No Picture, No Sound? The Effect of Anxiety, Disinhibition and Online Attention Control on Willingness to Communicate in Different Modes of Communication in a Synchronous Online Foreign Language Classroom

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Abstract

This study examines whether and to what extent video, voice and text-based communication in a synchronous online foreign language classroom affect the university students' willingness to communicate (WTC) and what impact anxiety, online disinhibition and online attention control exert on the level of WTC. Applying a cross-sectional design, a four-part questionnaire gathered data on participants' 1) background information and self-reported online attention control during lessons; 2) anxiety in different communication modes (adapted version of SCAM, McCroskey & Richmond, 1985); 3) disinhibition levels (modified version of the Measure of Online Disinhibition, Stuart & Scott, 2021); and 4) WTC in the three modes of communication (adopted from MacIntyre et al., 2001; Mystkowska-Wiertelak & Pawlak, 2016). The results of an RM ANOVA point to a variation in WTC depending on the communication mode, with video communication showing the lowest WTC. Further, a series of linear regressions reveal that in all three contexts anxiety stands in negative correlation with WTC, while students' disinhibition and online attention control appear as positive WTC predictors. The findings contribute to the underexplored realm of digital L2 learning, shedding light on the pivotal role of previously under-researched variables.

Keywords: *Willingness to Communicate, Synchronous Online Foreign Language Classroom, Anxiety, Disinhibition, Modes of Communication*

[1]Introduction

Modern foreign language (L2) pedagogy sets students' communicative competence as the ultimate goal of teaching and learning practices. The term 'communicative competence', originally introduced by Hymes (1972), can be informally defined as the knowledge that language users (need to) have in order to communicate appropriately in different social contexts. A concept that is tightly related to this goal is certainly students' willingness to communicate (WTC), understood as the readiness to enter into discourse at a particular time with a specific person or persons using a second language (MacIntyre et al., 1998, p. 547). The significance of WTC in L2 teaching and learning is twofold (MacIntyre et al., 1998): apart from being perceived as an outcome of L2 learning, as by its nature the concept implies the actual use of L2, WTC is also significant as a means of learning, since L2 needs to be used in order to be learned (Ellis, 2008; Mackey, 2012). Numerous studies therefore centred around this concept, mostly exploring individual and situational variables that either facilitate or inhibit L2 learners' WTC. Most of these studies, however, have focused on face-to-face communication (inside and outside the classroom contexts), while the domain of digital L2 learning has remained largely unexplored (Kirkpatrick et al., 2024; Lee & Chiu, 2023; Lee & Hsieh, 2019; Lee & Liu, 2022). More recently, however, this seems to have changed, with a growing body of literature addressing L2 WTC in digital settings. Most of these reports emphasize the highly complex and changeable nature of the construct due to the mutual effect of a number of internal and external factors (Kruk, 2021, 2022; Lee & Liu, 2022; Nematizadeh & Cao, 2023; Topalov et al., 2022).

However, despite the increased attention of researchers in L2 WTC in a digital environment, one important area still seems to remain open and unexplored. This research gap concerns the context of formal, synchronous online L2 learning and the different modes of communication (text chat, microphone and/or camera supported communication) this digital context provides. Accordingly, the current research aims to explore the students' WTC in the context of synchronous online English as a foreign language (EFL) learning taking into account the three modes of communication, that is, video, audio and text-based communication. At the same time, it examines the role of certain individual factors such as anxiety, disinhibition and online attention control that may influence the students' willingness to engage in L2 class communication. The recent pandemic has brought to the foreground numerous advantages of online education and at the same time revealed a number of challenges and open questions pertaining to the successful employment of technology in educational processes. The current research is expected to contribute to the field of language education in this regard, as

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understanding students' WTC in different formats of synchronous communication can enhance planning, designing and implementing communicative activities that generate greater interaction between students and the development of their communicative competence, that is, their ability to use language successfully, in terms of both effectiveness and appropriateness to a given context and situation.

Literature Review

Willingness to Communicate

The central position in L2 WTC theory is given to the pyramid model proposed by MacIntyre and associates (1998) whose original version has recently been upgraded to a three-dimension pyramid model depicting the complexity and dynamic nature of WTC in a multilingual setting (Henry & MacIntyre, 2024). The original six-layer model incorporates various factors contributing to L2 WTC, grouped into changeable, situation-dependent variables (for example, the conversation topic, rapport with interlocutor, classroom instruction and teacher support) and those rather stable, individual variables (e.g., extraversion, perceived L2 confidence, etc.). It is therefore the mutual effect of the learner's personality and a number of situational factors that make the L2 learner willing to communicate. There is abundant research on variables contributing to the enhancement of L2 WTC in face-to-face classroom, such as motivation and orientation toward L2, self-confidence, perceived language competence or anxiety (Chaves-Yuste et al., 2024; Farrokhi et al., 2023; Halupka-Rešetar et al., 2018; Lee & Hsieh, 2019; Lee & Lee, 2019; Knell & Chi, 2012; Öz et al., 2015; Zhou et al., 2023). Unlike other variables, L2 anxiety has been continuously reported to stand in a strong negative correlation with WTC. This, however, does not always apply to digital context research. Lee and Hsieh (2019), for example, report that unlike in non-digital environments (in-class and out-of-class face-to-face communication), in a digital setting the absence of L2 anxiety is not a significant predictor of students' L2 WTC. In a more recent study (Lee & Chiu, 2023), overall L2 anxiety, that is, anxiety in both face-to-face and digital contexts was reported to be negatively correlated with L2 WTC. The findings need additional empirical support (and the current research is intended as a contribution in this regard) and also show that the relationship between L2 WTC and individual factors needs to be considered from the perspective of situational contexts.

