



Reducing Speaking Anxiety by Integrating AI-interactions into L2 French Language Teaching

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Abstract

Over the past few years, French language courses at university level have seen increasing diversity in students' entry proficiency levels. Students with lower proficiency often experience speaking anxiety, which can limit their participation in French classes. Recent developments in artificial intelligence (AI), particularly AI-powered chatbots, offer new opportunities for language learning by enabling students to practice conversations individually and receive immediate feedback. Previous research suggests that AI chatbots can improve oral language skills and decrease anxiety in language learning contexts. Nevertheless, most studies have focused on learners of English, while evidence regarding French language learners remains limited. Moreover, most studies have focused on stand-alone AI speaking interventions rather than on the integration of AI-supported practice into regular second language (L2) courses and classroom-based learning activities. This project investigates the integration of an AI chatbot into semi-advanced (B1-level) French courses for Dutch university students. More specifically, the study examines whether chatbot-based speaking practice around specific topics can reduce anxiety and increase motivation to communicate in French in classroom activities around the same topics. Ten students participated in weekly AI-supported speaking assignments over a four-month period. Structured prompts guided the interactions by defining conversational roles, topics, target vocabulary, grammar points, and feedback mechanisms. Students also completed regular questionnaires about their experiences and motivation. The findings indicate that, despite occasionally perceiving the interactions as artificial, students valued the opportunity to practice French in a safe and low-pressure environment. Participants reported increased confidence, greater motivation to speak French in the classroom, and a stronger sense of preparedness for classroom discussions. These results suggest that AI chatbots can serve as a valuable complement to traditional second-language instruction.

Keywords: speaking anxiety, AI chatbot, French, language acquisition

1. Introduction

Becoming fluent in a new language after childhood can be challenging, for reasons that are not fully understood, despite decades of educational and psycholinguistic research. An important aspect of becoming proficient in speaking is developing fluency during interactions. Students, especially when they are not yet proficient enough, often struggle with having conversations in the target language. The students might not feel comfortable in communicating in the language in front of others due to limited knowledge of the new language or difficulty with quickly retrieving appropriate words. As a result, they may experience feelings of anxiety and stress. Anxiety has been reported to have a negative effect on several aspects of language learning (see [1], for an overview). For instance, anxiety has been found to negatively impact learning achievements: Learners that experience feelings of anxiety perform worse in speaking tests than learners that report less anxiety [2]. In addition, anxiety can cause reluctance to participate in language activities in class [3], has a negative effect on motivation for language learning [4], and impacts cognitive processing [5]. This makes anxiety a crucial factor in the language classroom for both learners and teachers.

Optimal training to boost speaking fluency requires face-to-face interactions between a student and a teacher. This is generally not achievable in a classroom setting with multiple students. The time available to give sufficient individual feedback on speaking skills – both on form and on meaning – is limited. Recent studies suggest that students experience less anxiety when using a second language (L2) in a virtual environment compared to real-world settings, such as classrooms with teachers and peers [7,8]. When students feel more at ease in speaking the language, they are more willing and motivated to engage actively in class. More active use of the language will inevitably lead to higher levels of speaking fluency. For instance, in a study on the influence of an AI-speaking assistant on



Chinese EFL students' foreign language enjoyment, foreign language anxiety, and willingness to communicate in English, [9] observed positive effects on these constructs after a six-week intervention with the AI chatbot. In a similar vein, students of German as a second language were found to benefit from writing output generated by ChatGPT to boost their writing practice through critical thinking during revision [10]. These findings highlight the potential of AI in second language education practices.

The goal of this didactic intervention study is to harness recent breakthroughs in artificial intelligence to investigate the implementation of an AI-based infrastructure in university language proficiency courses, in which an AI can effectively serve as a conversational partner in realistic communicative situations. This allows language learners to train their speaking skills in a stress-free manner and to reduce their speaking anxiety in the real-life classroom. This didactic initiative aims at creating a better and more stimulating learning environment for both teachers and students. For teachers, it provides better possibilities for adding depth to the lessons when the student group shares the same level of knowledge and skills. In addition, it allows teachers to provide feedback that is more focused on form aspects, which is important for language acquisition [6]. In turn, students can participate more easily and comfortably in the lessons because their speaking skills are up to standard, and they are less afraid to use the language because they have practiced in a safe environment.

