to ensure that higher scale scores indicate a higher level on the respective variable. Descriptive statistics of the study variables are reported in Table 1. To address research question 1, Pearson's correlation coefficients were used to operationalise the relationships between WTC and personality at both trait and state levels, i.e. between trait WTC (both trait WTC_{L1} and WTC_{L2}) and Big-Five personality traits, and between mean state WTC_{L2} and Big-Five personality mean states. Data on mean state WTC_{L2} and self-reported communication behaviour were compared to answer research question 2. In addressing research

question 3, correlation coefficients were calculated between (a) trait WTC_{L1} and end-of-term English scores, (b) trait WTC_{L2} and end-of-term English scores, and (c) mean state WTC_{L2} and end-of-term English scores. To address the sub-question regarding the predictive power of WTC in combination with relevant individual differences in personality, linear regression analyses were conducted. In addressing research question 4, bivariate correlations between end-of-term English scores and mean state WTC_{L2} and relative variability in state WTC_{L2} were calculated, respectively. In addition, mean state WTC_{L2} and its relative variability were combined in a regression analysis including their interaction to ascertain their relative contribution to the prediction of L2 learning performance.

6. RESULTS

6.1 Relationships between WTC and personality

As shown in Figure 1, in general, the participants stated they were relatively willing to communicate in both the L1 and the L2; however, the average level of trait WTC_{L2} (mean = 4.39, $SD = 1.07$, $N = 93$) was slightly lower than that of trait WTC_{L1} (mean = 4.60, $SD = 0.73$, $N = 90$, $d = 0.21$), this difference, however, did not reach statistical significance ($t = 1.78$, $df = 87$, $p = .08$). Figure 1 also indicates that scores for trait WTC_{L2} varied more than those for trait WTC_{L1} . This suggests that individual differences in WTC_{L2} differ quantitatively from individual differences in WTC_{L1} . The question whether these differences are also of a qualitative nature will be addressed by analysing their respective correlation patterns to personality dimensions. Trait WTC_{L2} correlated positively with trait WTC_{L1} ($r = .44$, $p < .01$, $N = 88$), suggesting that those with higher levels of WTC_{L1} tend to also have higher WTC_{L2} .

<INSERT FIGURE 1 ABOUT HERE>

In addressing research question 1, the relationships between trait WTC and Big-Five personality traits are reported in Table 1. Trait WTC_{L1} mainly correlated with extraversion ($r = .55, p < .01, N = 90$); whilst trait WTC_{L2} was rather weakly related to extraversion ($r = .19, p = .08, N = 88$). Trait WTC_{L2} showed significant associations with openness to experience ($r = .30, p < .01, N = 88$), conscientiousness ($r = .23, p = .03, N = 88$), and agreeableness ($r = .21, p = .05, N = 88$). Agreeableness was also significantly associated with trait WTC_{L1} ($r = .22, p = .04, N = 90$). Hence, it seems that WTC_{L1} was mainly linked to extraversion (and, to a lesser extent, to agreeableness); whilst the trait characteristics of WTC_{L2} were related to personality traits other than extraversion, and openness to experience seemed to play an important role.

<INSERT TABLE 1 ABOUT HERE>

In an analogous step, the relationships between WTC_{L2} and personality at the state level were analysed. Results suggest that mean state WTC_{L2} was significantly and positively related to all five personality mean states (see Table 1).

6.2 Relationships between WTC and self-reported communication behaviour

To address research question 2, we first compared the distributions of mean state WTC_{L2} and self-reported communication behaviour (Figure 2). The mean score for state WTC_{L2} was higher than that for self-reported communication behaviour, both aggregated across the 13 measurement occasions (WTC_{L2} : mean = 4.95, $SD = 1.19$ vs. ComBeh: mean = 4.22, $SD = 1.15$; $t = 5.95, df = 101, p < .01, d = 0.59$). For 85% of the participants, their self-reported communication behaviour was lower than their mean state WTC_{L2} (as assessed across the 13 measurement occasions). This means, on average participants seemed to have had higher levels of intentions to communicate than they actually expressed behaviourally. Self-reported communication behaviour was

positively related to mean state WTC_{L2} ($r = .44, p < .01, N = 102$) and negatively related to relative variability in state WTC_{L2} ($r = -.21, p < .05, N = 94$). This suggests that those learners who reported to have communicated more frequently also were less variable in their intentions to communicate. Both mean state WTC_{L2} as well as self-reported communication behaviour were significantly related to trait WTC_{L2} ($r = .53, p < .01, N = 93$; $r = .43, p < .01, N = 93$; respectively). To summarize the analyses in relation to research question 2, the results suggest that state WTC_{L2} and self-reported communication behaviour shared systematicity in their variability across lessons and activities. Students reported to be less often engaged in actual communication behaviours than their intention to communicate (i.e. their level of WTC) would have suggested. In other words, not all intentions to communicate were successfully transformed into actual communication behaviour. In addition, students who varied less in their state WTC_{L2} tended to communicate more in the classroom. Whilst these results indicate that communication intentions (WTC) and self-reported behaviours were related, both variables were not capturing the same construct.