Research on situational WTC has demonstrated the dynamic character of this construct as it can change from one moment to the next, due to the combined influence of psychological and situational factors (Farrokhi et al., 2023; Mystkowska-Wiertelak, 2021; Pawlak & Mystkowska-Wiertelak, 2015). According to Kang (2005), situational L2 WTC is the product of three interacting psychological factors: security (feeling safe and without fear to communicate in L2), excitement (feeling happy to communicate in L2) and responsibility (the feeling of duty to communicate a message in L2), and is additionally affected by factors such as the interlocutor(s), topic, and conversational context. Farrokhi et al. (2023) extend this list of environmental factors by adding the role of the teacher and the family, the nature of the tasks and classroom interaction. All these, along with individual factors, contribute to the multifaceted nature of L2 WTC (Farrokhi et al., 2023). The interplay of individual and contextual factors has been described in a model of L2 WTC proposed by Mystkowska-Wiertelak and Pawlak (2017). The model shows relationships ranging from individual variables such as international posture, implying openness to new experiences and international

affairs and communication confidence, to classroom environment factors, including the familiarity and interest in topic, group dynamics and the teacher's role. All these factors, combined with both planned and unplanned in-class WTC and practice seeking WTC, lead to L2 communication. The complexity and changeability of L2 WTC have recently been explored in a number of studies addressing the digital domain. Thus, in two case studies focusing on changes in self-reported levels of L2 WTC during online sessions on a multimedia platform, Kruk (2021, 2022) concluded that the levels of L2 WTC varied from session to session due to a number of factors, such as interlocutors, topics, inadequate English skills etc. Investigating L2 WTC in synchronous group discussion tasks, Nematizadeh and Cao (2023) observed changes in WTC triggered by a wide number of internal and external factors, ranging from students' views, interests, personal experiences and background knowledge, to interlocutors, facilitators, tasks dynamics and technical and organizational issues.

However, as already mentioned, the number of studies on L2 WTC in digital environment still remains relatively small and, as observed by the authors of the current research, of limited scope. Namely, L2 communication in a digital environment can be viewed from various perspectives, including communication as part of formal language courses and communication occurring in extramural, informal contexts, such as the use of social media, game playing, etc. Furthermore, it can be both synchronous, real time and in-person interaction, as well as asynchronous, out-of-real-time and not-face-to-face communication. Finally, the multimodality of digital learning sources provides different formats of communication, that is, spoken communication relying on video and/or audio, and written communication through text chat. The review of literature indicates that this complexity of communication has not been fully addressed and examined, particularly the context of formal, synchronous online L2 learning and the three modes of communication that it offers. Thus, some of the existing studies have focused on L2 WTC in informal learning contexts, without differentiating between the communication modes (Lee & Drajati, 2020; Lee & Hsieh, 2019; Lee & Lee, 2019). These studies report that L2 self-confidence, grit and virtual intercultural experience positively correlate with L2 WTC, while the lack of anxiety appears insignificant in predicting it. Reinders and Wattana (2015) focused on a very specific and limited synchronous context communication – game-based learning. In this study students played a massively multiplayer online role-playing game (MMORPG) and after the intervention it was found that the participants not only reduced their level of L2 anxiety, but also increased their level of L2 confidence and WTC.

As for formal language learning, the qualitative data collected in the study by Kissau et al. (2010) suggest that asynchronous online discussion is beneficial for developing a greater WTC among L2 students. In addition, the online environment, described as comprising both synchronous and asynchronous communication activities, was reported to both reduce L2 anxiety and increase perceived competence to communicate. Furthermore, Freiermuth and Jarrell (2006) compared task-solving activities by online chatting (both synchronous and asynchronous) and traditional face-to-face speaking and concluded that the former way of communicating was more appealing to L2 students and thus enhanced their WTC.

