The Effect of Group Randomization Style on Motivation and Cohesion in Real-Time Zoom-Based Classes

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The Effect of Group Randomization Style on Motivation and Cohesion in Real-Time Zoom-Based Classes

Megumi Tsuchida

Elliot Patton

Abstract

In 2020, Zoom became a central part of many university faculty members' lives, and the Breakout Room became common central to many online courses. To date, very little research has been conducted on the efficacy of Breakout Rooms compared to face-to-face groups. Using a mixed-design approach, the researchers tested the effect of two different procedures of randomized group formation on group cohesion and motivation in online classes.

Keywords: Zoom-based classes, group randomization, motivation, cohesion, mixed-design approach

1. Introduction

In 2020, the novel coronavirus pandemic forced a complete reimagination of how education around the world was delivered. Teachers at all levels experienced unprecedented challenges due to the sudden shift in educational modality. Language educators who had created their entire classroom practice based around standing before a live audience of students were forced to adapt to online formats such as Zoom, Webex, and other applications originally designed for business meetings. Originally, the current study was designed as an action research project that would take place in physical classrooms. Due to the limitations imposed by the pandemic, the researchers were forced to modify it into a study of online learning. In a way, this forced change was beneficial, as it allowed an unexpected investigation into areas that, to this point, have not been explored extensively by a body of research that is heavily focused on face-to-face classrooms.

Specifically, this IRI grant-funded study focuses on two variables of interest to every

instructor—motivation and group cohesion—with emphasis on the effect of online discussion group formation style on those variables. This paper will briefly introduce the general concepts of group cohesion and motivation as well as the foundation for the randomization methods employed. The dual data gathering procedure (utilizing a between-subjects design for second language acquisition students and a within-subjects design for linguistics students) will be explained, and results will be presented along with recommendations for instructors based on the findings of this study.

2. Group Cohesion, Motivation, and Randomization

Group cohesion, a concept used interchangeably with the similar term *group cohesiveness*, emerged from the sociological field known as group dynamics (Dörnyei & Murphey, 2003). Briefly, it can be defined as an individual's perceived sense of belonging to a group with shared goals and interests. Mullen and Copper (1994) shared three main characteristics of a cohesive group that will be familiar to any educator; students hold a desire to belong to the group; students share a common commitment to the tasks assigned by the instructor; and students share a certain level of pride in belonging to the group. It is relevant to educators because a learning cohort that is perceived by its members as being cohesive carries the important benefit of greater group productivity (Evans & Dion, 1991) and higher motivation (Dörnyei & Murphey, 2003). A sense of group cohesion, particularly when certain norms are established, has positive benefits in areas ranging from education (Dörnyei and Ushioda, 2011) to athletics (Kim & Sugiyama, 1992).

Particular variables have been shown to have significant effects on both motivation and group cohesion. One well-studied teaching method that has been shown to affect motivation is task-based learning and teaching (TBLT), which focuses on providing students with authentic language and focusing the curriculum around tasks, many of which are completed in small groups (Nunan, 2004). The relationship between TBLT and motivation is well-documented (Dörnyei, 2001); just to cite recent examples, Pietri (2015) found that task-based learning had a positive effect on Thai learner's motivation to study English. Additionally, NamazianDost et al (2017) found that employing a task-based design in the classroom had a positive effect on the motivation of Iranian junior high school students, and that those more motivated students were able to achieve higher scores on grammar tests. Both of the researchers in the current study employed TBLT-based principles in the online group activities examined.

One question that has not been considered as heavily in the literature is how to form groups for task-based classrooms, and what, if any role, the formation method has on motivation and perceived group cohesion. In a study of online learners, Kuo et al (2015) found that creating groups based on the results of learning styles questionnaires (cf. Kolb, 1984) was successful in creating cohesive groups. On the other hand, Liljedahl (2015) found that visible *randomization* of groups within a classroom—wherein students know that the group in which they are being placed is random—had a strong positive effect on high school mathematics students' perception of a high level of group cohesion. Patton (2021) applied Liljedahl's findings to language learning, creating three randomization conditions: one in which students were not randomized, one in which they were randomized but not shown the technique, and one in which they were randomized using a highly visible technique. Students who were able to see the randomization conditions provided the highest ratings of class cohesiveness and comfort level in the classroom.

The current study, due to the limitations of the Zoom online meeting software application, did not incorporate non-randomized, student-selected groups as a type of control group. Instead, two randomization conditions—one in which students are made fully aware of the randomization process, and another in which students are not informed of the randomization process—will be compared, with motivation and group cohesion considered as dependent variables. Thus, the research question for the current study is whether knowledge of the randomization process preceding small-group task-based online classroom activities has an effect on the motivation and perceived cohesion of a group.

3. Method

The current study employed a mixed-design approach due to the unique opportunity to investigate two highly distinct types of courses, Introduction to Japanese Linguistics and first-year second language acquisition (SLA) courses.

