Research Article

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Individual perceptions of group work environment, motivation, and achievement

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Abstract: The learning environment is an important factor in both learner motivation and learning outcomes. As second language (L2) classrooms frequently employ group work, clarifying the environmental effects in group work settings is important to improve pedagogical application in this context. This study examined the cross-sectional structural relations among the factors of work environment, motivation, and learning outcomes for L2 learners at various English proficiency levels. Japanese university students (N = 200) were engaged in group work activities for one semester. Self-reported data on motivation, the group work environment, course grades, and standardized English proficiency test scores were analyzed using path and moderation models. Results revealed that the group work environment significantly affected motivation. Learners who perceived stronger group cohesion and greater group engagement were likely to find learning more enjoyable and were less prone to amotivation. However, those perceiving weaker group cohesion and lesser group engagement tended to display the opposite motivational pattern. Further, this environmental effect on motivation was evident regardless of English proficiency level. Results further showed that motivation was significantly associated with achievement, thereby indicating that the group work environment indirectly influenced learning outcomes via motivation.

Keywords: group dynamics; group work; individual differences; learning environment; motivation

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1 Introduction

The learning environment is an important factor in both learner motivation and learning outcomes. A positive classroom environment enhances learner motivation, whereas a negative one generally decreases that motivation (Chang 2010). As second language (L2) classrooms frequently employ group work, clarifying the environmental effects in group work settings is important to improve pedagogical application in this context. Among factors that may compose the work environment, this study focused on perceived cohesion and engagement of group members in group work settings. Although group cohesion and perceived engagement of peers are well acknowledged to have prominent impacts on L2 learning motivation in pedagogical contexts (Fukada et al. 2020; Murphey et al. 2014), how they operate in combination in group work settings is yet to be investigated. The comparative effects of these factors in group work also remain unclear. Furthermore, as L2 proficiency significantly influences learner motivation (Gao et al. 2007), the environmental effect may also vary according to learner proficiency. However, little is known about the moderating effects of L2 proficiency on the association between environments and motivation during group work. This study examined the structural relations among the factors of work environment (comprising group cohesion and group engagement), motivation, and learning outcomes for L2 learners at various English proficiency levels.

1.1 Social environmental influences on L2 learning motivation

Foreign language classrooms are inherently social places in which learners interact in pairs, groups, and class-level activities. Collaboration through small group or pair work has positive effects on L2 learning, such as L2 learners’ engagement, learning outcomes, and affective reactions (Storch 2005, 2007). However, the effectiveness of such interactions may vary according to social environmental factors such as who students work with and where they learn. Although motivated peer engagement generally has positive effects on fellow L2 learners’ motivation levels (Chang 2010; Murphey et al. 2014; Tanaka 2017a), it loses effectiveness in a demotivating learning environment (Tanaka 2017b). This suggests that peers significantly affect fellow learners’ motivation levels, though these effects may vary according to the context in which learners operate. The learning environment is thus a crucial factor for understanding how L2 learning motivation evolves. This study focused on the socio-contextual effects of the group work setting on motivation and learning.
The importance of the social context is widely acknowledged in current L2 motivation literature. For instance, Dörnyei and Murphey (2003) emphasized the importance of group dynamics in determining both the nature of the classroom environment and learning effectiveness. Fukada et al. (2020) reviewed studies on group dynamics in L2 learning and contended its significance in understanding the roles of individual difference variables including motivation in L2 learning. Ushioda (2003) also argued that motivation is a socially mediated process in which supportive interpersonal interactions and optimal learning environments are necessary to achieve positive growth.

The salience of socio-contextual effects has also been evidenced in empirical studies on L2 learning motivation. For example, the social climate in a classroom (comprising teachers’ academic and emotional support, and mutual respect within the classroom) has been revealed to influence individual difference variables and L2 achievement (Joe et al. 2017). The normative classroom environment (student perceptions of their classmates’ career aspirations) has been demonstrated to affect individual learners’ motivations and L2 proficiency gains (Kozaki and Ross 2011; Sasaki et al. 2017). A negative classroom environment was also identified as one of the major demotivating factors (Kikuchi 2011). In the scope of group work settings, various aspects of the properties of group work have been reported to affect L2 learning, including group vision (Dörnyei and Kubanyiova 2014), directed motivational currents of the group (Dörnyei et al. 2016), collective-efficacy (Leeming 2020), emergent leadership (Leeming 2019, 2021), classroom atmosphere (Eddy-U 2015), and group work dynamics including both verbal and nonverbal elements (Poupore 2016, 2018). Among such group properties, this study aimed to shed light on the perceived cohesion and engagement of group members as contextual factors.

1.2 Group cohesion as a contextual factor

The concept of group cohesion is considered to be one of the key constructs, and has been one of the most frequently investigated constructs in the discipline of group dynamics (Pescosolido and Saavedra 2012). Research has demonstrated both positive and negative consequences of group cohesion (Forsyth 2014; Pescosolido and Saavedra 2012). The positive effects of group cohesion include enhanced satisfaction, commitment, and group productivity (Forsyth 2014), with multiple meta-analyses in the field of psychology demonstrating that group cohesion has moderately positive impacts on group performance (Greer 2012). Research on cooperative learning has also revealed that the cohesiveness of the group substantially mediates the effects of cooperative learning on achievement.
outcomes (Slavin 2014). The negative effects of group cohesion include conformity to undesirable group norms. As group cohesion tends to reinforce a commitment to the group norms, group cohesion may result in low performance quality, when the group norms stress such a goal (Forsyth 2014). Further, diligent workers may meet with resistance in a cohesive group when their value of high performance is conflict with the opposite value held by the group (Pescosolido and Saavedra 2012). Although group cohesion may thus yield undesirable consequences, research on various kinds of groups (for example, sports teams, military squads, and work groups in business settings) has generally confirmed the positive effects of group cohesion on performance (Forsyth 2014).