Focusing on WTC in synchronous online sessions, Lee and Liu (2022) revealed that EFL students' WTC showed fluctuations in relation to a number of factors of both personal and contextual nature – openness to new learning experiences, teacher and peer support, familiarity

with the topic and relevant vocabulary and technical issues. However, the authors failed to differentiate between verbal and written forms of communication, as they analyzed both the oral and written performances of the participants. Similarly, in addressing the relationship of physical and virtual communication anxiety to L2 WTC within in-class, out-of-class, and digital contexts, Lee and Chiu (2023) very broadly define digital settings as speaking and writing about "various topics with familiar or unfamiliar interlocutors (e.g., online gamers) in authentic, unpredictable digital communication scenarios" (p. 66). The same was observed in Kruk's two case studies (Kruk, 2021, 2022) that focused on changes in self-reported WTC during online sessions on a multimedia platform. Kruk concluded that the levels of L2 WTC varied from session to session due to a number of factors, such as interlocutors, topics, inadequate English skills etc., but in drawing this conclusion he relied both on text chat and voice chat interactions. Finally, in investigating L2 WTC in synchronous group discussions, Nematizadeh and Cao (2023) observed changes in the WTC levels triggered by a wide number of internal and external factors, ranging from students' views, interests, personal experiences and background knowledge to interlocutors, facilitators, tasks dynamics and technical and organizational issues. This study, however, focused only on group discussions in synchronous communication. In a recent study on the potential influence of demographics, L2 anxiety, enjoyment, well-being and informal digital learning of English (IDLE) on the students' WTC, Lee and Chiu (2024) touched the digital domain, but only referring to non-academic use of L2. They found out that L2 WTC in digital settings correlated positively with the level of L2 proficiency, previously established L2 WTC through IDLE, and psychological well-being.

As the above overview of the relevant literature demonstrates, the research on L2 WTC in the digital environment has failed to take into consideration and differentiate among the various modes of digital communication and their potential effect on the students' WTC, which is the focus of the present study. The only research, to the best of our knowledge, that addresses L2 WTC in relation to the three modes of online interaction is a rather small-scale study by Le et al. (2018). The study was conducted with 18 high school students who followed a six-week online course and were interviewed about perceiving their own L2 WTC during the course. The authors of the study reported that text and audio chat were felt to be less face threatening than video chat and students therefore exhibited greater WTC in the former contexts. In this case, unlike the other studies, students failed to perceive the digital environment as more comfortable and safer than the conventional form of education.

Communication in Synchronous Online Language Learning Environment
Technology has become an inseparable part of the modern way of living and has impacted every aspect of life, including the domain of L2 teaching and learning. Numerous benefits of employing technology in EFL have been reported so far (Jurkovič, 2019; Knežević et al., 2020; Sumartono, 2023). During the recent Covid pandemic a whole range of digital educational tools and platforms were at the disposal of millions of teachers and learners daily. Synchronous online classes via live-stream communication platforms (e.g. Zoom, Skype, Microsoft Teams) have proliferated and consequently today's L2 learners spend 30 or even more hours per week interacting in these virtual classrooms (Moser et al., 2021). When referring to an online class in this study, we adopt the definition of Lee and Liu (2022) who define it as "a digital

environment in which a teacher and students can interact synchronously, such as through live-streamed lectures or writing in a chat window" (p. 4).

This computer-mediated (human-to-human) communication has its own characteristics and specificities. One of them is online disinhibition, described as any behavior characterized by an apparent reduction in concerns for self-presentation and judgement of others (Joinson, 2001, p. 44). Such being the case, online disinhibition may be expected to have a positive effect on students' anxiety and thus increase their WTC. According to Cunningham (2011), reduced self-revelation in the virtual environment combined with physical presence in a familiar environment may be less inhibiting for learners than the conventional classroom environment. However, as stated by Joinson (2001), disinhibition cannot be expected to occur in all online contexts. This claim, along with Cunningham's idea above, provides the rationale for including the concept of online disinhibition in the current research. As Lee and Liu (2022) observe, despite the rapid expansion of online classes in the area of L2 learning, language teachers and educators do not have as much information on students' WTC in an online environment as they do when conventional classroom learning is concerned.

Methodology

Based on the theoretical framework described above and addressing the lack of data which would result in a clear understanding of students' WTC in the three ways of interacting (video, audio and text-based communication), the current research aims to assess the level of students' WTC in all modes of communication afforded by synchronous online language learning and explore the extent to which anxiety, disinhibition and online attention control affect WTC. The research questions we aim to address are as follows:

RQ1: What is the effect of the modality of communication during online EFL lessons (video, audio and text-based communication) on the students' WTC?

RQ2: What is the impact of individual factors such as online attention control, foreign language anxiety and disinhibition in video, audio, and text-based communication on WTC during EFL lessons, specifically examining WTC in video communication, audio communication, and text-based communication?

Participants

A total of 205 EFL undergraduate students (female = 123, 60%, male = 82, 40%) from a public university in a city in Serbia took part in the study (Table 1). The mean age of the participants was 20.24, ranging from 19 to 29. Students from the humanities, social sciences, and STEM fields were represented in the sample. All of the participants took synchronous online EFL classes during the spring semester of the academic year 2020/2021. The English courses the participants attended ranged from A2 to B2 level of the Common European Framework of Reference for languages (CEFR). Though most students take a placement test before they are enrolled into an English course, it is likely that, due to organizational and staffing issues, some of these students had higher proficiency (C1, and possibly even C2, since EFL in Serbia is taught as the first foreign language from the first grade of elementary school until the last grade of high school), but could not attend higher level courses, as such courses are not offered.

