

## Research Article

# Prosocial Engagement, Individual-level Motivations, and Group Dynamics: How Does Ideal Classmates Priming Work Now?

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## ABSTRACT

This study investigates how our motivational intervention, Ideal Classmates Priming, influences university students' L2 learning motivation and prosocial engagement before and after the COVID-19 pandemic. Previous studies found the intervention cultivated peer-generated norm-building and group cohesion, increased cooperation, built friendships, and raised metacognitive awareness about adjusting to each other's communicative needs. But the studies were conducted before the pandemic placed students and teachers in isolation. Now back in face-to-face classrooms, we conducted Ideal Classmates Priming at four Japanese universities in ten communication-based English classrooms to assess how its effects compare to our previous, pre-COVID-19 studies using the intervention. Longitudinal measurements were taken to assess changes in four temporal factors of motivation and one in prosocial engagement. Additionally, qualitative analyses described and checked changes in students' attitudes and behaviors regarding their classmates' and their own prosocial engagement. The findings suggest the intervention continues to positively influence motivation and peer engagement, but compared to their pre-pandemic counterparts, post-pandemic students demonstrated greater need for—and newer ways to give and receive—emotional connection and social support. This indicates a shift in the way students relate to each other in the face-to-face learning environment, underscoring the importance of the psychosocial dimension in post-pandemic classrooms.

**Keywords:** L2 motivation, ideal classmates priming, L2 engagement, changes after COVID-19, mixed methods research design

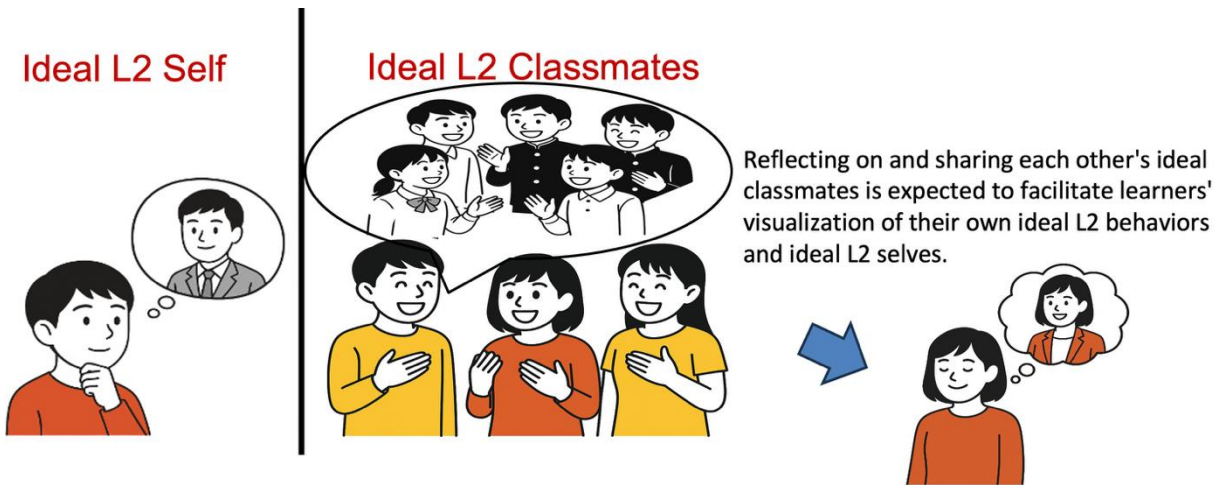
## INTRODUCTION

### Trees in the Forest as a Metaphor for Positive Group Dynamics

For a good story about group dynamics, we recommend *The Overstory* by Richard Powers (2018). It educates readers about how trees communicate with each other and support each other's well-being and well-becoming through sharing water, chemicals, and nutrients, all underground and in the winds. Analogously, in an ideal language classroom, students communicate with each other and support one another's well-being and contribute to an effective learning process. This paper explores the effects of our Ideal Classmates Priming intervention in creating a community of students sharing nourishing ideas and cultivating a collaborative prosocial learning environment.

### Disengagement, Demotivation, and Group Dynamics in Japan

Students learning English in college classrooms across Japan are known to be passive, silent, and disengaged. The main reasons include apathy, distraction, confusion, hypersensitivity to others' opinions, and peer pressure to resist classroom participation (e.g., King, 2013). Our motivational intervention, *Ideal Classmates Priming*, was designed to promote students' interest, focus, metacognition, empathy, and generation of mutual learning goals. Ideal Classmates Priming encourages students to share their visions of how they might act to support each other's language learning. Sharing their visions then results in their acting upon them when it comes time to engage in classroom tasks, leading to cooperative growth in language use and motivational development, as illustrated in Figure 1.

**Figure 1.** *Ideal L2 Self Motivational Intervention vs. Ideal Classmates Priming*

Common motivational interventions to improve and sustain second language (L2) learning behaviors involve helping students envision their future self images—specifically the Ideal L2 Self (a self-generated image of oneself achieving success with the target language) and Ought-to L2 Self (an image of oneself avoiding failure with the target language, driven by others' expectations, such as those of parents and teachers), as proposed in the L2 Motivational Self System by Dörnyei (2009), who was drawing from possible selves theory (Markus & Nurius, 1986). Increasing students' Ideal L2 Self or their Ought-to L2 Self are among the most sought-after interventional choices for teachers worldwide. For example, encouraging students to visualize speaking fluently could strengthen the Ideal L2 Self, whereas informing students the importance of English could boost the Ought-to L2 Self. These choices, however, can have limitations—even drawbacks, such as lowering motivation, prolonging its recuperation, and eventually retarding proficiency—especially if over-relied upon.

The first issue is that some students may have suffered motivational setbacks in learning English that they have yet to overcome and become hampered in imagining an Ideal L2 Self. Specifically, students who have been demotivated may have a negative past self image related to English learning, which can negatively affect their beliefs in the ability to regain their lost motivation in a process known as remotivation. One such student is Shota (a pseudonym), who experienced many failures in attempts

to remotivate and reported: “teachers started to nag me repeatedly ‘you better study English harder’ before I even recovered my motivation. This decreased my motivation even more” (Falout, 2020, p. 117). Struggling with motivational problems since junior high or high school, lower-proficient college learners in Japan, compared to higher-proficient learners, more likely hold negative self images with English (Falout et al., 2013), are less able to react to demotivation with self-regulation (Falout et al., 2009), and less able to apply strategies to remotivate (Falout et al., 2013)—this would include strategies such as imagining an Ideal L2 Self. Moreover, interventions to increase these students’ motivations could backfire, as in the case of Shota.

The second issue is that students may already have enough of an Ought-to L2 Self or an imbalance accompanying it. For example, science and engineering majors were found to have a motivational imbalance, with high levels of Ought-to L2 Self but low levels of Ideal L2 Self (Apple et al., 2020). The Ought-to L2 self negatively predicted English-learning outcomes. This means that the higher their Ought-to L2 Self, the lower were their scores on a standardized test of English. It seems that, at least for science majors in Japan, the more external pressure students feel that they must learn English, the less capable they are of learning it. Enhancing their sense of Ought-to L2 Self as a motivational intervention may yield diminishing returns.

Another issue is that *only* envisioning a future self may neglect the motivational and situational complexities involved. In one study, for example, visualization alone was not effective as a treatment for increasing measurable *willingness to communicate* (McCroskey & Baer, 1985) among college freshmen majoring in a wide range of sciences and humanities, but visualization in combination with goal-setting was (Munezane, 2015). Another study (Lockwood & Kunda, 1999) gives a cautionary example, although it was not based on L2 learners and not done in Japan. It showed that by overfocusing on their own future selves, students can under aim in their imaginary future accomplishments and miss out on bigger, better dreams that can come from observing inspirational role models.

In sum, those who are most susceptible to sustained motivational loss are the least

equipped to envision an Ideal L2 Self. The question is how to help learners imagine their Ideal L2 Self when their past and present self images related to language learning impede their ability to imagine a more-abled future self. Clear answers remain elusive, but Ideal Classmates Priming has been shown to increase the positivity of past and present self images of college students in English communication classrooms in Japan as well as their perceived levels of mutual engagement (Fukuda et al., 2017; Fukuda et al., 2022)—notably, the intervention acts *indirectly* upon motivation: rather than strengthening the vision of a successful self in the future, students strengthen their vision of a successful group of peers learning together in the present.