Learners of French in the first year of university education participated in a twelve-week intervention study in which they interact with an AI chatbot to prepare for speaking assignments in real-life classes. Motivation and affective factors were measured in pre- and post-intervention ratings, while attitudes towards the use of AI as a tool to boost speaking fluency were assessed during weekly reflection assignment.

More specifically, we want to investigate whether students find practicing with AI beneficial to their learning process. As such our initial focus is on the students' perception of working with AI to boost their speaking fluency. Second, we want to explore whether our intervention leads to an increase in confidence in speaking and motivation for language learning. It is important to mention that we chose not to include a control group that did not participate in the AI intervention. The main reason for this is that the number of students in the French classes was already quite small and would not allow for reliable statistical analyses. Second, we considered it unethical to deprive half of the students from a potential learning aid. Therefore, we will only take an exploratory approach to address the quantitative data. Based on our data, we will formulate implications for the second language learning practice, highlighting both insights from the students' attitude towards AI and their affective mental students and practical considerations from the implementations in language education.

2. Method

2.1 Participants

Ten Dutch adult learners of French (mean age 28,7 years, SD = 13,9, range = 20-66, 5 males) took part in this intervention study. All students were enrolled in undergraduate language proficiency courses at the University of Amsterdam, either as part of the first year in their bachelor in French language and culture, or as part of an elective program on French language proficiency of the first year of the bachelor of the French Language and culture programme of the University of Amsterdam. The courses targeted B1 to B2 level, and contained training in several competences, such as grammar, pronunciation, reading, and listening, and were programmed in two consecutive six-week teaching blocks over the first semester. Before the start of the first block students were invited for short welcoming interviews, which allowed us to have an idea of their entry level.

2.2 Tasks

Language background and learning motivation questionnaire. The questionnaire was created and distributed in Qualtrics and comprised several questions about the students' use and understanding of French and other languages. More specifically, with regard to French, students were asked when, with whom, and for how much time they spoke the language, as well as how long and where they listened to it. The students were also asked about their motivation and learning objectives. In addition, questions about classroom dynamics and their emotions regarding learning French were included. For this



purpose, we used measures of anxiety, boredom, and enjoyment, developed by [11-13, and elaborated on in 14]. Items were measured on a five-point Likert scale from “strongly disagree” to “strongly agree”. Finally, we asked about the students’ attitudes towards and use of AI during language learning.

AI-assignments. The AI assignments comprised 10 homework assignments (5 for each six-week teaching block), in which students engaged in spontaneous conversations with an AI chatbot within the protected UvA AI Chat environment (see Figure 1 for an example). Each assignment consisted of a general instruction in Dutch for the student, followed by a prompt in French (highlighted in yellow) that students had to paste into the UvA AI Chat environment. The prompt provided information about the setting and topic of the conversation, as well as requirements regarding the use of specific vocabulary and grammatical structures, turn-taking, and forms of feedback (except for the first two assignments). This was followed by a list of vocabulary items to be used during the conversation. Unfortunately, as the speech recording function was not working at the time, students were asked to say the sentences out loud for training and type them in the command line. Still, it allowed the students to train themselves in having a conversation of the specific topic.

Opdracht 1: imaginair interview met de voormalige president van Frankrijk François Hollande

Je duikt in de rol van interviewer en gaat de president (van wie je een korte tekst hebt gelezen voor Compréhension écrite) interviewen. Gebruik de informatie die je weet van de tekst als startpunt voor je vragen en gebruik zo veel mogelijk passend vocabulaire (zie de vocabulairelijst voor semaine 6). Probeer ook vanuit de antwoorden van de Chatbot/ François Hollande vervolgvragen te stellen. Je bepaalt zelf wanneer het interview is afgelopen, maar probeer tenminste 5 vragen te stellen.

Bonjour IA ! Nous allons réaliser un entretien. Mets-toi dans le rôle de l'ancien président français François Hollande.