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Table 1

Participants across Gender and Faculty

Faculty		Gender		Total
		M	F	
Faculty of Economics	N	27	20	47
	%	13.2	9.8	22.9
Faculty of Education	N	4	4	8
	%	2	2	3.9
Faculty of Philosophy	N	9	61	70
	%	4.4	29.8	34.1
Faculty of Sciences	N	23	24	47
	%	11.2	11.7	22.9
Faculty of Technical Sciences	N	19	14	33
	%	9.3	6.8	16.1
Total	N	82	123	205
	%	40	60	100

Instrument

The research instrument was a questionnaire consisting of four parts:

1. The first part elicited the participants' demographic information, including their age, gender and faculty, together with their self-reported online attention control during synchronous EFL lessons.

2. In the second part, the participants were asked to rate on a 5-point Likert scale the same 10 statements measuring anxiety in three ways of virtual class communication (video, audio and text-based communication), with lower scores indicating higher anxiety. This part of the questionnaire was adapted and translated into Serbian from the Situational Communication Apprehension Measure (SCAM, McCroskey & Richmond, 1985), which was particularly useful for this study as it measures the situational component of foreign language anxiety. The items included five statements representing feelings of anxiety and apprehension, e.g. 'I feel insecure' and 'I feel uneasy' and five statements representing feelings of confidence, e.g. 'I feel peaceful' and 'I feel self-assured'.

3. The third part of the questionnaire was aimed at collecting data on the participants' level of online disinhibition, with the items adopted, modified and translated into Serbian from the Measure of Online Disinhibition – MOD (Stuart & Scott, 2021). In its English form, the questionnaire consists of a single factor solution across 12 items (e.g. 'I am more assertive online than I am offline' and 'I find communicating with others easier on the internet than in person') which ask the participants to rate on a 5-point Likert scale ranging from 1 – 'Completely disagree' to 5 – 'Completely agree' to what extent each statement is representative of them, with higher scores indicating greater levels of disinhibition.

4. In the fourth part of the questionnaire, 10 items were designed to measure students' willingness to communicate (WTC) in online classrooms, rated on a 5-point Likert scale. These items were developed with reference to previous instruments (MacIntyre et al., 2001; Mystkowska-Wiertelak & Pawlak, 2016), serving as models rather than

direct sources. Since no existing tools for assessing WTC in online classrooms were available at the time of this research, an entirely new set of items was created, with higher means indicating greater willingness to communicate. Similar to the anxiety subscale, when answering questions related to WTC the participants were asked to rate the same 10 statements in three virtual classroom situations (video, audio and text-based communication).[2]

Content validity of the scales was assessed by three university professors and researchers. To evaluate the construct validity and reliability of the questionnaire, exploratory factor analyses (EFA) and Cronbach's alphas (α) were also conducted. Prior to this, five items from the anxiety scale reflecting feelings of apprehension and worry were reverse coded. The first step in conducting EFA was to check the normality and factorability of the data based on the criteria set by Finch and West (1997). The results met the assumptions for EFA (Skewness < 2, Kurtosis < 2, the Kaiser–Meyer–Olkin index (.920) and Bartlett's Test of Sphericity (χ^2 = 5426.814; df = 406; p < .000)). Subsequently, the questionnaire underwent three separate EFAs using principal axis factor analysis with varimax rotation on the original 32 questionnaire items. Following the guidelines of Hair et al. (1995), three items from the disinhibition scale had to be excluded from further analysis as they did not have acceptable factor loadings. The final version of the survey included three scales each with a single-factor solution (Table 2). Anxiety scale accounted for 65.21% of variance, disinhibition scale accounted for 74.48% of variance, whereas the WTC scale accounted for 64.53% of the variance.

Table 2
Construct Validity of the Questionnaire

Construct	Item	Factor Loading (FL)	Communality (h²)	Cronbach's Alpha (α)
Anxiety	1 (R)	0.741	0.596	0.926
	2	0.715	0.530	
	3	0.765	0.596	
	4 (R)	0.724	0.527	
	5 (R)	0.715	0.513	
	6	0.719	0.523	
	7 (R)	0.708	0.541	
	8 (R)	0.783	0.616	
	9	0.788	0.622	
	10	0.756	0.630	
Disinhibition	1	0.831	0.741	0.931
	2	0.840	0.761	
	3	0.803	0.662	
	4	0.829	0.723	
	5	0.783	0.663	
	6	0.787	0.623	
	7	0.678	0.508	
	8	0.643	0.432	
	9	0.715	0.517	
Willingness to Communicate (WTC)	1	0.701	0.546	0.937
	2	0.785	0.624	
	3	0.858	0.764	
	4	0.801	0.662	
	5	0.734	0.703	

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[2] The complete questionnaire is available upon request.