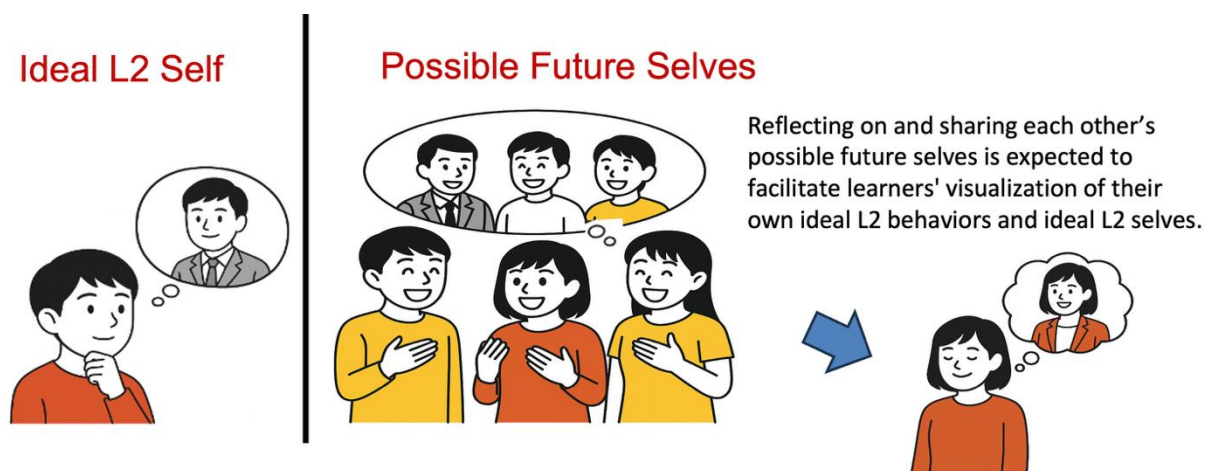
Additionally, an overfocus on the self and on societal pressures can myopically distort their powers to imagine and achieve. Instead of focusing on the *self*, however, students can focus on the *other* or *others*, who can be part real and part imagined role models, who in turn effect changes in the *self*, as we believe happens with Ideal Classmates Priming. This intervention seems suitable for many types of learners, especially those who have suffered from demotivation, because remotivation often happens *unintentionally* through social support (Falout et al., 2013). Ideal Classmates Priming taps into the nurturing roots of group dynamics, much of which lies underground and goes unseen, working invisibly below casual perceptions, but its effects become apparent in the outward branching growth of social engagement among students.

### Intervention: Ideal Classmates Priming

We tested Ideal Classmates Priming in a comparison of motivational interventions randomly assigned to classes (Fukuda et al., 2021). One intervention was Future Selves Priming (see Figure 2), the other, Ideal Classmates Priming. For classes assigned the Future Selves Priming, each student wrote a short description of how they envisioned themselves using English in future situations. For the Ideal Classmates Priming, each student wrote a short description of how they envisioned their classmates helping them learn English better and more enjoyably. These

descriptions were collected by class at the beginning of the semester and later in the semester anonymously shown to the students in the respective class. Short activities accompanied the descriptions, specifically drawing pictures of the descriptions and sharing them, collaboratively creating common themes among the descriptions, or choosing an idea to try during the communicative task for the day.

**Figure 2.** *Ideal L2 Self Motivational Intervention vs. Future Selves Priming*



Classes in both interventions experienced motivational gains in their self images of the past, present in/out-of-class, future—called Mind-Time Frames of Motivation (see Methods section). However, there were two salient differences. First, under the Ideal Classmates Priming, students more often reported to be interacting through English more and doing so in a friendly way. Second, a statistically significant correlation was found between the semester-long growth in the Mind-Time Frames of Motivation and end-level prosocial engagement, called Prosocial Peer Learning Engagement (see Methods section), but only for classes with Ideal Classmates Priming.

We then used a subset of these data to compare science and engineering majors with international studies majors (Fukuda et al., 2022) and found that Ideal Classmates Priming did not yield such motivational growths or correlation for the international studies students, who already had relatively high motivations to start with. For science majors, however, there were significant motivational growths. Also, there was a

significant correlation between end-level prosocial engagement and semester-long growth in Mind-Time Frames of Motivation, but only in present and future self images, not past self images.

Other teacher-researchers have integrated our approach into their classrooms in Japan and taken the lead on their own variations on Ideal Classmates Priming. For example, Peragine (2019), using it in university English discussion groups, reported that it helped cultivate peer-generated norm-building about cooperative learning behaviors, plus the group cohesion used to jointly perform these behaviors during communicative tasks. Davis (2018), using it in English communication classes at an all-girl, private junior high school, reported it increased cooperative learning, friendship building, and metacognitive awareness about interpersonal engagement. Lastly, Sampson (2018), using it with first-year science and engineering students at university, reported that the students could be more open with each other about their thoughts, be themselves as they engaged in challenging interactive tasks using English, adjust and adapt to each other's L2 communication needs on an individual-level basis, and help shape a resulting positive classroom atmosphere.

### **Psychological Effects of COVID-19 on Adolescents**

As the world we live in becomes increasingly globalized and interconnected, so do the perils we confront. The COVID-19 pandemic that started in December 2019 has affected the lives of people in every corner of the planet. In the educational sphere, schools and universities implemented containment measures such as social distancing, suppression of classroom interactions, and the shift to online classes. These sudden changes brought about unprecedented challenges to the daily lives of billions of children and adolescents across the world (Gunnes et al., 2024).

Burgeoning investigative studies have identified the psychosocial impact of COVID-19 on mental health among children and adolescents. For example, depression, trauma, stress-related disorders, sleep disorders, prevalence of anxiety,

suicidal behavior, attention-deficit/hyperactivity disorder, and other illnesses were identified in an umbrella review study (Hossain et al., 2022). This study integrated 17 eligible reviews with methodological rigor, after evaluating 422 papers, with participants from various parts of the world, including the U.S., U.K., Canada, China, Japan, France, Italy, Germany, Turkey, Jordan, Brazil, Nigeria, and India, among others, marking the recent global rise in mental disorders.

In a longitudinal study conducted among college students in Michigan ( $N = 258$ ), students continued to report high academic difficulties, with negative effects of fear and loneliness undermining their learning (Hu et al., 2024). Students reported to have experienced dissatisfaction with digital learning compared to face-to-face classes (Maqableh & Alia, 2021). In the study conducted among university students in Germany, it was found that learning satisfaction scores decreased as the semester progressed from fall 2020 to spring 2021, and motivational cost and loneliness negatively influenced learning satisfaction (Gadosey et al., 2022).

In a large case study with 1,572 participants from 43 countries, it was demonstrated that the level of subjective well-being decreased during COVID-19, compared to life before the pandemic, while at the same time it was revealed that participants expected to be happier in the future than now, but not any more than they had expected in the pre-pandemic period (Mureşan et al., 2023). In a partial experimental study, an experience of awe was found to be effective in enhancing one's sense of connectedness, empathy, and prosociality in the challenging time of epidemiological crisis (Luo et al., 2023). Largely, research studies on the effects of COVID-19 on psychosocial aspects of life claim the need for interventions to improve the well-being of students in difficult times (Turhan et al., 2022).

In the educational sphere, including language classrooms, teachers across the world adjusted pedagogy, curriculum, and lesson plans to cope with the unpredictable situation of moving away from face-to-face learning, while trying to sustain learners' enthusiasm and motivation (Fatima, 2020). These findings underscore the profound impact of the pandemic on students' emotional and academic well-being, highlighting

an urgent need for evidence-based educational strategies. In this context, exploring motivational interventions such as Ideal Classmates Priming becomes increasingly important to support student engagement and resilience in language learning during and beyond times of crisis.

## Research Questions

Despite evidence from previous studies showing that Ideal Classmates Priming is effective in enhancing students' motivation and engagement in English learning, the COVID-19 pandemic may have altered how this intervention functions. Therefore, the research questions that this study addresses are as follows.

- How does the Ideal Classmates Priming intervention affect individual-level English-learning motivations and group-level prosocial engagement before and after COVID-19?
- How do its effects bring communication, comfort, and human connection within and throughout the social ecology of each classroom?

## METHODS

### Participants

The study was conducted during both the pre-pandemic (2017 and 2018) and post-pandemic (2024) periods by collecting data from students at private universities in the Kanto region of Japan. All students participated in this study voluntarily while taking English courses for 15 weeks. The students were from three universities in 2017 and 2018, and four universities in 2024. Although quantitative and qualitative data were collected at the same time, the number of participants is explained separately.