<INSERT FIGURE 2 ABOUT HERE>

6.3 Relationships between WTC and L2 performance

To address research question 3, the relationships between trait and mean state WTC and end-of-term English scores were analysed. Trait WTC_{L2} significantly correlated with end-of-term English scores ($r = .49, p < .01, N = 63$), whilst no correlation was found between trait WTC_{L1} and end-of-term English scores (Table 1, $r = .13, p = .31, N = 61$). Amongst the five personality dimensions, only trait conscientiousness significantly correlated with end-of-term English scores ($r = .29, p = .03, N = 61$). As suggested earlier, compared to trait WTC_{L1} , which was mainly

associated with extraversion, the correlation pattern of trait WTC_{L2} seemed more diverse. This result suggests that it was the intention to communicate in the L2 (i.e. WTC_{L2}), rather than WTC_{L1} or extraversion per se, that predicted L2 performance.

As trait conscientiousness correlated with both trait WTC_{L2} and end-of-term English scores, we tested whether trait WTC_{L2} predicted end-of-term English scores when controlling for trait conscientiousness. Results show that when controlling for trait conscientiousness, trait WTC_{L2} remained a significant predictor of end-of-term English scores ($\beta = .41, t = 3.53, p = .001$ see Table 2, model 2). When additionally controlling for WTC_{L1} , trait WTC_{L2} still remained a significant predictor of end-of-term English scores ($\beta = .47, t = 3.55, p = .001$; see Table 2, model 3).

<INSERT TABLE 2 ABOUT HERE>

The intention to communicate in L2 at the state level (indicated by mean state WTC_{L2}) moderately correlated with end-of-term English scores (Table 1, $r = .31, p = .01, N = 70$). Self-reported communication behaviour, however, was not associated with L2 performance (Table 1, $r = .09, p = .46, N = 70$). As reported earlier, all Big-Five personality mean states significantly correlated with mean state WTC_{L2} . However, none of them showed significant links with end-of-term English scores (see Table 1).

6.4 Relationships between variability in state WTC and L2 performance

In addressing research question 4 we inspected the bivariate correlations between end-of-term English scores and mean state WTC_{L2} and relative variability in state WTC_{L2} , respectively. Whilst the former ($r = .31, p < .01, N = 70$; see Table 1) indicates that learners with higher state WTC_{L2} (averaged across the 13 measurement occasions during the course) tended to achieve better L2 performance

scores overall, the latter ($r = .10, p = .44, N = 66^1$; see Table 1) suggests that the variation in a learner's state WTC_{L2} was unrelated to learning outcomes. In a subsequent step we combined mean state WTC_{L2} and its relative variability in a regression analysis including their interaction to ascertain their relative contribution to the prediction of L2 learning performance. When including the interaction between mean state WTC_{L2} and relative variability in state WTC_{L2} , only mean state WTC_{L2} ($\beta = .30, t = 2.12, p = .04$) predicted end-of-term English scores. Relative variability in state WTC_{L2} did not predict L2 performance ($\beta = .06, t = 0.49, p = .63$). The results indicate that the effect of mean state WTC_{L2} on learning outcomes ($r = .31$) was not moderated by its variability.

<INSERT TABLE 3 ABOUT HERE>

7. DISCUSSION

This study compared WTC_{L1} and WTC_{L2} by investigating their respective relationships with Big-Five personality dimensions. It offers a novel perspective by considering the associations between Big-Five personality and WTC_{L2} at state level in addition to those at the trait level. Results indicate that WTC_{L1} was mainly related to extraversion or talkativeness, whilst WTC_{L2} was not strongly related to extraversion but associated with a different set of personality variables, mainly openness to experience. Moreover, we distinguished WTC (as the intention to communicate) from observable communication behaviour, and found that both trait and mean state WTC_{L2} were more effective than other selected variables (e.g. self-reported communication behaviour, and Big-Five personality traits and mean states) in predicting L2 performance.

¹ The difference in N between the analyses including mean state WTC_{L2} and relative variability in state WTC_{L2} is caused by the exclusion of data sets that were either based on fewer than three data points, or with no variability across the 13 measurement occasions (see Mestdagh et al., 2018).

7.1 Personality variables correlated with WTC_{L1} and WTC_{L2}

The results show that WTC_{L1} and WTC_{L2} were substantially related. Language learners, however, seemed to show slightly lower WTC_{L2} than WTC_{L1} . This resonates with previous findings (e.g. Chu, 2008; Liu & Jackson, 2008) suggesting that L2 learners tend to be less willing to communicate in the L2 than in their L1. At the same time, we cautiously take the fact that the averages of WTC_{L1} and WTC_{L2} scores were both above the respective scale mid-points in conjunction with the symmetric distribution of scores around these respective mean scores as an indication against the notion of a generally low WTC in Chinese students (see Chu, 2008). This resonates with Freiermuth and Huang's (2012, 2018) qualitative analyses in which they found that Chinese speakers (from Taiwan) who were non-English majors demonstrated WTC_{L2} , but only when given an opportunity to chat with Japanese students.