Moi, je jouerai le rôle de l'intervieweur et je te poserai des questions sur ta vision de la Ve République, la vie politique et la citoyenneté.

- C'est moi qui commence et qui termine l'entretien.
- Tes réponses doivent être courtes, 2 à 3 phrases maximum.
- Après chaque réponse, attends que je réagisse avant de continuer.
- Essaie d'utiliser autant que possible le vocabulaire inclus dans le tableau ci-dessous.
- Pendant l'entretien, améliore mes réponses, au besoin, en donnant des explications précises sur la grammaire, le vocabulaire et la structure des phrases, dans un registre standard.

Assignment 1: imaginary interview with the former French president François Hollande

You are going to play the role of an interview host and will interview the president (of whom you have read a short text as preparation for Reading comprehension). Use the information you learned from the text as a starting point for your questions and use as much as possible the appropriate vocabulary (see the vocabulary list for week 6). In addition, try to ask follow-up questions based on the answers from the Chatbot/François Hollande. It is up to you to decide when the interview is over but try to ask at least five questions.

Hi AI! We are going to perform an interview. Put your self in the role of the former president of France, François Hollande.

I will play the role of the interview host and ask you questions on your vision about the Ve République, political life and citizenship.

- I will start and stop the conversation.
- Your replies should be short, maximum 2 to 3 sentences.
- After each reply, please wait until I respond before going on.
- Try to use as much as possible the vocabulary included in the table below.
- During the interview, please correct my replies, if necessary, by giving detailed feedback related to grammar, vocabulary and sentence structure, for a standard register.

Fig. 1. Example of a French prompt

The second part of the assignment consisted of a set of reflection questions. For the first block (5 assignments), students were asked to reflect on their experience practicing with the AI environment, including how much time they spent practicing and whether they found the activities useful. They were also asked whether the AI environment allowed them to experiment more with the language compared to the real-life classroom, and to what extent they felt that the conversations resembled real-life interactions. Finally, students were asked to reflect on what went well, what could be improved, and what types of feedback they would find most useful in future sessions. In the second block (5 assignments), we limited the number of reflection questions to three, in order to reduce the students’ workload, with now one general question on their experience practicing with AI.

2.3 Procedure

Our intervention took place over the course of the first and second block of the first semester. Before the start of the intervention, students were informed about the purpose of this didactic intervention and filled out a written consent form. Importantly, it was specified that all assignments were considered an integral part of the courses but that the use of AI could not be obliged following the university guidelines. Moreover, they were informed about the procedures and data anonymisation, and gave informed consent (the experimental design was approved by the Ethics Committee of the Faculty of Humanities of the University of Amsterdam). Finally, the students also filled out the language background and



learning motivation questionnaire. These measurements formed the baseline behaviour for speaking anxiety and motivation during language learning.

During the language proficiency courses in the first and second block, students received the weekly AI assignments thematically related to the classes in terms of topics and vocabulary, as well as grammar covered in class. Students were told that they could practice in the virtual environment for as long as they wished. In the classroom, similar conversations were practiced during the week following each AI assignment, and the teacher explicitly referred back to the AI activities.

At the end of the semester, the students filled out again the learning motivation questionnaire, to see whether students' affective behaviour changed after the intervention.

2.4 Analyses

Qualitative results. To assess students' attitude and use of the AI tool to boost their speaking fluency and reduce speaking anxiety, we analysed the answers to some of the reflection questions. For the first bloc, we focussed on two questions: (i) "Did you find it useful to practise conversations with AI? Why/why not?", and (ii) "Did you feel more comfortable experimenting with speaking with AI than in a regular class? Why/why not?". For the second bloc, we analysed responses to the question on the students' experience with practicing with the AI-tool.

The responses to these open-ended questions were analysed using an inductive thematic analysis. Responses were coded for recurring themes relating to participants' perceived usefulness of practising conversations with AI and their comfort in experimenting with spoken language compared with regular classroom practice. Related codes were grouped into the following seven broader themes: practice opportunities, low-pressure environment, immediate interaction/feedback, confidence, realistic conversation practice, AI limitations, and limited usefulness. In a next step, the frequency of each theme was calculated.