The quantitative data during the pre-pandemic period were collected from 415 university students (206 in 2017, and 209 in 2018). The students were studying English in 22 communication-based English classes (11 in 2017 and 11 in 2018) at

three universities. The quantitative data during the post-pandemic period were collected from 235 university students in 2024. The students were studying English in 10 communication-based English classes at four universities.

The qualitative data during the pre-pandemic period were collected from 171 students in six classes in 2018. And the qualitative data during the post-pandemic period were collected from 312 students in 10 classes at four universities.

### **Mixed-Methods Design**

To provide a comprehensive understanding of the investigation, this study employed a mixed methods approach known as convergent parallel design. In this approach, quantitative and qualitative data are collected simultaneously, analyzed separately, and then the results are merged for interpretation. The goal is to directly compare findings from both data sets to determine whether they confirm or diverge from one another, thereby providing a more comprehensive picture of the phenomenon under study. According to Creswell and Plano Clark (2018), the convergent design is particularly useful when the researcher wants to validate or corroborate findings from different data sources within the same timeframe. In the present study, data from Likert-type questions were analyzed quantitatively, while data from open-ended questions were analyzed qualitatively. The quantitative analysis was conducted to examine general tendencies among the participants, and the qualitative analysis was used to explore their thoughts in greater depth. Finally, the results of both analyses were presented in a single table to provide a comprehensive picture that would have been difficult to obtain using only one method of data analysis.

### **Instruments and Timeline**

Three questionnaires were prepared bilingually in both English and Japanese. The directions and items in the questionnaires were written in English and then translated into Japanese. The first questionnaire, the Pre-survey, was administered in Weeks 1,

2, or 3 of the semester and included questions designed to elicit students' background information. The next 18 items comprised the Mind-time Frames of Motivation (MTFM) survey. The survey examines students' motivation for learning English in different timeframes of self images: past, present, and future. Table 1 shows the 18 items of the MTFM survey.

Past self images are measured by four items (Qs 1–4), present self images for in-class investment by four items (Qs 5–8), present self images for out-of-class investment by six items (Qs 9–14), and future self images by four items (Qs 15–18). Items within each factor were presented together to facilitate participants' concentration within each timeframe: switching back and forth from past, present, and future when answering item-by-item could confuse or disrupt concentration and cause imprecision in answering. However, arranging items by factor groups is not considered as rigorous for testing construct validity as when mixed (Dörnyei & Dewaele, 2023). The survey was conducted using a 6-point Likert scale indicating the level of agreement from 1 (Not at all) to 6 (Yes, very much).

The Pre-Survey also had item 19, referred to as Pre-Q19 later in this paper, aimed at eliciting students' perceptions of their ideal classmates. The question was as follows:

*Pre-Q19. Please describe a group of classmates that you could learn English well with. What would you all do to help each other learn better and more enjoyably?*

This survey was used in previous studies (e.g., Fukuda et al., 2021; Fukuda et al., 2022). In Fukuda et al. (2021), the validation of the survey was examined through exploratory factor analysis (EFA), resulting in the reduction of the number of items from 18 to 15. However, the same 18-item version was administered again because the participants in the post COVID-19 data collection in 2024 were different from previous studies, and it was decided that the validation should be re-examined with a new dataset.

**Table 1.** *Mind-Time Frames of Motivation Survey Items*

Factor	No.	Item
Past	1	I enjoyed learning English in class in the past.
	2	I enjoyed learning English out of class in the past.
	3	Even if English had not been a compulsory subject, I would have chosen to study it in the past.
	4	I was confident in learning English in the past.
Present In-class	5	I regularly use English in class with my classmates this semester.
	6	Even if the teacher were not close to me, or could not hear me, I still speak English with my classmates in class this semester.
	7	In this class, my classmates and I support each others' English learning reciprocally.
	8	In this class, my classmates and I talk about our English-related future careers.
Present Out-of- class	9	Outside of this class, I make an effort to speak more English with my classmates.
	10	Outside of this class, my classmates and I support each other's English learning reciprocally.
	11	Outside of this class, my classmates and I talk about our English-related future careers.
	12	Outside of this class, I make an effort to speak more English with other people (friends, teachers, family, etc.).
	13	Outside of this class, other people (friends, teachers, family, etc.) and I support each other's English learning reciprocally.
	14	Outside of this class, other people (friends, teachers, family, etc.) and I talk about our English-related future careers.
Future	15	I think I will use English in my daily life in the future.
	16	I think I will get a job using my English abilities in the future.
	17	I can imagine belonging to a group of friends who use English in the future.
	18	I can imagine belonging to a group of professionals who use English in a job in the future.

Various Ideal Classmates activities were done in or around Weeks 2 to 5. We started by anonymously compiling responses to Pre-Q19, the Ideal Classmates prompt, on a large screen or an online course platform. Activities involved encouraging students to discuss these descriptions in pairs or small groups, drawing pictures of these descriptions and sharing them with their peers, and finding common themes among the descriptions.

Then the Mid-Survey was administered between Weeks 7 and 9. It was designed to assess students' engagement with Prosocial Peer Learning Support Engagement

(PPLS Engagement). It consisted of four six-point Likert scale questions (Mid-Qs 1–4) and one open-ended question (Q5), as shown in Table 2.

**Table 2.** *Prosocial Peer Learning Support (PPLS) Engagement Survey Items*

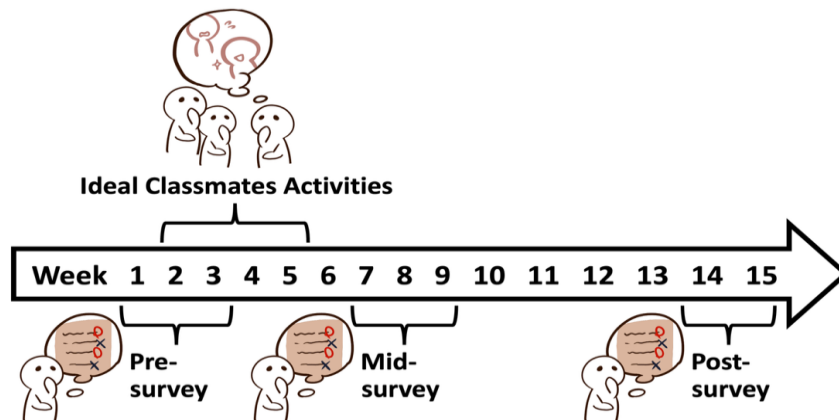
Number	Item
1	My classmates are helping me to learn English.
2	I am helping my classmates to learn English.
3	My classmates are helping me to enjoy English.
4	I am helping my classmates to enjoy English.
5	In what new ways are your classmates helping you to learn and enjoy English in the past few weeks?

At the end of the semester, the post survey contained the same Likert-scale questions for the MTFM and PPLS Engagement surveys; however, different from the Pre-Q19 item was the Post-Q19:

*Please describe any changes you have made during this semester in your behavior or attitudes toward your classmates. What influences do you think these changes may have had on your classmates, relationships in and out of class, and your English learning?*

In both the pre-pandemic (2017 & 2018) and post-pandemic (2024) periods, quantitative and qualitative data were collected in the same manner (see Figure 3).

**Figure 3.** *Timeline of Data Collection for Both Comparison Groups*



## Data Analysis

### *Quantitative Analysis*

Pre- and Post-MTFM quantitative data were analyzed using descriptive statistics, *t*-tests, reliability analysis, correlation matrices, and confirmatory analysis. Descriptive statistics present the means of responses to the questionnaire items at the two time points, and *t*-tests were conducted to examine the significance of changes from before to after COVID-19. Reliability analysis was conducted using Cronbach's alpha to assess consistency. Cronbach's alpha is an estimate of the average correlation of all sets of two items in a survey (Field, 2018). The minimum acceptable values for Cronbach's alpha range from .50 to .80 (Field, 2018), and for the present study, .70 was chosen. In this analysis, the cases where each question was deleted were also examined to determine whether the question contributed to the overall consistency.