At the trait level, both WTC_{L1} and WTC_{L2} were significantly correlated with selected Big-Five personality traits, which generally supports the claim discussed in the literature that both WTC_{L1} (e.g. McCroskey & Richmond, 1990) and WTC_{L2} (e.g. MacIntyre et al., 1998) are associated with a learner's personality. However, unlike findings reported by MacIntyre and Charos (1996) and Öz (2014), extraversion did not significantly correlate with WTC_{L2} in this study; although it should be noted that a (somewhat) different scale was used in the current study to measure WTC. The results of the current study show that WTC_{L1} was strongly related to extraversion and moderately related to agreeableness, whilst WTC_{L2} was more strongly related to openness to experience than to extraversion (and, to a lesser extent, to conscientiousness and agreeableness). This supports Chu's (2008) finding of a weaker relationship between extraversion and WTC_{L2} than between extraversion and WTC_{L1} . Moreover, this is in line with a recent large-scale study conducted by Piechurska-Kuciel (2018) with 534 secondary school students in Poland,

suggesting that openness to experience is another significant predictor of WTC_{L2} .

Compared to WTC_{L1} , WTC_{L2} seems to depend less on talkativeness or assertiveness, and more on inquisitiveness and intellect. This is in contrast with Öz's (2014) findings. The reason might be that, compared to the pre-service English teachers in Öz's (2014) study, participants in the current study were intermediate learners who were not that proficient in English. Unsurprisingly, L2 communication involves more uncertainty and is more challenging than L1 communication (MacIntyre et al., 1998). Hence, the moderately proficient learners' WTC_{L2} in the current study may be less driven by eagerness to talk than by attitude towards novelty and uncertainty. Talkative people are not necessarily more willing to communicate in a L2, as they might be rather low in trait openness. In comparison, learners who are more intellectually curious and more interested in new ideas and experiences (i.e. open to experiences) might be more interested in learning a new language and seeking opportunities to actively communicate in the L2. It seems important to further investigate how different personality variables relate to WTC_{L1} and WTC_{L2} in different situations. At this point in time, however, only a small number of studies have considered WTC_{L1} and WTC_{L2} simultaneously.

In addition, both WTC_{L2} and L2 performance significantly correlated with trait conscientiousness in this study. Conscientious students tend to be more hardworking, self-disciplined, and achievement-oriented, and thus tend to be more ambitious and motivated to perform well (Furnham et al., 2003). This is not overly surprising given the numerous studies that found that conscientiousness is predictive of both academic and job performance (e.g. Barrick, Mount, & Strauss, 1993; Chamorro-Premuzic & Furnham, 2003). Similarly, linguists, such as Schmidt (1990), agree that conscientiousness plays an important role in L2 learning, which is in line with our findings.

The relationships between WTC_{L2} and personality have primarily been studied from a trait perspective (e.g. Çetinkaya, 2005; Chu, 2008; Öz, 2014). To our knowledge this is the first study to investigate state characteristics of personality and their relationships with mean state WTC_{L2} in L2 settings. Results of this study indicate that mean state WTC_{L2} may be systematically related to all five trait-relevant personality mean states. For instance, students who described themselves as being more conscientious during the semester tended to be more willing to use English in classroom communication. However, these are preliminary findings that await replication as discussed in the limitation section.

7.2 Differences between WTC and self-reported communication behaviour

This study found significant correlations between WTC_{L2} (both trait and state) and communication behaviour. That is, students who reported higher willingness to communicate in English (i.e. intention) also reported communicating more often in English classes during the semester (i.e. action). This is in line with Mystkowska-Wiertelak and Pawlak's (2014) study, who reported significant correlations between trait WTC and observed communication behaviour in English.

Interestingly, for the vast majority (85%) of learners, levels of self-reported communication behaviour were lower than those of mean state WTC_{L2} confirming that not all intentions to communicate manifest themselves in observable communication behaviours. One major factor that prevents state WTC from translating into communication behaviours might be the lack of immediate communication opportunities. In other words, the manifestation of communication behaviour builds on (state) WTC and relies on the availability of communication opportunities. In a classroom situation, however, opportunities to actively engage in communication behaviour

might not be given to all students who express their WTC by raising their hands in response to a teacher's question (MacIntyre et al., 1998), although hand raising might be seen as an intermediate state between intention and behaviour. Such a perspective highlights that state WTC needs to be also considered as a *consequence* of situational demands.

7.3 WTC as a predictor of language performance

In this study both trait and mean state WTC_{L2} significantly predicted language performance scores; self-reported communication behaviour, on the other hand, did not predict language performance scores. That is, students who had generally higher L2 communication tendencies and felt willing to communicate in the L2 classes tended to get higher scores at the end of the semester, regardless of their communication intentions being expressed in observable communication behaviours. This suggests, somewhat surprisingly, that what facilitates language learning seems to be the subjective intention to communicate rather than the actually observable use of the language. This finding puts the onus onto the learner (i.e. their WTC) and less onto the teacher (e.g. by providing opportunities to actively communicate). The L2 teacher's role is more to facilitate rather than to initiate. This also suggests that students who talk less in communication activities are not necessarily absentminded or passive, but may be actively constructing and rehearsing discourse in their minds (Shi, 2006). The process of constructing and rehearsing discourse "internally" can be seen as a form of virtually enacted state WTC, as it shows eagerness and readiness to engage in active discourse. Exclusively relying on observable communication behaviour when monitoring student engagement with L2 learning demands may overlook effective antecedences of learning and performing; an area for future research.