3.1. Japanese Linguistics

One section of Introduction to Japanese Linguistics—henceforth known simply as "Japanese Linguistics"—was tested. Japanese Linguistics is an introductory course in Japanese linguistics. The main language used in the classroom is Japanese. The course consisted of a) group discussions in Zoom and b) on-demand lectures in the Fall 2020

semester due to the COVID-19 pandemic. The data were collected from 10 Zoom classes. 45 students registered in the semester at Kansai Gaidai University; 46% were first-year students and 36% were second-year students. Approximately 25-30 students were participants, and all attended the Zoom classes regularly.

The Japanese Linguistics course utilized a within-subjects design; The first five classes were conducted in the blind random condition, in which students did not know the specific method in which their Zoom Breakout Room members were determined. In effect, the randomization was not made apparent to the students in the blind-random (BR) condition. However, in the visible-random (VR) condition, the teacher showed "assign automatically," a function of Zoom Breakout Rooms, to be selected on the shared screen, stressing that the class was going to be divided randomly. The results of the grouping were also shown (i.e., the list of the Breakout Rooms and the participants' names). A midterm survey was administered at the conclusion of the blind-random condition courses, and the class shifted to the visible-random condition in which students were made explicitly aware of the randomization procedure. Lastly, the final survey was administered. The midterm survey and the final survey employed similar questions, with the main difference being that the final survey voiced the questions in a past-tense, reflective style.

3.2. SLA Courses

The specific SLA courses examined were entitled Introduction to Social Sciences and Effective Essay Writing; a total of four groups of first-year students were tested in the SLA courses. Introduction to Social Sciences is a communication-focused content-based course with emphases on vocabulary acquisition and reading skills, and Effective Essay Writing focuses primarily on academic writing. These courses will collectively be referred to as SLA courses rather than by their individual titles. 62 SLA students answered the survey. Of these, 29 were in classes that employed the visible-random condition, and 33 were in classes that employed the blind-random condition. 100% of SLA respondents were first-year students at Kansai Gaidai University, and all courses were conducted online via Zoom and on-demand instruction.

The four SLA classes were tested using a between-subjects design. These classes were divided into blind-random and visible-random conditions, and these conditions were maintained over the duration of the 10 Zoom Breakout Room sessions. One Social Sciences course and one Essay Writing course were assigned randomly to each condition. As the

group formation style remained consistent throughout the course, students in the SLA classrooms were only administered a survey at the conclusion of the 10th Zoom discussion activity. In the SLA classes, students in the blind-random condition were assigned using the "assign automatically" function of Zoom Breakout Rooms. Students in the visible-random condition, on the other hand, were shown the randomization process on the website Random.org. From here, students were allowed to enter their own Breakout Rooms based on the results they saw on the screen. Students in both conditions were given similar task-based activities involving writing and discussion that were pertinent to both courses.

3.3. Surveys

The surveys consisted of 12 items that were divided between items designed to measure motivation, group cohesion, and effectiveness of the randomization procedure. Surveys were administered online using the Google Forms application. All items asked students to provide answers on 7-point Likert scales in order to allow for ease of analysis. Students in both classes were given class time to complete the surveys, but participation was voluntary, and no further inducements (e.g., bonus points) were provided. As such, the response rate was approximately 65%. As the course types incorporated highly separate designs, results will be presented separately.

Following Patton's (2021) study that students in face-to-face classes who were in the visible-random condition reported a more positive classroom atmosphere than those in the blind-random condition, the researchers of the current study hypothesized that randomization condition would affect both motivation and group cohesion; namely, that students in visibly randomized groups would report higher levels of motivation and group cohesion.

4. Results

Data from the two surveys administered to the Japanese Linguistics students and the single survey administered to the SLA students were automatically entered into the Google Sheets spreadsheet software application via Google Forms. Analysis was conducted using the R statistical software package.

4.1. Japanese Linguistics

Data from the two surveys administered to the Japanese Linguistics class was

analyzed by separating the items into three categories: (1) motivation, (2) group cohesion, and (3) effectiveness of randomization. (3) was mainly done to collect information for future courses and was not analyzed as a variable in this study. Given the nature of the within-subjects design as well as the unequal sample sizes between the first and second surveys, a dependent samples T-test was used to analyze the results (tested at $p < .05$).

In order to make the scores clear, the mean scores (on a Likert scale of 7) will be listed. The mean scores and results of the T-tests can be seen in Table 1, below:

Table 1: Results for Japanese Linguistics course

Variable	Blind-random	Visible-random	T statistic	p (a < .05)
Motivation	$\bar{x}$ = 4.667 (s = 1.58)	$\bar{x}$ = 5.44 (s = 1.13)	-2.108	.039
Group cohesion	$\bar{x}$ = 3.892 (s = .755)	$\bar{x}$ = 4.28 (s = .650)	-2.051	.045

Table 1 shows that students rated their motivation level higher in the visible-random condition than in the blind-random condition ($p = .039$), and that the difference was statistically significant. Additionally, students also rated their level of group cohesion significantly higher in the visible-random condition ($p = .045$). From these data, we have evidence to suggest that students who experienced both conditions viewed the visibly randomized condition more favorably as it pertained to their motivation level and the perceived cohesion of the group.