To examine the four constructs comprising the Mind-Time Frames of Motivation (MTFM), correlational analysis was conducted among the constructs, using Pearson's correlations. Following Field (2018), if the alpha is over .5, the relationship is considered strong, the relationship between .3 and .5 is moderate, and if it is lower than .3, it is weak. Furthermore, confirmatory factor analysis (CFA) was conducted to examine the intercorrelations of the constructs. CFA is a type of Structural Equation Modeling (SEM) which provides validation evidence for the survey. The MTFM survey was previously validated with Exploratory Factor Analysis (EFA) by Fukuda et al. (2021). While EFA is usually employed to determine the number of factors a survey can identify, CFA is more appropriate when the researchers already have some knowledge of the latent variable structure. Considering that the MTFM survey has been used in previous studies, CFA is a suitable choice of validation analysis for the present study. Conventional statistical analyses, such as Cronbach's alpha and correlation coefficients, were conducted with JASP Version 0.19 (JASP team, 2024) and CFA was performed with Amos Ver. 29 (Arbuckle, 2024).

### *Qualitative Analysis*

Since the qualitative analysis of Pre-Q19 was the focus of a previously published paper (see Murphey et al., 2014), this study focuses on the qualitative data from Mid-Q5, Post-Q5, and Post-Q19. For the analysis, qualitative data from the open-ended Mid-Q5, Post-Q5, and Post-Q19 responses collected from both the pre- and post-pandemic student groups were organized into two separate Excel sheets. After carefully reading the entire dataset multiple times, each semantic segment of a student's comment was labeled with a short phrase or sentence that served as a code accurately reflecting its content. In the analysis of the qualitative data from Post-Q19, higher-order categories were created to subsume related codes for further analysis. The wording of each code was iteratively refined to ensure it best represented all grouped semantic segments. This process was repeated multiple times before finalizing the coding scheme. Participants could choose to answer the open-ended questions in either English or Japanese, the latter of which was the first language for nearly all of them. Responses given in Japanese were translated into English in the following sections.

## **RESULTS**

### **Quantitative Results**

The MTFM survey measures student motivation across four factors within three temporal categories—past, present in-class, present out-of-class, and future—allowing for a broad-ranging comparison of motivational trends when conducted over time. The results highlight whether and how much students have shifted in their motivational orientations.

Table 3 presents descriptive statistics for the MTFM survey conducted at the start of the semester, before and after the COVID-19 pandemic, as well as the *t*-test results between the two times. The past-oriented motivation scores increased slightly, but significantly, after the pandemic, which may suggest a greater inclination toward reflecting on past experiences after COVID-19. No other categories showed

statistically significant increases. Overall, the data suggest that motivation had shifted subtly in response to the pandemic, with an increased emphasis on the past; however, the other categories remained stable over time.

**Table 3.** Descriptive Statistics for Mind-Time Frames of Motivation Survey at Semester Start, Before and After COVID-19

Time	Before COVID-19 (2017+2018)		After COVID-19 (2024)		$t(275)$	$p$	Cohen's $d$
	$M$	$SD$	$M$	$SD$			
Past	3.53	1.08	3.72	1.11	2.37	0.018	.174
Present In-class	3.77	0.96	3.85	0.99	1.12	0.263	
Present out-of-class	3.00	1.14	3.05	1.20	0.59	0.560	
Future	3.48	1.20	3.38	1.20	1.13	0.260	

The descriptive statistics presented in Table 4 compare the MTFM survey scores Pre (at the beginning of the spring semester) and Post (at the end of the spring semester) before and after the COVID-19 pandemic. Across all time frames—past, present in-class, present out-of-class, and future—there is a general increase in mean scores from pre- to post-survey periods, indicating an overall rise in motivation over time. The results of paired-samples  $t$ -tests show that all these increases were statistically significant, and the effect size indicated by Cohen's  $d$  was small or medium. These results indicate that the Ideal Classmates Priming still worked after the pandemic as well as before.

Next, the consistency of the survey items was examined with Cronbach's alpha. The overall reliability of the survey remained high, indicating strong internal consistency across all 18 items both before and after the COVID-19 pandemic. In the four subcategories of MTFM, the alphas ranged from .738 to .911, all of which are considered over the threshold, suggesting that the items in each factor were consistent.

**Table 4.** *Descriptive Statistics for Mind-Time Frames of Motivation Survey Before and After COVID-19*

	Before (2017+2018)		<i>t</i> (415)	After (2024)		<i>t</i> (227)
	Pre <i>M</i> ( <i>SD</i> )	Post <i>M</i> ( <i>SD</i> )		Pre <i>M</i> ( <i>SD</i> )	Post <i>M</i> ( <i>SD</i> )	
Past	3.40 (1.05)	3.73 (1.09)	5.19**	3.54 (1.07)	3.93 (1.12)	4.16**
Present In-class	3.50 (0.95)	4.02 (0.91)	9.41**	3.54 (0.93)	4.21 (0.94)	8.37**
Present Out-of-class	2.81 (1.08)	3.26 (1.14)	6.82**	2.81 (1.13)	3.34 (1.24)	5.22**
Future	3.40 (1.16)	3.60 (1.19)	2.86*	3.12 (1.17)	3.58 (1.15)	4.63**
<b>Total MTFM</b>	<b>3.23</b> <b>(0.82)</b>	<b>3.62</b> <b>(0.90)</b>	<b>9.88**</b>	<b>3.22</b> <b>(0.85)</b>	<b>3.71</b> <b>(0.95)</b>	<b>8.38*</b>

Notes. *N* for Before = 567, *N* for After = 273. \*\**p* <.001, \**p* <.01

When examining the contribution to the internal consistency of each question in the MTFM survey, two of the 18 items (Q5 and Q6) were found to negatively contribute to the overall consistency. However, if one of them were deleted, the consistency would go up by only 0.002 and 0.001 respectively; thus, they were not regarded as problematic in this study. Concerning the four factors, almost every item found to contribute to the consistency of its factor. However, Q8 (In this class, my classmates and I talk about our English-related future careers) was found to negatively contribute to consistency. In the data before the pandemic, if the item were deleted, the reliability would go up from .738 to .768, and in the data after the pandemic, the reliability would go up from .741 to .769, indicating that the question item was answered rather differently than the other three items in the factor. Overall, the data indicate that the survey maintained strong reliability across time, with minor variations reflecting potential shifts in motivational consistency across different time frames.

Next, the relationships between the four factors of MTFM were examined with correlations as shown in Figure 4 and Figure 5. The correlations both at the start and

the end of the semester before COVID-19 were all found to be strong between all factors.

Figure 4 shows the correlations at the start of the semester from the two time points. As discussed above, all the relationships in both before and after COVID-19 were statistically significant with  $p$  values lower than .001. When compared, however, the two times showed two main differences. First, the two correlations that decreased most after COVID-19 were between past and in-class present (from .448 to .362) and between in-class present and out-of-class present (from .673 to .561). It should be noted that both relationships involved in-class present motivation. Second, the two correlations that went up most were the one between past and future (from .575 to .625) and the one between out-of-class present and future (from .554 to .686). Both relationships were connected to future motivation.