This claim questions whether "talking" should be seen as the primary indicator of effective

language learning, and whether students who talk less are truly passive learners and are reluctant or unwilling to communicate in the target language and hence will not progress (Marlina, 2009). According to Vygotsky (1986), other than external speech that represents the social function of speech, there is also inner speech, the egocentric function of speech, that is influenced by outside factors and influences thought. Hence, one explanation that warrants further investigation might be that “talking” (i.e. observable communication behaviour) may not be the only form of engaging in L2 activities. Silently thinking and constructing ideas in one’s mind may bring about readiness to enter into discourse (i.e. WTC), and potentially facilitate L2 learning too.

The fact that mean state WTC_{L2} was a significant (albeit of moderate size) positive predictor of L2 performance may indicate opportunities for teachers to intervene at state level. Rather than targeting WTC as a trait, which is arguably more fixed, focussing on the state components of WTC, that is the momentary, context-specific intention to communicate in the classroom, may be more feasible. Over time the repeated experience of states of heightened intention to communicate may accumulate and, as for any learning process, through reinforcement and habit formation lead to trait change in a bottom-up fashion (i.e. trait change via state changes). Similarly, evidence has recently become available to suggest that individuals are able to change their personalities via engaging in behaviours reflective of the targeted trait levels (see e.g. Hudson, Briley, Chopik, & Derringer et al., 2018). Our preliminary results with regard to state variability in WTC_{L2} seem to suggest that the variation in state WTC is less of a concern in terms of L2 performance as measured in our study. What can be concluded so far, however, is that lesson-by-lesson fluctuations of WTC are not necessarily detrimental to learning progress.

8. LIMITATIONS

The fact that data on communication behaviour were solely based on self-report using a state

questionnaire might be perceived as a major limitation of this study. Due to the relatively large class size, it was not feasible to, for example, request the teacher to evaluate each student's communication behaviour after each class. Reliance on self-reports in the context of performance-related information could create a threat to the validity of the data collected as students might not be able (or willing) to objectively report their actual communication behaviours. They might be more concerned with their intentions rather than actual behaviours. As communication behaviours are observable, future research might build on other measurement approaches, such as teacher observations and reports. Although, teacher ratings as such might also not fully meet "objectivity" criteria. We therefore argue that, rather than favouring one method over the other, it would be advisable to adopt a combined perspective that promises to capitalise on the respective strengths of either approach whilst compensating for the weaknesses of the other.

As the self-report questionnaires used in this study were anonymous for data protection considerations, it was impossible to link the self-report data to official student records, which would have been useful for validating the self-reported end-of-term grades. However, as self-reporting of L2 learning outcome scores was anonymous and without any prospect of individual benefit, there was limited temptation for students to pretend to have gained a higher score than actually was the case. We therefore see the anonymity of reporting as a mitigating factor to the potential validity threat.

Additionally, although teacher judgments were considered in the performance measure, the paper-based exam scores were weighted higher in this context. The paper-based exam may focus on grammatical accuracy rather than communicative competence, i.e. the ability to conduct effective information exchanges. It might have been the case that students who were more

willing or ready to communicate tended to be those who construct and rehearse discourse in their minds, and thus performed better in terms of grammatical accuracy. However, these students did not necessarily have higher communicative competence, which seems to be developed through frequent interpersonal communication (i.e. communication behaviour). As communicative competence is regarded as an important goal for L2 learning, oral exam scores (in combination with paper-based exam scores) promise to be a useful data source for furthering the investigation of L2 learning and respective relationships with WTC, variability in WTC, and communication behaviour.

9. CONCLUSION

Focussing on individual differences as complementing culture-related explanations of learners' WTC, this study not only compared the relationships between Big-Five personality dimensions and WTC_{L1} and WTC_{L2} at the trait level, but also sheds light on the relationship between personality and WTC_{L2} at the state level.

This is the first study to explicitly consider the state characteristics of WTC_{L2} (mean and relative SD) and personality (i.e. the relationships between Big-Five personality mean states and mean state WTC_{L2}) when analysing the role of WTC in L2 learning. In addition, this study differentiates state WTC from observable communication behaviour, and provides evidence that WTC_{L2} , when compared to self-reported communication behaviour, makes a contribution to the prediction of language learning outcomes. As a meaningful construct that plays a role in facilitating L2 learning, WTC_{L2} , including its state characteristics, deserves more attention. Such insights might be helpful to L2 teachers who would like to improve students' L2 learning through enhancing WTC_{L2} . L2 teachers are encouraged to put more effort into systematically stimulating students' WTC_{L2} , particularly its state components, such as by optimising the task

design and teaching strategies (Peng, 2020). Additional research is needed to systematically investigate the effectiveness of such interventions using experimental designs (e.g. Zhang et al., 2018). Further, research that integrates an individual differences perspective and goes beyond the traditional trait approach has the potential to further contribute to improving L2 learning by fostering state WTC_{L2} in classrooms.