Quantitative results. For the questions on motivation, use of French and attitude towards the use of AI, we limit ourselves to report frequencies, as the sample is too small to conduct statistical analyses. With respect to the Likert-scores on the items concerning foreign language anxiety (FLCA, 8 items), boredom (FLLBS, 8 items), and enjoyment (S-FLES, 9 items) scores were averaged for each participant.

2.5 Results

Qualitative results. A total number of 186 student responses to the reflection questions were analysed, 132 from the first block (answering two reflection questions, one on usefulness and one on comfort) and 54 from the second block (answering one broader reflection question). Since these questions were open-ended and answers were not restricted to a specific word count, a considerable proportion of responses could be grouped under more than one theme, resulting in a total number of 216 identified themes. Figure 2 shows the frequencies of the seven different themes for each of the two teaching blocks.

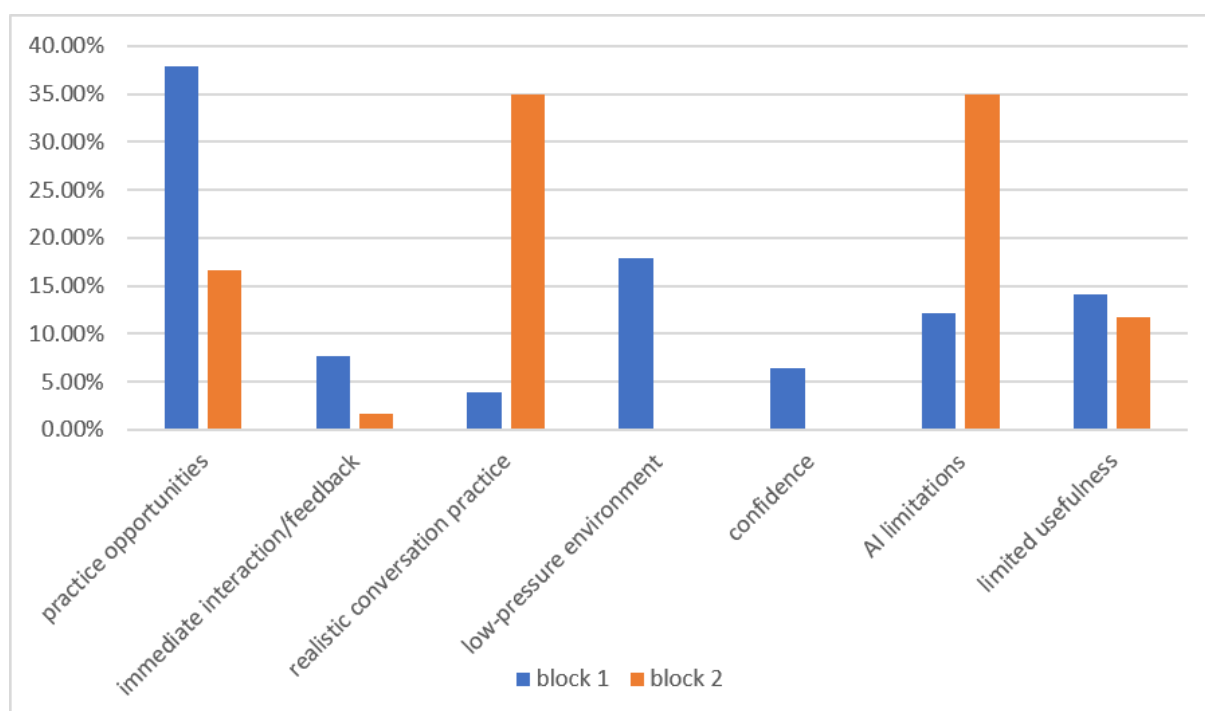


Fig. 2. Frequencies of themes in answers to reflection questions

Figure 2 shows some interesting shifts in themes from block 1 to block 2. In block 1, the predominant themes are practice opportunities and low-pressure environment. Although practice opportunities are still relatively often mentioned in block 2, the predominant themes are now realistic conversation practice (which was strikingly less frequent for block 1) and also AI limitations, which were mentioned relatively often in block 1 as well, but to a lesser extent. This suggests that, while practicing with the AI was more realistic in block 2, it also enlarged the risk of encountering the limitations of AI. Interestingly, the themes most closely related to speaking anxiety, confidence and low-pressure environment, were only mentioned in block 1, not in block 2. This could imply that students, after taking six weeks of French language classes, including five AI practice assignments, felt already more comfortable in using the language. That students felt encouraged to engage in the conversations is illustrated by the following two quotes (translated from Dutch by the authors):