6	0.839	0.720
7	0.814	0.735
8	0.577	0.457
9	0.854	0.735
10	0.852	0.753

factor loading > .4, communalities > .5, the cumulative percentage of variance > 60% (Hair et al., 1995)

The reported Cronbach's alphas for the three constructs are generally considered excellent indicators of a scale's internal consistency, since they are all above $\alpha = 0.90$ (Nunnally & Bernstein, 1994).

Procedure

The survey was conducted in April and May 2021 and the questionnaire was distributed via learning platforms (Microsoft Teams, Google Meet or Zoom) that were employed in students' EFL online classes. As for the participants' EFL courses, they all followed a similar structure in which activities typically encompassed a variety of reading, listening and speaking tasks that required student-instructor and student-student interaction. While language instructors delivered their lessons with their cameras on, students could choose the communication format, although the use of camera and microphone was desirable. The survey was conducted at the end of the semester, allowing sufficient time for adaptation to EFL online lesson delivery, with all participants confirming technical readiness for all three communication modes.

The data was analyzed using SPSS 25 by means of descriptive and inferential statistical tests. To answer RQ1, a Repeated Measures ANOVA was conducted, whereas three linear regressions were conducted in order to answer RQ2. Prior to conducting the test, the data were inspected to ensure the assumptions of normality, sphericity and absence of outliers were met (Field, 2013). Sphericity was assessed using Mauchly's test, whereas normality was evaluated through the inspection of skewness, kurtosis, and Q-Q plots for each level of the within-subjects factor. No significant violations were found. The dichotomous variable representing online attention control was recoded as a dummy variable, giving the category levels a functional numerical value in order to enable the use of hierarchical linear regressions in the data analysis process.

Results

In addressing the research questions, this section presents the outcomes of the investigation into the effects of communication modality (camera, microphone and text chat) on students' WTC, along with an exploration of the extent to which individual variables impact WTC within the three modalities of communication during EFL lessons.

Table 3 demonstrates that the lowest mean was obtained for anxiety when students needed to use both a camera and a microphone to take part in an English class, which in turn indicates an anxious setting of near-medium level, as the mean score was above 3 (neutral agreement) on a five-point Likert scale. The participants reported above-neutral levels of anxiety when they participated in the English class using only the microphone (M = 3.48, SD = 1.03) and when they were communicating via text-based option (M = 3.75, SD = 0.91), indicating less anxious feelings. The level of reported disinhibition was below neutral (M = 2.21, SD = 1.03), indicating a tendency towards more inhibited online behavior. As regards WTC, it scored

lowest in online contexts which required students to communicate via camera (M = 2.56, SD = 1.15), followed by WTC via the microphone (M = 3.13, SD = 1.07) and WTC via the chat option (M = 3.19, SD = 1.05).

Table 3
Descriptives for Anxiety, Disinhibition and WTC

	Mean	SD	Skewness	Kurtosis
Anxiety – camera	2.94	1.15	.108	-.944
Anxiety – microphone	3.48	1.03	-.341	-.839
Anxiety – chat	3.75	0.91	-.498	-.562
Disinhibition	2.21	1.03	.814	-.024
WTC – camera	2.56	1.15	.176	-.938
WTC – microphone	3.13	1.07	-.331	-.920
WTC – chat	3.19	1.05	-.333	-.851

A Repeated Measures ANOVA was used to address the first research question and to examine the effect of modality of communication during online EFL lessons (video, audio, text-based) on the students' WTC in the lessons. As recommended for medium-sized samples (Berger & Zhou, 2014), the Kolmogorov-Smirnov test was used to confirm the data's assumed normal distribution, with the results not being significant for any of the modes of communication. The sphericity assumption, tested using Mauchly's test, returned a significant result, $\chi^2(2) = 67.983$, $p = .001$. Therefore, the degrees of freedom were corrected using the Huynh-Feldt correction ($\varepsilon = .780$), as suggested for epsilons greater than .75 (Abdi, 2010). The RM ANOVA results showed that the students' WTC was significantly impacted by the communication modality used in online EFL classes, $F_{(1.57, 323.51)} = 66.130$, $p < .001$, $\eta_p^2 = .243$. This result suggests that the students' willingness to take part in communication during online EFL lessons varied depending on the mode of communication that was used during the lessons. Post hoc tests using Bonferroni correction revealed that the students' WTC was significantly lower when they had to communicate using the camera (M = 2.55, SE = .08) compared to their WTC during the lessons which required them to communicate using microphones only (M = 3.13, SE = .07), mean difference = -.57, 95% CI [-.66, -.48], $p < .001$, and text-based communication (M = 3.19, SE = .07), mean difference = -.64, 95% CI [-.78, -.49], $p < .001$ (Figure 1). There was no significant difference between the conditions of audio and text-based communication, mean difference = -.06, 95% CI [-.18, .06], $p = .323$.