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TABLE 1

Descriptive Statistics for and Intercorrelations Between Big-Five Personality, WTC_{L1} and WTC_{L2}, and L2 Performance

	<i>N</i>	Mean	<i>SD</i>	Skewness	Kurtosis	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. traitE	90	3.88	0.95	-.06	.18	(.80)														
2. traitA	90	5.36	0.68	-.30	-.22	.18	(.71)													
3. traitC	90	4.79	0.92	-.01	-.04	-.02	.33**	(.80)												
4. traitN	90	3.80	1.06	.27	-.28	-.14	-.04	-.17	(.84)											
5. traitO	90	4.67	0.68	-.19	.39	.31**	.22*	.27**	-.01	(.69)										
6. traitWTC _{L1}	90	4.60	0.73	.11	.70	.55**	.22*	.18	-.05	.16	(.89)									
7. traitWTC _{L2}	93	4.39	1.07	-.23	.22	.19	.21*	.23*	.17	.30**	.44**	(.96)								
8. m.stateE	102	4.82	0.84	-.11	.27	.47**	.28**	.21*	-.10	.27**	.58**	.47**	(.90)							
9. m.stateA	102	5.05	0.78	.04	.09	.30**	.42**	.25*	-.07	.22*	.50**	.43**	.90**	(.92)						
10. m.stateC	102	5.06	0.80	.12	.07	.20	.37**	.37**	.02	.20	.43**	.41**	.82**	.91**	(.93)					
11. m.stateN	102	2.88	0.80	.10	-.36	-.25*	-.25*	-.31**	.31**	-.07	-.40**	-.17	-.51**	-.53**	-.56**	(.78)				
12. m.stateO	102	4.66	0.83	.04	.24	.42**	.22*	.15	.08	.32**	.49**	.49**	.90**	.85**	.83**	-.39**	(.84)			
13. m.stateWTC _{L2}	102	4.95	1.19	-.97	.63	.16	.21*	.16	.09	.11	.35**	.53**	.54**	.55**	.54**	-.35**	.55**			
14. var.stateWTC _{L2}	94	0.39	0.21	1.02	.71	-.00	-.22*	.26*	.04	-.05	.10	-.03	.06	.17	.28**	-.15	.06	-.14		
15. m.ComBeh	102	4.22	1.15	-.23	-.23	.37**	.08	.03	-.02	.22*	.34**	.43**	.54**	.43**	.35**	-.06	.56**	.44**	-.21*	
16. EngSco	70	71.97	10.13	.04	-.76	-.02	.21	.29*	.15	.16	.13	.49**	.15	.17	.22	.04	.16	.31**	.10	.09

Note. traitE = trait Extraversion; traitA = trait Agreeableness; traitC = trait Conscientiousness; traitN = trait Neuroticism; traitO =

trait Openness to Experience; traitWTC_{L1} = trait WTC_{L1}; traitWTC_{L2} = trait WTC_{L2}; m.stateE = mean state Extraversion; m.stateA = mean state Agreeableness; m.stateC = mean state Conscientiousness; m.stateN = mean state Neuroticism; m.stateO = mean state Openness to Experience; m.stateWTC_{L2} = mean state WTC_{L2}; var.stateWTC_{L2} = relative variability state WTC_{L2}; m.ComBeh = mean Communication Behaviour; EngSco = End-of-Term English Score. * indicates $p < .05$; ** indicates $p < .01$. Coefficients in parentheses represent Cronbach's alpha – as reliability estimate – of the respective scales.

TABLE 2

Regression results for predicting L2 performance at trait level

Predictor	<i>b</i>		<i>beta</i>		<i>sr</i> ²	<i>sr</i> ²		<i>r</i>	Fit	Difference
	<i>b</i>	95% CI [LL, UL]	<i>beta</i>	95% CI [LL, UL]		95% CI [LL, UL]				
(Intercept)	51.67**	[40.73, 62.62]								
Trait WTC _{L2}	4.64**	[2.26, 7.03]	0.46	[0.22, 0.69]	.21	[.05, .37]	.46**			
								$R^2 = .207^{**}$		
								95% CI [.05, .37]		
(Intercept)	42.27**	[27.20, 57.34]								
Trait WTC _{L2}	4.22**	[1.83, 6.61]	0.41	[0.18, 0.65]	.16	[.00, .33]	.46**			
Trait C	2.34	[-0.29, 4.97]	0.21	[-0.03, 0.44]	.04	[-.05, .13]	.29*			
								$R^2 = .249^{**}$	$\Delta R^2 = .042$	
								95% CI [.07, .40]	95% CI [-.05, .13]	
(Intercept)	47.61**	[28.49, 66.73]								
Trait WTC _{L2}	4.78**	[2.08, 7.48]	0.47	[0.20, 0.73]	.17	[.00, .33]	.46**			
Trait C	2.38	[-0.25, 5.01]	0.21	[-0.02, 0.45]	.04	[-.05, .13]	.29*			
Trait WTC _{L1}	-1.76	[-5.63, 2.11]	-0.12	[-0.38, 0.14]	.01	[-.03, .06]	.13			
								$R^2 = .260^{**}$	$\Delta R^2 = .011$	
								95% CI [.06, .40]	95% CI [-.03, .06]	