4.2. SLA Courses

Again, data was divided among (1) motivation, (2) group cohesion, and (3) effectiveness of randomization. Due to the unequal group sizes, a two-tailed Welch T-test was employed. As the conditions were maintained throughout the course of the semester, samples were treated as independent and tested at $p < .05$.

Again, the mean results on a Likert scale of 7 are displayed in order to make the results more comprehensible. Results can be seen in Table 2, below:

Table 2: Results for SLA courses

Variable	Blind-random	Visible-random	T statistic	p (a < .05)
Motivation	$\bar{x}$ = 5.412 (s = 1.264)	$\bar{x}$ = 5.34 (s = 1.149)	-.400	.69
Group cohesion	$\bar{x}$ = 5.138 (s = 1.145)	$\bar{x}$ = 5.429 (s = .839)	-1.154	.125

We can see in the table that practically no difference in motivation level was reported between the blind-random and the visible-random groups. Additionally, although the reported level of group cohesion was higher in the visible-random group than in the blind-random group, the difference was not powerful enough to be considered significant. Thus, in the between-subjects portion of this study, the hypothesis that randomization method affects student motivation and perceived group cohesion cannot be confirmed.

5. Discussion

As mentioned in the introduction, the pandemic played a massive role in both the design and implementation of this study. The researchers had originally laid out a design suitable for face-to-face classes that, due to unforeseen circumstances, became an investigation into a facet of online education that will doubtless receive a lot of attention over the coming years. As such, we would like to present the potential findings we have while avoiding falling into the trap of extrapolating too heavily from a study that had to be reworked in order to fit rapidly changing circumstances.

The within-subjects investigation of the Japanese Linguistics course provides evidence suggesting that students who experience both randomization conditions will feel more motivated, and that the group has a more cohesive quality, when the instructor makes it clear that the group is completely random. This follows Liljedahl's (2015) findings; when the members of a group know that they might end up in a Breakout Room with any member of the class, it might increase the likelihood that they will be more open and ready to interact, even if the student is not a close friend or acquaintance. It is important to note here that Liljedahl's study, similar to the linguistics class surveyed here, took place in a content-centered course (mathematics). Thus, the visible randomization might be more effective in content classes than in skills classes, such as SLA. In order to corroborate this, a larger-scale follow-up study comparing skills courses and content courses would be necessary. Ideally,

given the trajectory of the pandemic at the time of writing, such a study could take place in a classroom in line with the original research design.

As opposed to the linguistics courses, at least within the parameters of the current study, it is not possible to state that visible randomization had a strong effect on motivation and cohesion in the SLA courses. As mentioned in the previous paragraph, this might be due to the focus of the course on skills acquisition over content-centered instruction. However, as Patton's (2021) study also took place in skills-based courses and found strong preferences for the visible-random condition, it is not possible to state this conclusively, and further study needs to be undertaken. Importantly, both groups in the SLA courses reported high levels of motivation and group cohesion as related to the formation of groups in the class, but it cannot be said for certain whether this is related to randomization of small, task-based groups, or rather to students simply enjoying small-group tasks regardless of membership. In addition, other factors, such as first-year students' overall high level of motivation to study English at the university level, as well as students' intrinsic motivation to form cohesive groups, must be considered as potential cofactors. Further research would need to incorporate a type of control group, but for the purposes of this study, it was assumed that randomization was a beneficial practice that should be extended to all students.

6. Conclusion

In summary, this study examined whether the knowledge of randomized group formation had an impact on student motivation and group cohesion in online class settings. The within-subjects investigation in Japanese Linguistics revealed that motivation and group cohesion were higher in the visible-random condition and that the results were statistically significant. From this, the authors suggest that visible randomization has a positive effect on motivation and group cohesion when participants have the opportunity to experience both conditions. SLA courses, on the other hand, employed the between-subjects design, and both the visible-random and the blind-random conditions showed high levels of motivation and group cohesion, albeit with no significant difference. With a non-randomized group, the effect may be more pronounced. Hence, the next step of the study would be conducting the study with three different conditions, following Patton's (2021) study, and also ascertaining whether or not the mean differences found in this study were related to the content-centered nature of the linguistics course. Also, incorporating student interviews would be worthwhile,

as these would provide a deeper understanding of students' perceptions of the group than a brief questionnaire. In contrast to Liljedahl's (2015) study, the participants in the present study had no prior contact with classmates before the semester began. Qualitative research in such a context is still unexplored. Accordingly, interview data may shed light on how students build a new relationship with classmates and how they perceive their motivation, group cohesion, and the effect of randomization throughout the semester.

The present study was originally designed for physical classroom settings. However, due to the COVID-19 pandemic, the researchers, like so many educators, modified the course of the research plan and implemented it in online class settings. Even though the space of learning and teaching changed from physical classrooms to online classes, motivation and group cohesion may still be of interest to many educators. Given the results, the researchers of the current study recommend that educators utilize the randomization methods in group tasks in order to enhance students' motivation and group cohesion in their classes.

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（つちだ・めぐみ　外国語学部講師）

（Elliot Patton　City University of Hong Kong）