Figure 1

WTC in Different Online Lesson Modalities
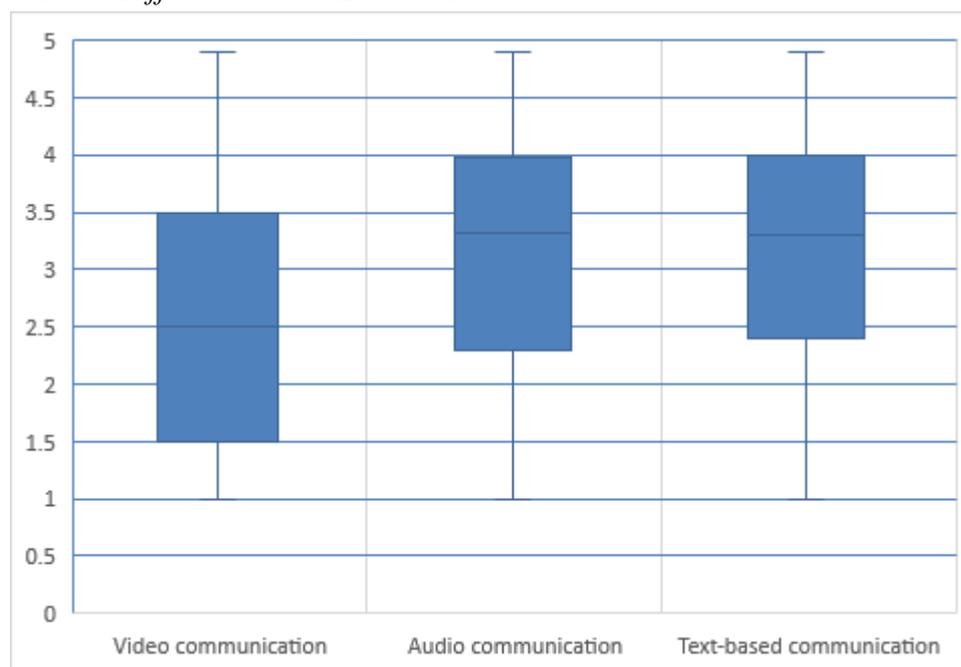
In order to answer the second research question, we used WTC in video-, audio-, and text-based communication during online EFL lessons as the dependent variable in three hierarchical linear regression models, and online attention control, anxiety in three different modes of online communication and disinhibition as predictor variables. The first model examined the power of independent variables to predict the students' WTC in online lessons when they were required to use the camera and the microphone to interact with the instructor and the other students. Table 4 displays the regression coefficients and basic descriptive statistics.

Table 4

Zero-Order Correlations and Linear Regression Model Predicting Willingness to Communicate in Video Online Lessons

	1	2	3	4	β	t	p
	Online attention control	Anxiety – camera	Disinhibition	WTC – camera			
1		-.259**	-.156*	-.324**	-0.137	-2.665	0.008
2			-.096	.703**	0.678	13.305	0.000
3				.051*	0.109	2.162	0.032
4							
					Intercept = .455		
Mean	0.39	2.94	2.21	2.56			
SD	0.49	1.15	1.03	1.15	R^2 = .528**		

**p<.01; *p<.05

All predictor variables had a significant zero-order correlation with students' WTC (*p*<.01 for online attention control and anxiety experienced during lessons when interaction takes place

via camera and microphone, and $p<.05$ for disinhibition). All three variables further had significant partial effects in the full model ($F_{4,\,198} = 55.468$, $p=.001$, $R^2 = .528$). The students' WTC equaled to .455 - .137 (Online attention control) + .678 (Anxiety – camera) + .106 (Disinhibition). WTC increased for those students who had higher online attention control and those who reported lower levels of anxiety and lower online inhibition.

In order to predict the students' WTC during an online EFL class with their microphones turned on (WTC – microphone), a second linear regression was calculated. Table 5 displays the results of descriptive statistics and the standardized regression coefficients.

Table 5

Zero-Order Correlations and Linear Regression Model Predicting Willingness to Communicate in Audio Online Lessons

	1	2	3	4	β	t	p
	Online attention control	Anxiety – microphone	Disinhibition	WTC – microphone			
1		-.260**	-.156*	-.313**	-0.143	-2.538	0.012
2			-0.03	.618**	0.583	10.420	0.000
3				.132*	0.129	2.350	0.020
4							
					Intercept = .867		
Mean	0.39	3.48	2.23	3.13			
SD	0.49	1.04	1.03	1.07	$R^2 = .649**$		

$**p<.01$; $*p<.05$

Zero-order correlations in the second model were significant between the students' WTC during lessons where interaction takes place via microphone, on the one hand, and all the predictor variables, on the other. These variables also had significant partial effects in the full model ($F_{4,\,200} = 36.482$, $p=.001$, $R^2 = .649$). The students' WTC equaled to .867 - .019 (Online attention control) + .583 (Anxiety – microphone) + .129 (Disinhibition). The students' WTC increased for students with higher online attention control and those who reported lower online inhibition and lower levels of anxiety experienced during lessons in which interaction took place via audio communication.

The third linear regression analysis was used to develop a model for predicting the students' WTC in online EFL lessons during which students interacted using text-based communication (WTC – text chat) from their online attention control, their reported levels of anxiety when communicating via chat during online EFL classes and their disinhibition. Basic descriptive statistics and regression coefficients are shown below.