**Figure 4.** *Start-of-the-Semester Correlations among Mind-Time Frames of Motivation*

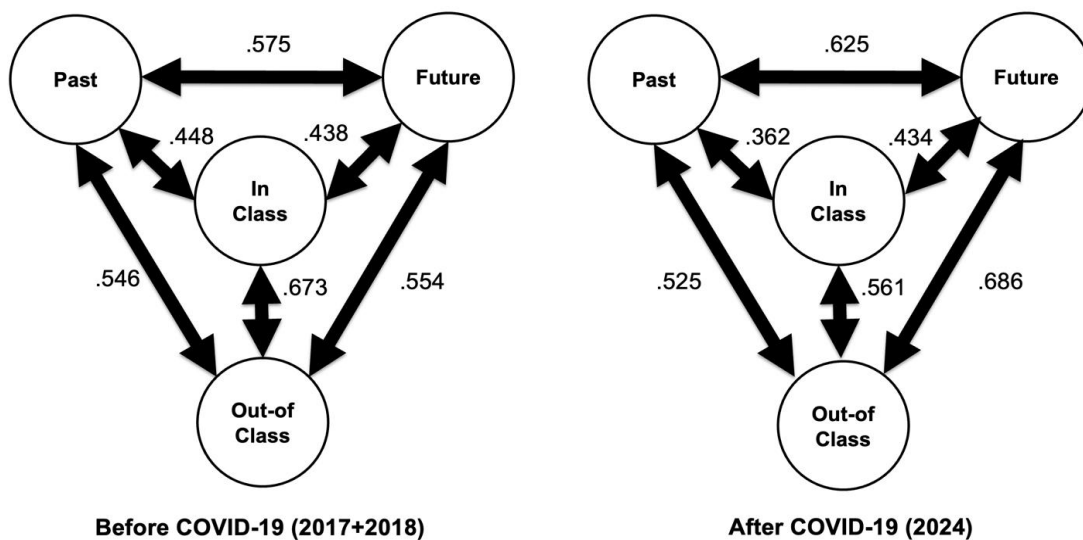
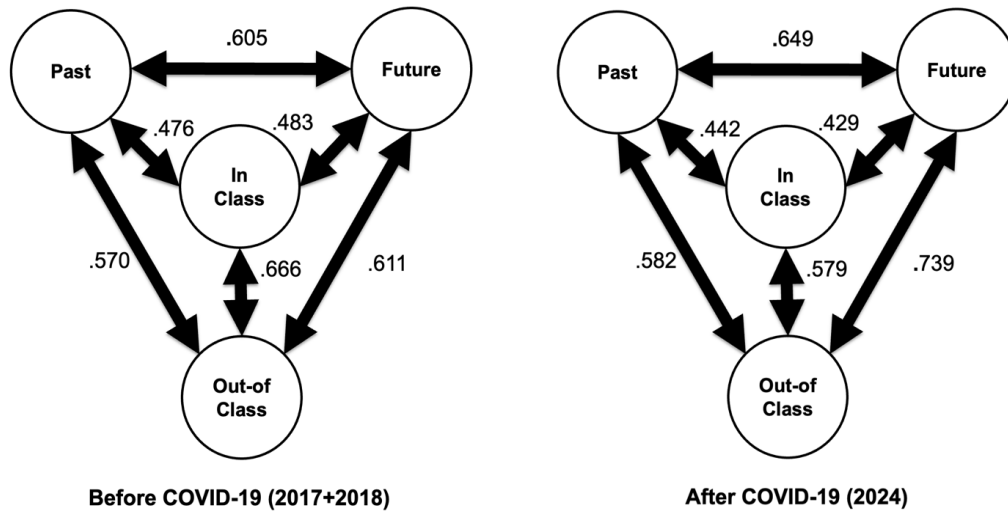


Figure 5 presents the correlations at the end of the semester from the two time points. Again, all the relationships in both before and after COVID-19 were statistically significant with  $p$  values lower than .001. When compared, however, the two times

showed two main differences. Three correlations decreased after COVID-19. In addition to the two pairs that decreased at the semester start, the correlation between in-class present and future decreased from .483 to .429. By contrast, the correlations that had increased at the semester start (past and future; out-of-class present and future) again showed the sharpest increase.

**Figure 5.** *End-of-the-Semester Correlations among Mind-Time Frames of Motivation*



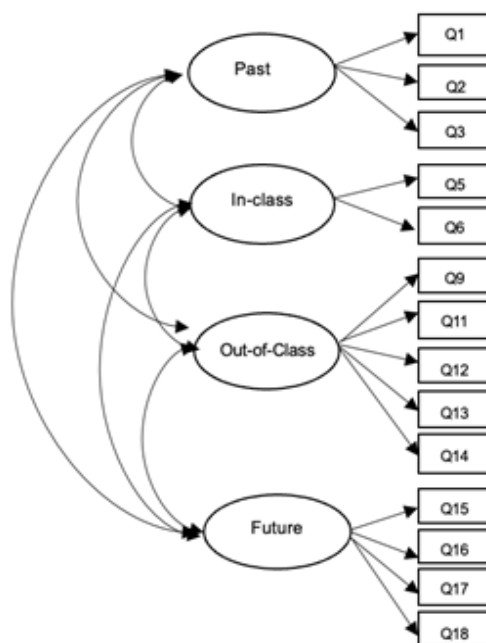
Winke (2014) called for more research using Structural Equation Modeling (SEM) in applied linguistics, especially when investigating psychological concepts such as motivation. Previously, Ideal Classmates Priming was examined with correlations (Fukuda et al., 2021). In the current study, we decided to take one step further by conducting CFA, a type of SEM that tests whether a set of observed variables is consistent with what researchers understand about a construct, with the data from the semester start in 2024 ( $N = 269$ ).

In our case, observed variables are responses to the question items. The four factors (past, in class present, out of class present, and future) are latent variables or unobserved variables. For the model (Figure 6) to reflect the consistency indicated by Cronbach’s alpha and the regression weights of each item, it was decided to have 14 items instead of 18 by excluding the data from Q4, Q7, Q8, and Q10. The results of

this analysis, as shown in Figure 6, indicated an acceptable, if not excellent, model fit, with a chi-square divided by degrees of freedom = 2.55, CFI = .947, and RMSEA = .076. The results imply that Mind-Time Frames of Motivation existed among students after COVID-19 as a robust psychological construct.

In summary, the quantitative analyses reveal that students' motivational orientations, as measured by the MTFM survey, remained largely stable yet showed meaningful shifts throughout the semester following the COVID-19 pandemic. Increases in past and present in-class motivation, along with consistently strong correlations among motivational time frames, suggest a reinforced focus on immediate and reflective dimensions of learning. This might imply that Ideal Classmates Priming facilitates students' visualization of ideal proximal-future self-images. The decline in future-oriented motivation, while modest, may signal a broader recalibration of students' long-term academic outlooks. Reliability remained high across all survey categories, and confirmatory factor analysis supported the underlying structure of the MTFM framework, affirming its continued validity in post-pandemic educational contexts.

**Figure 6.** Model for the Confirmatory Factor Analysis of MTFM



## Qualitative Results

In the qualitative analysis, we closely examined open-ended comments collected from Q5 (“In what new ways are your classmates helping you to learn and enjoy English in the last few weeks?”) in the Mid- and Post-surveys and Q19 (“Please describe any changes you have made during this semester in your behavior or attitudes toward your classmates. What influences do you think these changes may have had on your classmates, relationships in and out of class, and your English learning?”) in the Post-survey. Our aim was to explore the impact of Ideal Classmates Priming on students’ class engagement.

First, we will discuss the answers to Q5: “In what new ways are your classmates helping you to learn and enjoy English in the last few weeks?” Both groups made various comments in response to this question in the Mid- and Post-surveys. Through a comprehensive coding of all parts of the data, we identified that the comments were categorized into the following nine codes:

### **1. Trying to communicate in English (Not speaking Japanese) inside or outside the classroom**

e.g. “My classmates actively communicate with me and ask me a lot of questions. Even if you don’t know the answer to your question, it will help you in various ways.” (Student 178, Mid-survey in 2024)

### **2. Creating friendly atmosphere which promotes each other’s English communication**

e.g. “My classmates react to what I said. They laughed and nod.” (Student 163, Post-survey in 2018)

### **3. Support completing class activities**

e.g. “My classmates help me to explain what to do in class activity.” (Student 119, Mid-survey in 2018)

### **4. Teaching English (even when not directly related to task) in or out of class**

e.g. “They helped me with the parts that I didn’t understand in translation, and they thought about how to make sentences together.” (Student 311, Post-survey in 2024)

## **5. Metacognitive suggestions or advice for homework and tests**

e.g. “We form small groups to work on English assignments and practice exercises together, deepening our understanding.” (Student 129, Post-survey in 2024)

## **6. Sharing information/ideas with me (in English)**

e.g. “A friend of mine who listens to *Bilingual News* told me about some interesting stories from around the world. The show doesn’t just cover politics or economics—it also features fascinating research being done at American universities and includes interviews with researchers. I found it really engaging, so ever since it was recommended to me, I’ve started listening to *Bilingual News* instead of music.” (Student 158, Post-survey in 2018)

## **7. Inspiring me**

e.g. “When we practice reading aloud, my classmates say, ‘your pronunciation is very good!’ It becomes my motivation.” (Student 17, Mid-survey in 2024)

## **8. Not having much support from my classmates**

e.g. “I think they don’t help me.” (Student 128, Post-survey in 2018)

## **9. Others (positive comments but not specific)**

e.g. “Yes, they will help me.” (Student 233, Post-survey in 2024)

Tables 5 and 6 summarize the coding results. Table 5 compares the Mid- and Post-Q5 coding results between the pre- and post-pandemic groups, whereas Table 6 presents a within-group comparison of each group’s Mid- and Post-Q5 responses. The findings from these coding results indicate that students in both groups received various types of support from their classmates during class engagement. We referred to these types of class engagement as Prosocial Peer-Learning Support (PPLS) Engagement in our past studies (Fukuda et al., 2021, 2022). Content-wise, only the comments grouped under Code 8 (“Not having much support from classmates”) were negative, while those grouped under the other codes were positive.