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *B* represents unstandardized regression weights. *Beta* indicates the standardized regression weights. *Sr*² represents the semi-partial correlation squared. *R* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. $VIF_{\text{trait WTCL2}} = 1.32$; $VIF_{\text{trait conscientiousness}} = 1.04$; $VIF_{\text{trait WTCL1}} = 1.29$, * indicates $p < .05$, ** indicates $p < .01$.

TABLE 3

Regression results for predicting L2 performance at state level

Predictor	<i>b</i>		<i>beta</i>		<i>sr</i> ²		<i>r</i>	Fit	Difference
	<i>b</i>	95% CI [LL, UL]	<i>beta</i>	95% CI [LL, UL]	<i>sr</i> ²	95% CI [LL, UL]			
(Intercept)	71.71**	[69.32, 74.09]							
mean state WTC _{L2}	2.72*	[0.51, 4.94]	0.29	[0.05, 0.53]	.08	[-.04, .21]	.29*		
rel.var state WTC _{L2}	2.67	[-8.20, 13.54]	0.06	[-0.18, 0.30]	.00	[-.02, .03]	.04		
								$R^2 = .087$	
								95% CI [.00, .22]	
(Intercept)	71.70**	[69.30, 74.11]							
mean state WTC _{L2}	2.77*	[0.16, 5.37]	0.30	[0.02, 0.58]	.06	[-.05, .18]	.29*		
rel.var state WTC _{L2}	2.71	[-8.31, 13.73]	0.06	[-0.18, 0.30]	.00	[-.02, .03]	.04		
Interaction									
(m.state WTC _{L2} by rel.var state WTC _{L2})	-0.25	[-8.06, 7.56]	-0.01	[-0.29, 0.27]	.00	[-.00, .00]			
								$R^2 = .087$	$\Delta R^2 = .000$
								95% CI [.00, .20]	95% CI [-.00, .00]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. $VIF_{\text{mean state WTC}_{L2}} = 1.37$; $VIF_{\text{relative variability state WTC}_{L2}} = 1.01$; $VIF_{\text{mean by relative variability}} = 1.37$, * indicates $p < .05$, ** indicates $p < .01$.