Table 6

Zero-Order Correlations and Linear Regression Model Predicting Willingness to Communicate in Text-Based Online Lessons

	1	2	3	4	β	T	p
	Online attention control	Anxiety – text chat	Disinhibition	WTC – text chat			
1		-.290**	-.156*	-.325**	-0.15	-2.477	0.014
2			-0.032	.542**	0.51	8.507	0.000
3				.179**	0.168	2.885	0.004
4							
					Intercept = .687		
Mean	0.39	3.75	2.23	3.19			
SD	0.49	0.91	1.03	1.05	R^2 = .599**		

**p<.01; *p<.05

Similarly to the first two models, significant zero-order correlations were found between WTC, on the one hand, and online attention control and reported levels of disinhibition and anxiety experienced during text-based online classroom interaction, on the other, also making a significant contribution to the regression model ($F_{4, 199}$ = 27.769, p=.001, R^2 = .687). The following equation predicting students WTC during text-based communication in online EFL lessons can be established: .687 - .150 (Online attention control) + .510 (Anxiety text – chat) + .168 (Disinhibition). WTC increases when students are less anxious, less inhibited and have higher online attention control.

Discussion

The aim of the current study was to examine if the modes of communication (video, audio and text chat) in a synchronous online EFL classroom have an effect on students' WTC (RQ1), and whether students' anxiety, disinhibition and online attention control impact WTC in each of the three modes of communication (RQ2). Regarding the former question, the overall results point to the varying nature of students' WTC within the context of synchronous online L2 learning. The findings are thus congruent with numerous recently published reports on the dynamic nature of WTC (Farrokhi et al., 2023; Kruk, 2021, 2022; Lee & Liu, 2022; Mystkowska-Wiertelak, 2021; Nematizadeh & Cao, 2023). This varying nature of WTC, as the present results indicate, is related to the mode of communication employed in class, that is, the amount of video and audio cues that the students' participation in class implies. More precisely, students' WTC appears to be higher in situations when they are visually and audibly less exposed and vice versa. Similar findings are reported by Le et al. (2018), who interpret them in relation to the concept of social presence. The authors claim that social presence, defined as "the degree to which a person is perceived as 'real' in mediated communication" (Gunawardena & Zittle, 1997, p. 8, as cited in Le et al., 2018, p. 47) determines the level of WTC, with students being more willing to speak in conditions of lower social presence, i.e. when communicating via text or audio chat. The current findings can be interpreted in the same vein. The multimodality of synchronous online learning allows students to decide on the extent

to which they are socially present, that is, 'visible' in lessons, and obviously they choose the modes that reduce this visibility. The given interpretation can be supported by certain psychological phenomena that synchronous online communication triggers, such as the "mirror effect" perceived as a negative feeling awaken while viewing oneself during an online session (Bailenson, 2021), or "voice confrontation", that is, dislike of hearing one's own voice, which is recognized as a common phenomenon. When these are viewed in light of Kang's (2005) perception of L2 WTC as a product of three psychological factors – security, excitement and responsibility, it seems obvious that the camera and microphone supported modes of communication eliminate the first two feelings. In such circumstances, naturally, text chat appears as the most comfortable and therefore the most preferable way to communicate.

Addressing the impact of individual variables on students' WTC in synchronous online L2 learning, the findings generally indicate that WTC increases when students are less anxious, more disinhibited and exhibit higher online attention control and immerse themselves in online environment, be it text chat, audio or video communication. However, as seen in the values of the regression coefficients (β), the impact of anxiety is substantially higher than with the other two variables. As for anxiety, the finding is in line with numerous reports on negative correlation between students' anxiety and L2 WTC in face-to-face classroom (Chaves-Yuste et al., 2024; Knell & Chi, 2012; Öz et al., 2015; Zhou et al., 2023). It is also in line with Lee and Chiu's (2023) study on the link between overall L2 anxiety and WTC in digital contexts, but contradictory to other reports on the role of anxiety on L2 WTC in a digital setting (Kissau et al., 2010; Lee & Hsieh, 2019; Reinders & Wattana, 2015). In all these studies, as already mentioned, digital setting is very broadly interpreted, including both synchronous and asynchronous communication in L2 and/or as subsuming written and spoken interaction in the context of social media and game playing. Some authors (e.g., Lee & Hsieh, 2019; Reinders & Wattana, 2015) interpret these findings in terms of perceiving the digital environment as more comfortable for students (they feel safe and relaxed) and thus less anxiety-provoking. Obviously, the context of the current study is different: first, as part of formal education, synchronous online learning requires a higher degree of seriousness among students; second, it implies immediate interaction with the teacher and other students, without leaving much time for reflection before responding. In this regard, this type of lesson appears very similar to traditional, face-to-face learning, which, as already mentioned, has proved to be more anxiety-provoking and therefore less communication-supportive. An additional interesting finding of the current study is that this negative impact of anxiety holds true for all three modes of synchronous online communication. In other words, if anxious, students are generally unwilling to communicate in synchronous online classes, no matter which mode of communication they use, although the intensity of this negative effect appears to be stronger in the context of video and audio communication, as seen in the values of the regression coefficients (β). As students are more exposed in video and audio communication, or more 'socially present', it is possible that the fear of negative evaluation leads to higher anxiety (Hilliard et al., 2020). A more exposed manner of communication may arguably offer a lower degree of control over one's self-disclosure, also increasing levels of anxiety (Green et al., 2016). In that respect, allowing students to control their social presence in online communication can be beneficial for the reduction of anxious feelings (Prentiss, 2021; Topalov et al., 2023). However, considering the current lack of literature on both WTC and anxiety in