As previously noted, Table 5 provides a detailed comparison of the types of PPLS Engagement observed among students in the pre- and post-pandemic groups.

Compared to the pre-pandemic student group, the post-pandemic student group showed less engagement in “1. trying to communicate in English (not speaking Japanese) inside or outside the classroom” (Mid-survey: -12.29% / Post-survey: -13.82%) and “2. creating a friendly atmosphere which promotes each other’s English communication” (Mid-survey: -3.91% / Post-survey: -1.24%) at both the middle and end of the semester. The post-pandemic group, however, appeared to be more active in other types of PPLS Engagement, such as:

- 3. Support completing class activities (Mid-survey: +16.34% / Post-survey: +12.14%)
- 4. Teaching English (even when not directly related to task) in or out of class (Mid-survey: +2.71% / Post-survey: +2.79%)
- 6. Sharing information/ideas with me (in English) (Mid-survey: +2.36% / Post-survey: +1.13%)
- 7. Inspiring me (Mid-survey: +0.13% / Post-survey: +0.39%)

Although the post-pandemic student group was less active in communicating in English or creating a friendly atmosphere, they were more active in supporting-, teaching-, sharing-, and inspiring-oriented PPLS Engagement or acts during their English learning throughout the semester. This result may be attributed to the post-pandemic student group’s limited opportunities for face-to-face communication in physical classroom settings, such as maintaining social distance from other students and desks, being required to wear masks that covered their mouths and noses, and being encouraged to avoid active conversations with peers both inside and outside of the classroom, which were constraints commonly found in other settings (e.g., Maqableh & Alia, 2021). Consequently, the post-pandemic group experienced more opportunities for helping each other in different ways and collaborating online, such as turning off face cameras and working with other students through online platforms, bulletin boards, or workspaces.

**Table 5.** Comparison of Before and After COVID-19 Student Groups' Results for Mid & Post-Q5: "In what new ways are your classmates helping you to learn and enjoy English in the last few weeks?"

		Positive	Positive	Positive	Positive	Positive	Positive	Positive	Negative	Positive	
		1. Trying to communicate in English (Not speaking Japanese) inside or outside the classroom	2. Creating friendly atmosphere which promotes each other's English communication	3. Support completing class activities	4. Teaching English (even when not directly related to task) in or out of class	5. Metacognitive suggestions or advice for homework and tests	6. Sharing information/idea as with me (in English)	7. Inspiring me	8. Not having much support from my classmates	9. Others (positive comments but not specific)	
<b>Mid-survey</b>											
① Ideal Classmate Priming Group Before COVID-19 (2018)	<i>n</i>	37	44	6	21	4	9	1	1	7	130
	%	28.46	33.85	4.62	16.15	3.08	6.92	0.77	0.77	5.38	100.00
② Ideal Classmate Priming Group After COVID-19 (2024)	<i>n</i>	54	100	70	63	11	31	3	2	0	334
	%	16.17	29.94	20.96	18.86	3.29	9.28	0.90	0.60	0.00	100.00
Diff. of % between the two groups ( ② minus ① )		-12.29	-3.91	+16.34	+2.71	+0.21	+2.36	+0.13	+0.17	-5.38	
<b>Post-survey</b>											
① Ideal Classmate Priming Group Before COVID-19 (2018)	<i>n</i>	43	45	8	21	9	6	0	4	3	139
	%	30.94	32.37	5.76	15.11	6.47	4.32	0.00	2.88	2.16	100.00
② Ideal Classmate Priming Group After COVID-19 (2024)	<i>n</i>	44	80	46	46	9	14	1	9	8	257
	%	17.12	31.13	17.90	17.90	3.50	5.45	0.39	3.50	3.11	100.00
Diff. of % between the two groups ( ② minus ① )		-13.82	-1.24	+12.14	+2.79	-2.97	+1.13	+0.39	-0.62	+0.95	

Although the post-pandemic student group demonstrated lower levels of face-to-face English communication and efforts to create a friendly atmosphere compared to the pre-pandemic group, a comparison of each group's Mid- and Post-survey results (see Table 6) revealed an increase in the post-pandemic students' reports of communication- and friendship-oriented PPLS Engagement over the course of the semester. This increase is reflected in the percentage change from Mid-Q5 to Post-Q5: (1) trying to communicate in English [not speaking Japanese] inside or outside the classroom (+0.95), and (2) creating a friendly atmosphere that promotes each other's English communication (+1.19), although reports of other supporting-, teaching-, sharing-, inspiring-oriented PPLS Engagement decreased over the semester. These findings suggest that even post-pandemic students, who are assumed to have had limited face-to-face communication and friend-making experiences in physical classroom settings, can adapt to and increase their communication and friendship-oriented PPLS Engagement while taking English classes and learning together. The

rise in these engagement rates may also have been strengthened by Ideal Classmates Priming.

**Table 6.** Changes in Q5 Results Over the Semester for Before and After COVID-19 Student Groups

		Positive	Positive	Positive	Positive	Positive	Positive	Positive	Negative	Positive	
		1. Trying to communicate English (Not speaking Japanese) inside or outside the classroom	2. Creating friendly atmosphere which promotes each other's English communication	3. Support completing class activities	4. Teaching English (even when not directly related to task) in or out of class	5. Metacognitive suggestions or advice for homework and tests	6. Sharing information/idea as with me (in English)	7. Inspiring me	8. Not having much support from my classmates	9. Others (positive comments but not specific)	
<b>① Ideal Classmate Priming Group Before COVID-19 (2018)</b>											
Mid-Q5	n	37	44	6	21	4	9	1	1	7	130
	%	28.46	33.85	4.62	16.15	3.08	6.92	0.77	0.77	5.38	100.00
Post-Q5	n	43	45	8	21	9	6	0	4	3	139
	%	30.94	32.37	5.76	15.11	6.47	4.32	0.00	2.88	2.16	100.00
Diff. of % between the two survey results ( Post-Q5 minus Mid-Q5 )		+2.47	-1.47	+1.14	-1.05	+3.40	-2.61	-0.77	+2.11	-3.23	
<b>② Ideal Classmate Priming Group After COVID-19 (2024)</b>											
Mid-Q5	n	54	100	70	63	11	31	3	2	0	334
	%	16.17	29.94	20.96	18.86	3.29	9.28	0.90	0.60	0.00	100.00
Post-Q5	n	44	80	46	46	9	14	1	9	8	257
	%	17.12	31.13	17.90	17.90	3.50	5.45	0.39	3.50	3.11	100.00
Diff. of % between the two survey results ( Post-Q5 minus Mid-Q5 )		<b>+0.95</b>	<b>+1.19</b>	<b>-3.06</b>	<b>-0.96</b>	<b>+0.21</b>	<b>-3.83</b>	<b>-0.51</b>	<b>+2.90</b>	<b>+3.11</b>	

Next are the findings on Post-Q19: “Please describe any changes you have made during this semester in your behavior or attitudes toward your classmates. What influences do you think these changes may have had on your classmates, relationships in and out of class, and your English learning?” In response to this question, students from each group reported experiencing various types of changes over the semester (see Table 7).

Three notable points emerged. First, among the different types of changes, six new codes were identified exclusively in the post-pandemic student group’s comments—changes that were not observed in the pre-pandemic student group:

- **New Code 1:** I became better able to focus on studying/learning English.

- **New Code 2:** I became more comfortable speaking English with my friends in class.
- **New Code 3:** I became more active in class activities, including group activities and discussions.
- **New Code 4:** My general communication skills improved.
- **New Code 5:** My presentation skills improved.
- **New Code 6:** I started talking with my classmates outside the classroom.