- “The conversation felt quite natural and the chatbot really encouraged me to give longer answers. It really felt like I was talking to someone who was interested in my past holiday.”
- “I thought the conversation was really comfortable and clear. Each time, the chatbot asked specific questions which made me almost automatically answer in a more elaborate way than usually. It felt as if I had a real conversation with a language coach who motivated me to reflect on my experiences and my learning trajectory.”

Quantitative results

Pre-intervention motivation and language background survey. 77.8% of the students (total N = 9) reported that they often or always enjoy learning French. A smaller majority also indicated that they are motivated to actively participate in the face-to-face French classes, with 44.4% reporting that they are often motivated and 11.1% that they are always motivated (total N = 9). Half of the participants reported spending more than three hours preparing for their language proficiency classes (total N = 10). Regarding speaking-related anxiety, most students reported experiencing feelings of stress or anxiety when speaking French: 33.3% indicated that they always experience such feelings, 11.1% often, and 44.4% sometimes. Only 11.1% reported experiencing these feelings infrequently (total N = 9). When asked about contexts in which speaking French induces the most anxiety, students most frequently identified study-related activities in general (66.7%) and the French classroom (55.6%). The teacher was reported as the primary interaction partner by all students (N = 10). With regard to their overall exposure to spoken French, 70% of the students reported speaking French for 1–3 hours per week, 20% for 3–5 hours, and 10% for 11–15 hours (total N = 10). Students also reported varying degrees of



AI use in their French learning. Among the respondents ($N = 8$), 62.5% indicated that they sometimes use AI, while 12.5% reported using it often; the remaining students indicated that they use AI infrequently. Overall, students expressed a relatively positive attitude towards the use of AI in language learning: 62.5% agreed with its use, 12.5% expressed a neutral position, and 25% disagreed (total $N = 8$). Students primarily perceived potential benefits of AI-assisted language learning in the area of grammar, with 62.5% identifying grammar as a domain in which AI could be particularly beneficial (total $N = 8$).

Anxiety, boredom, and enjoyment. Students reported a mean anxiety score of 3.03 ($SD = 0.94$, range = 1.63–4.38), indicating an average level of foreign language anxiety. The relatively large range suggests considerable variation in anxiety levels between students. For boredom, a mean score of 1.52 ($SD = 1.01$, range 1–2.38) was found across the eight FLLBS items, indicating a general low degree of boredom across students. Finally, the ratings for foreign language enjoyment revealed a mean score of 3.17 ($SD = 0.40$, range 2.67–3.67) across the nine items, showing moderate enjoyment. Note however that question 9 of the enjoyment scale “In class, we have shared stories and recurring inside jokes.” has a mean rating of 1.25 which may skew the overall mean.

Post-intervention survey

The post-intervention survey was filled out by only 5 students. For anxiety, a mean score of 2.28 ($SD = 0.73$, range 1.75–3.50) was found across the eight items. For boredom, the mean score was 1.80 ($SD = 0.40$, range 1.13–2.14). For enjoyment, a mean score of 3.75 ($SD = 0.68$, range 2.78–4.33) was found across the nine items. Among the participants who completed both the pre-test and post-test, anxiety scores decreased by an average of 0.75 points ($SD = 1.21$), from $M = 3.09$ ($SD = 1.30$) at pre-test to $M = 2.34$ ($SD = 0.83$) at post-test. In contrast, enjoyment scores increased by an average of 0.56 points ($SD = 0.96$), from $M = 3.19$ ($SD = 0.36$) at pre-test to $M = 3.75$ ($SD = 0.68$) at post-test. Boredom scores increased by an average of 0.66 points ($SD = 0.39$), from $M = 1.06$ ($SD = 0.13$) to $M = 1.72$ ($SD = 0.40$).