synchronous online L2 learning, this is something that deserves a wider exploration in the future.

Contrary to anxiety, the factor of disinhibition stands in a positive correlation with students' WTC in all three modalities of communication, with the coefficients indicating a similar strength of influence across the modalities – the higher their disinhibition is, the more willing to communicate they seem to be. The finding as such corroborates literature reports on the positive effect of the lack of inhibition on L2 students' production (Cunningham, 2011). What is more, it complements the anxiety findings – in a condition of reduced anxiety and feeling more relaxed, students are also less inhibited and therefore more willing to communicate. This observation applies to all three modes of communication. Consistent disinhibition levels across various online communication modes imply that the impact of disinhibition on WTC remains stable, suggesting it might be a generalizable trait rather than a mode-dependent response. The Measure of Online Disinhibition (Stuart & Scott, 2021) used in this study may tap into a stable personality trait, explaining the consistency in coefficients, so that the individuals who are generally disinhibited may feel equally comfortable expressing themselves regardless of the specific mode, contributing to a perceived uniformity in the online environment for students. To the best of our knowledge, there are no studies that investigate disinhibition across different modes of online communication contexts, which certainly warrants further investigation or a change in research paradigms to a more qualitatively focused study.

A similar interpretation may hold true for the third variable examined in this study – online attention control and the ability to immerse oneself in the environment of a synchronous online L2 classroom. Regardless of the mode of communication employed, students generally seem to be more willing to communicate if they are able to overlook their current physical environment and all the norms and expectations that it imposes on them. Cunningham (2011) addresses this ability in relation to the concept of liminality, that is, the specific position of an online learner being "neither here nor there or perhaps simultaneously both here and there" (Cunningham, 2011, p. 27) while participating in a synchronous online class. This perception of dual presence (or absence) may "severely hamper the students' freedom to immerse themselves in the virtual learning environment" (Cunningham, 2011, p. 35). This ability, according to our results, seems crucial for the level of students' WTC in a synchronous online L2 class irrespective of the mode of communication. This finding, similar to other findings of the present research, awaits empirical testing in the future.

Conclusion

The present study aimed to explore the level of students' L2 WTC in a synchronous online lesson in relation to the three possible modes of communication that this learning environment offers and the impact of several internal factors that might seem relevant for this context. The obtained results point to a variation in the level of L2 WTC depending on the modes of communication, with video communication showing the lowest values, and text chat the highest levels of WTC. Further, in all three contexts of communication, anxiety stands in negative correlation with L2 WTC, while students' disinhibition and online attention control appear as positive predictors of L2 WTC. Although the findings as such cannot be interrelated, that is, the examined variables do not explain the variation in the students' WTC, the importance of the current research lies in the following aspects: first, it highlights the difference

among the three modes of communication in synchronous online L2 communication and the importance of taking them into account when exploring L2 WTC, which has not been the case in previous research; second, it contributes to the underexplored domain of digital L2 learning and stresses the importance of differentiating between its various forms when researching this area; finally, it sheds light on the role of several individual differences (specifically, anxiety, disinhibition and online attention control) that seem relevant for this context of teaching and learning foreign languages. In that regard, the finding referring to the role of anxiety appears particularly important, considering the scarce and contradictory literature reports available so far.

While the findings provide valuable insights, it is crucial to recognize the inherent limitations of the study's cross-sectional design, which captures a singular point in time, thereby constraining the ability to establish causation. Additionally, reliance on self-report measures introduces the possibility of response bias, as participants' responses may be influenced by factors such as social desirability, potentially affecting the accuracy of the collected data. Finally, although efforts were made to adapt and translate the instruments into the participants' mother tongue, there may still be nuances in the translation that impact the equivalence of the measures across different cultural and linguistic contexts. Despite these inherent limitations, the methodological rigor of the study and its comprehensive approach and relevance to contemporary educational contexts hopefully contribute to its overall value in advancing our understanding within the field of WTC and online language learning. Future research in this field will certainly benefit from conducting more studies that clearly differentiate between synchronous and asynchronous learning environments and track students' L2 WTC in each format of communication they offer. Finally, as virtual and physical elements today are more and more combined into a blended learning construct, it will be interesting to explore the dynamics of L2 WTC in such a learning environment as well.

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