Second, the open-ended comments from both student groups revealed a variety of changes they experienced over the semester. These changes were grouped into twenty-one codes. Further analysis showed that these twenty-one codes could be categorized into eight overarching themes, which more clearly illustrate the areas of change:

- ① Changes in Classroom Environment and Relationships with Classmates
- ② Changes in Learning Motivation and Psychological State
- ③ Changes in English Use and Behavior
- ④ Changes in Skills
- ⑤ Changes in Perception of English
- ⑥ Changes in Learning Activities and Relationships Outside the Classroom
- ⑦ No Change (in my/our behaviors or English)
- ⑧ Others (positive comments but not specific)

Lastly, a closer examination of the number of semantic segments grouped under these categories revealed that Ideal Classmate Priming appeared to have a more positive impact on the post-pandemic student group compared to the pre-pandemic group in five areas:

- ② Changes in Learning Motivation and Psychological State (+3.20)
- ③ Changes in English Use and Behavior (+0.65)
- ④ Changes in Skills (+11.10)
- ⑥ Changes in Learning Activities and Relationships Outside the Classroom (+0.89)
- ⑦ No Change (in my/our behaviors or English) (+5.80)

However, the post-pandemic student group showed less positive impacts in the following areas compared to the pre-pandemic group:

- ① Changes in Classroom Environment and Relationships with Classmates (-6.31)
- ⑤ Changes in Perception of English (-1.72)
- ⑧ Others (positive comments but not specific) (-2.01)

The most significant negative rate was observed in ① Changes in Classroom Environment and Relationships with Classmates, primarily due to lower rates in two specific types of changes:

- 1. Opportunities for communicating in English increased within the classroom / My classmates spoke English more actively (-1.62)
- 3. We got more along with each other / Friendly atmosphere increased within the classroom (-4.96)

These two types of changes are related to communication- and friendship-oriented PPLS Engagement. In sum, the lower rates for these changes can be attributed to the post-pandemic students' limited experiences with face-to-face communication and in-person classroom interactions during the pandemic period.

**Table 7. Comparison of Before and After the COVID-19 Pandemic (2018 vs. 2024) for Post-Q19**  
 “Please describe any changes you have made during this semester in your behavior or attitudes toward your classmates. What influences do you think these changes may have had on your classmates, relationships in and out of class, and your English learning?”

Categories	Positive or negative change	Types of Change	A. Ideal Classmate Priming Group Before COVID-19 (2018) (Post Q19)		B. Ideal Classmate Priming Group After COVID-19 (2024) (Post Q19)		Diff. of % between the two groups: B – A (*A– B for the negative type of change)
			n	%	n	%	
① Changes in Classroom Environment and Relationships with Classmates	Positive	1. Opportunities of communicating in English increased within the classroom / My classmates speak English more actively	13	8.72	26	7.10	-1.62
	Negative	2. Less opportunities of speaking English	3	2.01	2	0.55	+1.46
	Positive	3. We got more along with each other / Friendly atmosphere increased within the classroom	31	20.81	58	15.85	-4.96
	Positive	4. Students / I became more supportive.	6	4.03	20	5.46	+1.43
		4-1. My classmates supported me in speaking English more.	(3)		(5)		
		4-2. We supported each other in group work/discussions (to achieve higher scores).	(0)		(4)		
		4-3. My classmates taught me, or I taught my classmates, what we did not understand in English learning.	(2)		(7)		
		4-4. I started working more often with my classmates on English assignments.	(0)		(3)		
	Positive	5. I was Inspired by my classmates.	2	1.34	6	1.64	+0.30
		Total	55	36.91	112	30.60	-6.31
② Changes in Learning Motivation and Psychological State	Positive	6. My English-learning motivation was strengthened	9	6.04	20	5.46	-0.58
	Negative	7. I was demotivated	3	2.01	2	0.55	+1.46
	Positive	New code 1. I became better able to focus on studying/learning English.	0	0.00	2	0.55	+0.55
	Positive	8. I became able to enjoy learning or speaking English	12	8.05	26	7.10	-0.95
	Positive	New code 2. I became more comfortable speaking English with my friends in class.	0	0.00	15	4.10	+4.10
	Positive	9. I became more confident in speaking English.	3	2.01	13	3.55	+1.54
		Total	27	18.11	78	21.34	+3.20
③ Changes in English Use and Behavior	Positive	10. I became more active in communicating in English with others	32	21.48	76	20.77	-0.71
	Positive	New code 3. I became more active in class activities including group activities and group discussions.	0	0.00	5	1.37	+1.37
		Total	32	21.48	81	22.13	+0.65
④ Changes in Skills	Positive	New code 4. My general communication skills have improved.	0	0.00	2	0.55	+0.55
	Positive	11. My English (communication) skills improved.	3	2.01	44	12.02	+10.01
	Positive	New code 5. My presentation skills improved.	0	0.00	2	0.55	+0.55
		Total	3	2.01	48	13.11	+11.10
⑤ Changes in Perception of English	Positive	12. I had a different perception towards English (-using) or new insights.	5	3.36	6	1.64	-1.72
		Total	5	3.36	6	1.64	-1.72
⑥ Changes in Learning Activities and Relationships Outside the Classroom	Positive	New code 6. I started talking with my classmates outside the classroom.	0	0.00	6	1.64	+1.64
	Negative	13. I became more active in learning or using English outside the classroom (with my classmates).	6	4.03	12	3.28	-0.75
		Total	6	4.03	18	4.92	+0.89
⑦ No Change (in my or our behaviors / English)	Negative	14. No / Not much change (in my or our behaviors / English).	18	12.08	23	6.28	+5.80
		Total	18	12.08	23	6.28	+5.80
⑧ Others (positive comments but not specific)	Positive	15. Others (positive comments but not specific)	3	2.01	0	0.00	-2.01
		Total	3	2.01	0	0.00	-2.01

## Merging of Quantitative Results and Qualitative Results

Following Creswell’s (2014) suggestion that a table be presented with both quantitative and qualitative results in a mixed methods research, Table 8 gives a side-by-side summary of the findings of the present study, showing the similarities and differences between the before and after COVID-19 groups.

**Table 8.** *Summaries of Quantitative Results and Qualitative Results*

	<b>Quantitative Results</b>	<b>Qualitative Results</b>
<b>Similarities between Groups</b>	<ul style="list-style-type: none"> <li>- The general motivation levels, as well each of the four temporal motivations (past, present in-class, present out-of-class, and future), measured with the MFTM questionnaire, went up from the beginning to the end of the semester.</li> <li>- Significant correlations among all temporal motivations were observed.</li> </ul>	<ul style="list-style-type: none"> <li>- After receiving the Ideal Classmates Priming (ICP) treatment, both student groups (before and after COVID-19) demonstrated the same types of PPLS Engagement throughout the semester.</li> <li>- Following the ICP treatment, both groups experienced similar categories of change over the course of the semester.</li> </ul>
<b>Differences between Groups</b>	<ul style="list-style-type: none"> <li>- The motivation levels in terms of past became higher after COVID-19, while the levels in other mind-time frames showed no significant increase.</li> <li>- Correlations involving in-class present motivation decreased from before to after COVID-19.</li> <li>- Correlations involving future motivation increased from before to after COVID-19.</li> </ul>	<ul style="list-style-type: none"> <li>- Students reported greater difficulty engaging in TL-mediated communication and creating a friendly atmosphere with their classmates after the onset of COVID-19.</li> <li>- New types of PPLS Engagement emerged among post-pandemic students making new categories of personal change, which were not observed in the pre-pandemic group.</li> <li>- The ICP treatment influenced each category of personal change to varying degrees between the two student groups (before and after COVID-19).</li> </ul>

## DISCUSSION

### Discussion of Quantitative Results

In the correlational analyses, it was found that the relationships among four temporal motivations (past, in-class present, out-of-class present, and future) were all significant

both before and after COVID-19. In other words, the students' perceptions of their language motivation in terms of different timeframes appear to be meaningfully interrelated within the mindsets of most of the individual participants. This suggests that students' motivational mindsets can be understood through their own lens of themselves in relation to learning and using the L2 over time.

However, the relationships between different temporal factors did not appear the same after COVID-19 (2024) as before COVID-19 (2017 and 2018). As observed in Figure 4 and Figure 5, the correlations related to in-class present motivation either remained the same or decreased. And the relationships related to future either stayed the same or increased. Although we should be cautious in our interpretations because the participants in the two datasets differed from each other and the data were collected in different institutions, these two trends can be discussed from the perspective of COVID-19 pandemic and its influence on language learning as follows.