3. Discussion

The aim of this didactic intervention study was to integrate AI technology into the curriculum of a university-level French language proficiency programme in order to enhance L2 learners' confidence and reduce their anxiety when speaking French in the classroom. The study addressed the following research question: To what extent can the integration of AI-based speaking assignments reduce learners' anxiety during spoken French production? Over the course of the intervention, L2 learners of French completed weekly conversation assignments using an AI chatbot. Through semi-structured conversations with the chatbot, learners practised vocabulary, and grammar. They also reflected on their experiences with the AI-supported speaking activities through weekly reflective assignments. To assess changes in learners' affective experiences, including speaking anxiety, boredom, and enjoyment, an online questionnaire was administered both before and after the intervention period.

The results show a decrease in anxiety scores and an increase in enjoyment scores between the pre-test and post-test questionnaires. These findings suggest that the AI-supported assignments may have contributed to increased confidence in speaking French and reduced speaking anxiety. However, no causal conclusions can be drawn, and the findings should be interpreted with caution given the small sample sizes and the absence of a control group that did not participate in the intervention. Nevertheless, the qualitative data provide further support for the patterns observed in the quantitative results. Students particularly valued the additional opportunities for speaking practice and the low-pressure environment provided by the AI chatbot, which allowed them to experiment with the French language without the pressure associated with classroom interaction [7,8]. This finding is particularly relevant in light of the responses to the pre-test questionnaire, in which students reported having limited opportunities to practise speaking French and indicated that they experienced anxiety when speaking in the classroom, which was their primary opportunity for oral practice.

These benefits were mentioned most frequently during block 1 and less frequently during block 2. In the second block, however, students more often reported that the conversations had become increasingly realistic. One possible explanation is that students had gained confidence through repeated interaction with the chatbot, enabling them to sustain conversations more easily and engage in more spontaneous language production. Students also became more aware of the limitations of chatbot-mediated interactions during block 2 and expressed a desire for more human-like interaction. This shift may indicate that, as students became more proficient and gained confidence through repeated AI-mediated



speaking practice, they also became more aware of the limitations of these interactions and increasingly desired opportunities for more authentic, human-to-human communication. In this sense, the AI-supported activities may have functioned not only as a low-pressure environment for practising spoken French, but also as a stepping stone towards more realistic communicative situations.

Overall, our didactic intervention study represents a first step towards integrating an AI-based tool into the curriculum of a university-level French language proficiency programme. Although the benefits of the intervention cannot be established statistically, students' reflections on their experiences with and the usability of the AI chatbot suggest that such a tool may have potential as a means of reducing speaking anxiety and fostering self-confidence in the live classroom. These findings are consistent with previous research demonstrating the potential of AI-supported language learning to reduce speaking anxiety in both individual learning contexts and didactic interventions [9,10]. In a follow-up study, we are currently running the same intervention with the now available speech option of UvA AI chat to investigate whether students can obtain the required proficiency level even faster.

To maximise the benefits of AI-mediated speaking practice, the integration of the AI assignments could be strengthened by aligning the vocabulary, grammatical structures, and fixed expressions introduced in the preparatory materials and practised in class with those used in the AI assignments. Ideally, the conversations practised with the AI tool could subsequently be further practised in a live classroom setting. Such an approach could strengthen students' motivation to engage with the AI conversations and encourage them to come to class better prepared for live interaction, and take part actively in the conversation without feeling anxious. In addition, reviewing transcripts of the AI-mediated interactions in the classroom could provide opportunities for teachers and students to identify specific linguistic or communicative difficulties and address them through more targeted feedback. This feedback could then be fed into more tailored AI exercises. This could be particularly valuable given the limited time available for individualised feedback during live classroom sessions. However, such a practice would require students to feel comfortable sharing their AI interactions and should therefore be implemented with due consideration for students' privacy and willingness to share their conversations.

Taken together, the findings suggest that AI-mediated speaking practice may offer a valuable complement to classroom-based interaction by providing learners with additional opportunities to practise speaking in a low-pressure environment before engaging in live communication.

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