FIGURE 1

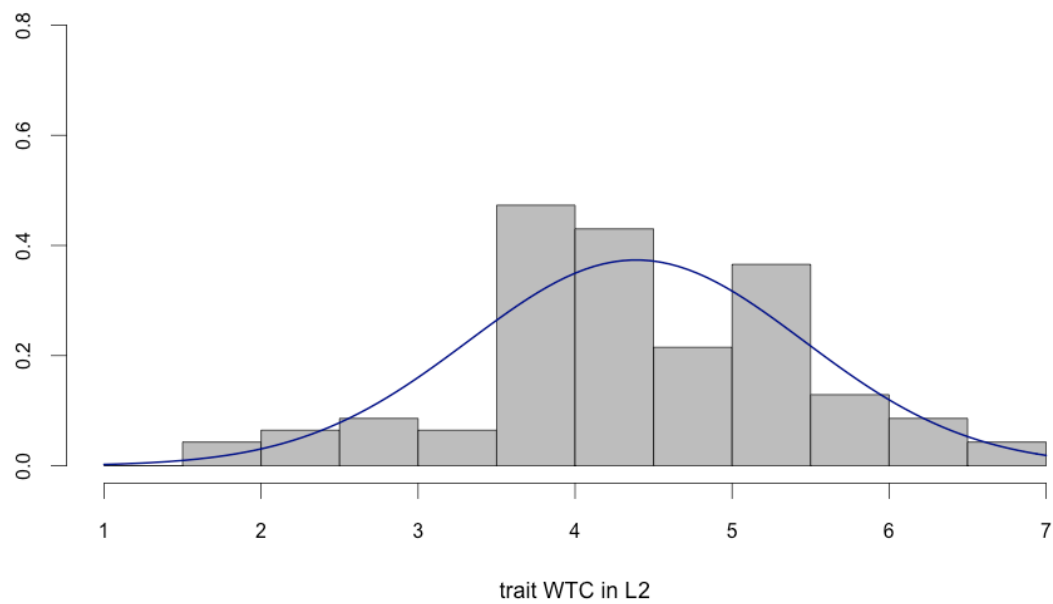
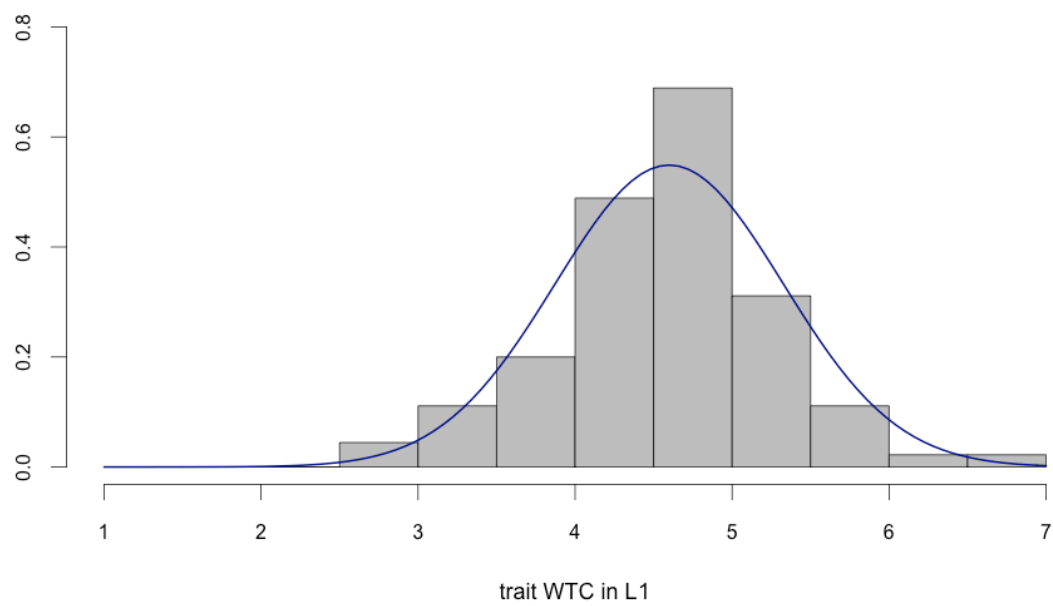
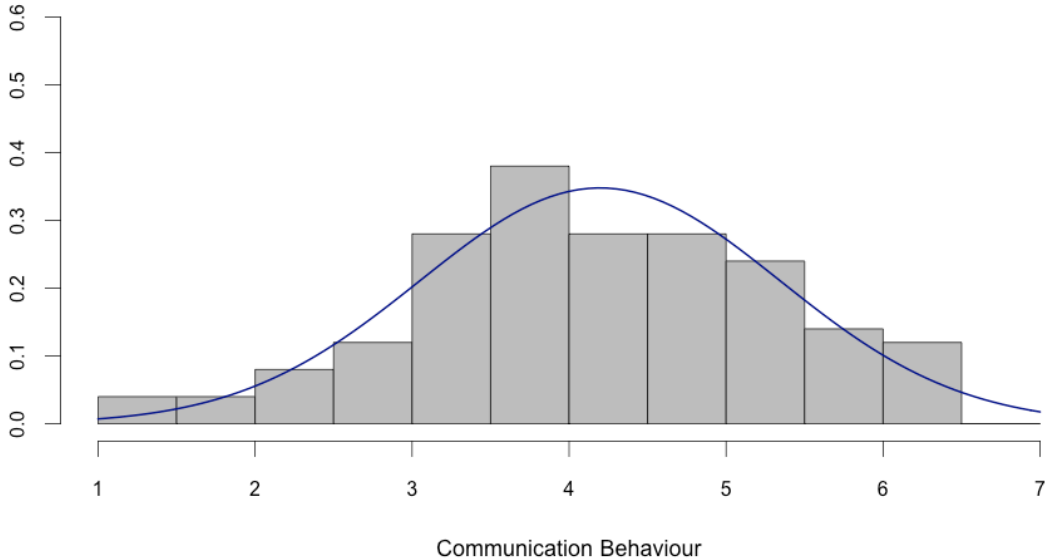
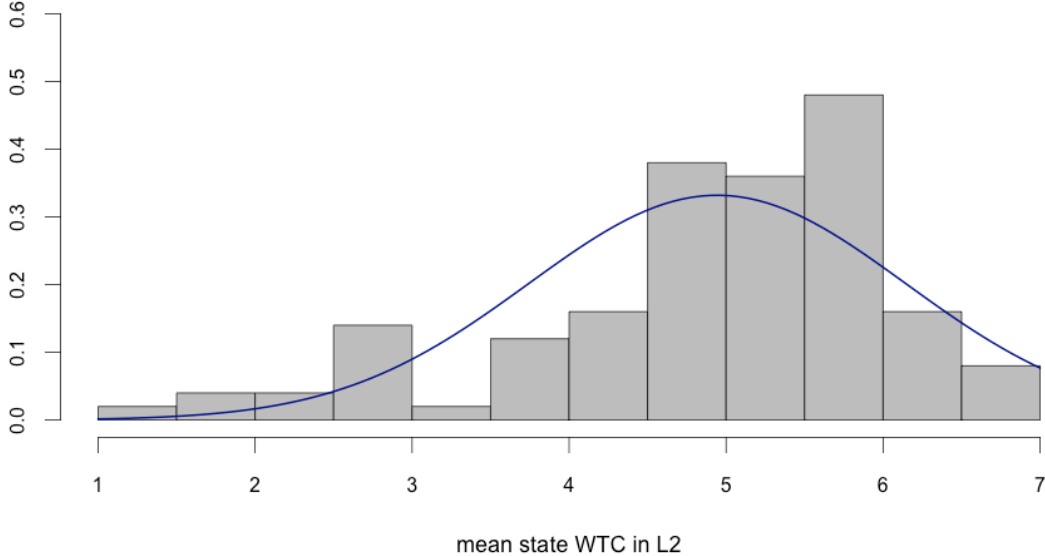
Density distributions of trait WTC_{L1} and trait WTC_{L2} 