First, we should remember that the participants in the current study from 2024 had spent a few years of their high school or the first half of their university online, without much face-to-face interactions with their teachers or other students. As seen in the descriptive statistics in Table 3, their perceptions of past language learning became more positive, but the connections between their present language learning in class and future remained almost the same. We think this may stem from their current mode of taking classes being different from their past practices. More precisely, the participants in 2024 had taken language classes mostly online in the past, but they were taking classes face to face at the time of data collection. The differences in the modes of classes may have contributed to the changes in the relationships.

What is also noticeable in Figure 4 and Figure 5 is that the relationships between future and other time frames were more closely related in 2024 than before the pandemic. In other words, after the pandemic, university students connected their future use of English with motivations in other mind-time frames. As seen in the descriptive statistics in Table 3 and Table 4, motivational *levels* of their future language learning and use remained almost the same as before COVID-19, but the *connections*

between future and other factors in the mind-time frames increased. It might be because the students in 2024 felt that their studies in the past and in the present would more directly lead to their future success.

### **Discussion of Qualitative Results**

Regarding the qualitative data analysis, the adverse effects of students' loneliness on their learning during the COVID-19 pandemic—previously identified in past studies (Gadosey et al., 2022; Hu et al., 2024)—appeared to be reflected in the post-pandemic student group's relatively lower levels of communication with classmates and greater difficulty in forming a friendly atmosphere, compared to the pre-pandemic student group. However, the post-pandemic students showed notable strengths in supporting and inspiring their classmates by the end of the semester.

Overall, we also observed that indicators related to communication and peer engagement improved over the course of the semester, particularly because of the Ideal Classmate Priming treatment and increased opportunities for face-to-face communication and collaboration. These qualitative findings suggest that the Ideal Classmates Priming treatment, combined with in-person interaction and group work, may help restore key aspects of prosocial engagement attitudes and skills that were likely diminished during the pandemic.

### **Answers to the Research Questions**

The research questions are as follows. How does the Ideal Classmates Priming intervention affect individual-level English-learning motivations and group-level prosocial engagement before and after COVID-19? And how do its effects bring communication, comfort, and human connection within and throughout the social ecology of each classroom?

The Ideal Classmates Priming intervention positively influenced both individual-level English-learning motivations and group-level prosocial engagement before and after COVID-19, although with notable differences across time. Quantitatively, motivation increased from the beginning to the end of the semester in all cohorts, with significant correlations among the four factors within the Mind-Time Frames of Motivation, but post-COVID-19 data showed weakened connections involving in-class present motivation and strengthened connections with future motivation—likely reflecting shifts in learning environments and student perspectives. Qualitatively, students consistently reported enhanced communication and peer support due to the Ideal Classmates Priming; yet post-pandemic participants faced more difficulty with social connection early on, likely due to prior remote learning and social isolation. Nonetheless, these students gradually regained comfort and engagement through face-to-face interaction and group work, suggesting that Ideal Classmates Priming fostered communication, comfort, and human connection within the classroom’s social ecology, helping to rebuild peer-learning support systems disrupted by the pandemic. Both quantitative and qualitative results found an outward branching growth of social engagement among the participating students, indicating that the Ideal Classmates Priming intervention tapped into the nurturing roots of their group dynamics.

## CONCLUSION

This study has certain limitations. As previously discussed, survey items were presented consecutively within their respective constructs, such as past, present, and future self images. Although this format was intended to enhance clarity for the participants when answering, it may be argued that items from different constructs should be interspersed to provide greater construct validity. Additionally, it should be noted that this study compared students who never experienced shut-down conditions due to COVID-19 with those who had. Therefore, this entails an obvious limitation as it compares two different groups of students rather than one group of students before and after COVID-19.

Still, the findings from this study suggest that Ideal Classmates Priming remains an effective group dynamics intervention in post-pandemic English classrooms, though its mechanisms may have shifted due to the psychosocial and educational disruptions caused by COVID-19. While the in-class present motivations appeared weakened in their relationships with other mind-time frames, future-oriented motivations became more integrated with students' perceptions of past and present learning experiences. Qualitative data further revealed that although post-pandemic students initially struggled with classroom communication and interpersonal connections, their prosocial engagement and peer support skills noticeably improved through Ideal Classmates Priming and related activities as well as renewed opportunities for face-to-face interaction. These results highlight the enduring relevance of Ideal Classmates Priming in rebuilding classroom community, bolstering learner resilience, and fostering prosocial motivation in the wake of collective trauma.

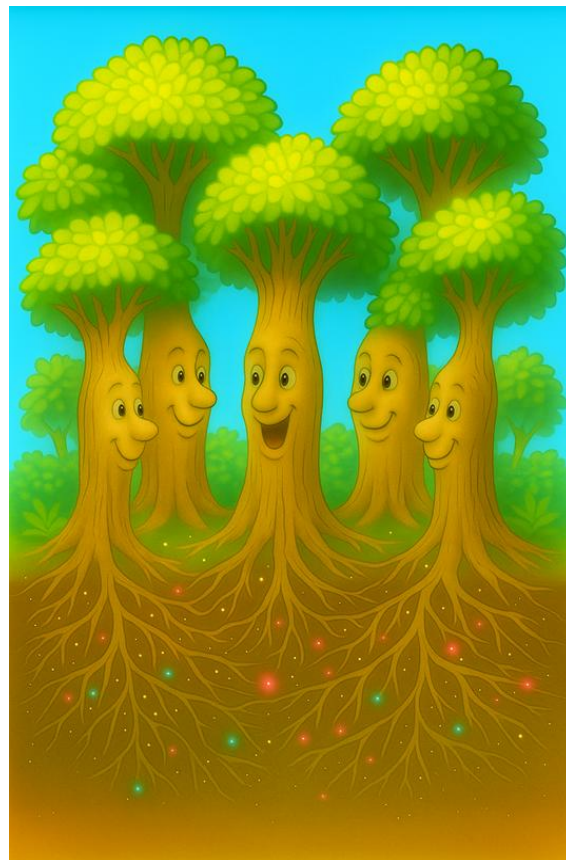
To illustrate these group dynamics, consider the way trees live in cooperative harmony, communicating with each other, helping each other both overstory (Powers, 2018) and underground; tree leaves by exchanging information through releasing volatile compounds (King, 2020), and tree roots by exchanging nutrients through fungal mycorrhizal networks. These enriching pathways facilitate the development of each tree, form a resilient community of shared support systems across phenotypes and species, and grow a healthy forest ecosystem (Simard et al., 2012). Similarly, students in this study cooperatively created a harmonious peer-learning support system by sharing ideas on how to create a rich climate for the prosocial learning space, expressing their visions in the kind act of helping each other in every class, and extending their imagination to future days when they communicate in English in real life.

Ideal Classmates Priming and the related activities appear to have connected students through the networks of the vision of the ideal class as if to form a new organism of a prosocial, resilient community, bouncing back from the traumatic experience of isolation: "Connection heals" (Powers, 2018, p. 470). The spirit of

helping each other and an act of kindness do not stop there but spread their roots in every direction, and new trees of kindness emerge (Faber, 1859). The hope is that Ideal Classmates Priming helps students continue to spread their spirit of prosocial kindness outside the classroom, further extending the network of peer-support systems in their everyday situations.

The application of Ideal Classmates Priming and socially oriented task-based communicative activities in classrooms across the world, combined with a short lecture on how trees talk to each other, could potentially lead the whole of humanity toward nature-loving, empathetic, cooperative beings; as shown in the grove of trees in Figure 7 (OpenAI, 2025), each classroom group functions as a hub to transmit the nutritious spirit of harmony, caring, and mutual support spreading across the institution and beyond.

**Figure 7.** *Forest-Inspired Visualization of Harmonious Peer-Supported Classroom Learning*



## Authors' Contributions

TF, YF, JF, and TM participated in the design of the study. TF, YF, and JF collected the data. TF, YF, and JF worked on data analysis. TF, YF, JF, YM, and TM were all involved in the writing of the manuscript. All the authors drafted the manuscript collaboratively. All the authors read and approved the final manuscript.

## Ethics Approval & Consent to Participate

This study was granted an exemption of review process by the Toyo University Ethics Review Committee in March 2024. All participants provided informed consent prior to enrollment and data collection in the study.

## Declaration of GenAI and AI-Assisted Technologies

In the preparation of this work, the authors used ChatGPT in order to create an image of trees (Figure 7) and some pictures in Figures 1 and 2. In addition, ChatGPT and Grammarly were used throughout the paper checking spelling and grammar; however, no generative AI was used to compose sentences. The authors take full responsibility for the content of the publication.

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