FIGURE 2

Density distributions of mean state WTC_{L2} and Communication Behaviour



APPENDIX A

Trait WTC_{LI} Questionnaire

Instructions

Below are some situations in which a person might choose to communicate. Presume that you have completely free choice. Please indicate how willing you would be to communicate in each type of situation. For each of the items, please indicate the level of accuracy that describes your response and mark the box. Here we are interested in how willing you GENERALLY are to communicate.

Stranger

I am willing to talk to a shop assistant.

I am willing to speak in public to a group of strangers (about 30 people).

I am willing to talk with a stranger on campus.

I am willing to talk in a small group of strangers (about five people).

I am willing to talk with a waiter/waitress in a restaurant.

I am willing to talk with a stranger while standing in line.

I am willing to talk in a large meeting of strangers (about 10 people).

Acquaintance

I am willing to talk when I happen to meet an acquaintance.

I am willing to talk in a large meeting of acquaintances (about 10 people).

I am willing to talk to a teacher after class.

I am willing to talk with an acquaintance while standing in line.

I am willing to talk in a small group of acquaintances (about five people).

I am willing to talk with support staff (e.g., tutor, admin, librarian, porter, etc.).

I am willing to speak in public to a group of acquaintances (about 30 people).

Friend

I am willing to talk in a large meeting of friends (about 10 people).

I am willing to talk with a friend while standing in line.

I am willing to talk with a fellow student when engaging in extracurricular activities.

I am willing to speak in public to a group of friends (about 30 people).

I am willing to talk with one of my roommates.

I am willing to talk in a small group of friends (about five people).

I am willing to talk with a fellow student sitting next to me in class.

Classroom activity

I am willing to volunteer an answer when the teacher asks a question in class.

I am willing to ask a question in class.

I am willing to present my own opinions in class.

I am willing to participate in group discussions in class.

I am willing to help others answer a question in class.

APPENDIX B

Trait WTC_{L2} Questionnaire

Instructions

The following statements describe some communicative situations during as well as outside an English class. Please indicate how willing you are to engage in these communication activities USING ENGLISH. For each of the items, please indicate the level of accuracy that describes your response and mark the box. Here we are interested in how willing you GENERALLY are to communicate IN ENGLISH during as well as outside the English class that you have experienced in this university.

Speaking and listening

I am willing to participate in a dialogue in English at my desk with my neighbor.

I am willing to ask the teacher a question in English.

I am willing to do a short presentation in English to the class with notes.

I am willing to do a role-play standing in front of the class in English.

I am willing to ask my neighbor in English how to pronounce a word in English.

I am willing to ask my neighbor in English how to express my thoughts in English.

I am willing to ask my neighbor in English the meaning of an English word.

I am willing to give a short self-introduction in English to the class without notes.

I am willing to volunteer an answer in English when the teacher asks a question.

I am willing to help others answer a question in English.

I am willing to participate in group discussions in English.

I am willing to present my own opinions in English to the class.

I am willing to participate in the English activities outside the classroom (e.g., English-speaking contest, English corner, English imitation show, etc.).

I am willing to read out a paragraph in English to the class.

I am willing to translate a spoken utterance from Chinese into English.

Writing

I am willing to write a CV or personal statement in English (e.g., to apply for an internship online).

I am willing to do a structured writing task in English from the textbook.

I am willing to write a short report in English on an article or book I read.

I am willing to write a story in English.

I am willing to write a piece of status or a comment in English on social network sites (e.g., Weibo, WeChat, QQ, etc.).

I am willing to write a greeting card or short message in English.

I am willing to write down a list in English of homework I must do.

I am willing to write answers in English to the exercises from the textbook.

I am willing to write a narration in English (e.g., about a Chinese event, my hometown, university life in China, etc.).

I am willing to write an argumentation in English (e.g., agreeing or disagreeing with a person's point of view, describing the cause and effect of something, etc.).

I am willing to write a diary about my daily life in English.

I am willing to write a self-introduction in English.

I am willing to translate a piece of writing from Chinese into English.

Reading

I am willing to read a novel in English.

I am willing to read a newspaper article in English.

I am willing to read a piece of status or a comment in English on SNS (e.g., Weibo, WeChat, QQ, etc.).

I am willing to read an article in English from the textbook.

I am willing to read an advertisement in English (e.g., to find an internship opportunity online).

I am willing to read reviews in English for popular movies.

I am willing to watch a movie/TV series in English.

I am willing to change the language settings on some of my mobile devices into English (e.g., mobile phone, pad, laptop etc.).