While extensive research has been carried out on group cohesion in the discipline of psychology, the roles of group cohesion in L2 learning have been understudied in relation to motivation (Dörnyei and Muir 2019; Fukada et al. 2020). However, as Dörnyei and Murphey (2003) emphasized the central role of group dynamics in promoting a positive classroom environment and learning performance, the positive effects of group cohesion have also been evidenced in the field of L2 learning motivation. To illustrate, group cohesion was correlated positively with L2 learning motivation and students’ evaluations of the teacher and course (Clément et al. 1994) and self-efficacy and autonomous behaviors in L2 learning (Chang 2010). It also tended to promote collective efficacy (Leeming 2020). Although group cohesion generally has a positive effect on learner motivation, research has also documented a counterproductive finding. Dörnyei and Kormos (2000) investigated how social and individual variables related to L2 learner engagement during oral tasks and demonstrated that group cohesiveness was negatively correlated with the number of words produced during these tasks among low-task attitude subsamples. As mentioned earlier, when a group places a value on low quality performance, group cohesion can be counterproductive (Pescosolido and Saavedra 2012). This finding would exemplify how a high level of group cohesion can lead to unproductivity and dysfuctionality depending on the other elements of the group environment. This study employed the construct of group cohesion for group work environment, as it is one of the most important concepts to understand group dynamics (Forsyth 2014; Pescosolido and Saavedra 2012).

1.3 Group engagement as a contextual factor

Students are generally sensitive to their classmates’ engagement and disengagement in L2 learning. Such perceptions of peer engagement tend to influence an individual learner’s motivation and learning in L2 learning classrooms. In general,
perceived motivated peer engagement has a favorable influence on individual learner motivation. For example, perceived classmates’ behaviors and engagement was strongly correlated with perceived own behaviors and the engagement of individual learners in conversation-based English as a foreign language (EFL) classrooms (Murphey et al. 2014). Perceived peer engagement in extensive reading predicted individual learners’ motivation (Tanaka 2017a). Groupmates’ participation also affected other members’ willingness to communicate during the group task (Eddy-U 2015). Further, associating with more motivated classmates was identified as one of the determinants of individual learner motivation (Chang 2010).

Despite the reported positive effects of perceived motivated peer engagement, the effects do not necessarily appear in all the contexts. For example, Tanaka (2017b) has demonstrated that perceived peer engagement in vocabulary learning does not have particularly desirable impacts on classmates’ motivation in a rather demotivating learning environments where students are generally not enjoying learning. Rather, perceived peer disengagement had the power to debilitate motivation in such a context. Overall, perception of peer engagement and disengagement appear to play a prominent role in enhancing and dampening motivation, but the dominant effects may vary according to context: whether learners are generally motivated or demotivated. As peer engagement is required to promote satisfactory group work, it is assumed to affect learners’ motivation to work within the group. This study operationalized perceptions of group members’ engagement as a contextual factor, and probed how such group engagement contributes to the motivation of group members engaging in group work.

1.4 Motivation variables of this study

Self-determination theory (SDT; Ryan and Deci 2017) classifies motivation into three broad types: intrinsic, extrinsic, and amotivation. Intrinsic motivation refers to motivation derived from within the self (for example, the pleasurable feeling that an action produces); extrinsic motivation refers to motivation regulated by external factors such as rewards and punishment; and amotivation represents a lack of motivation to act. As learners with high amotivation cannot perceive a connection between their learning behaviors and the learning outcomes, amotivation is often likened to learned helplessness (Legault et al. 2006). This study focused on intrinsic motivation and amotivation, as intrinsic motivation is the most optimal form of motivation (Ryan and Deci 2017), while amotivation is undoubtedly a debilitative form. See McEown and Oga-Baldwin (2019) and Noels et al. (2020) for a brief overview of SDT in the context of L2 learning.
Intrinsic motivation plays an influential role in L2 learning as shown in its positive association with vocabulary size (Tanaka 2013, 2017b), intention to persist and self-evaluation (McEown et al. 2014), and learning outcomes (Oga-Baldwin et al. 2017). Intrinsic motivation is also linked with the learning environment (Poupore 2016). Thus, the group work environment operationalized by group cohesion and engagement may be associated with intrinsic motivation.

Amotivated students perceive no control over the outcomes of their learning. Various beliefs lead to amotivation, such as a lack of belief in ability and capacity for effort, and a lack of value placed on the task (Legault et al. 2006). The consequences of amotivation are detrimental, such as higher stress (Baker 2004), problem behaviors, intention to drop out, lower academic performance, and low self-esteem (Legault et al. 2006). Amotivation or demotivation is also a significant issue in L2 learning (Kikuchi 2009). As a negative class environment is one of the major demotivating factors (Kikuchi 2011), the group work environment is potentially a factor affecting amotivation. Furthermore, given that the learning environment can bring about learning enjoyment (Poupore 2016), a positive learning environment may alleviate the degree of amotivation. Therefore, this study examined how the group work environment either mitigated or worsened amotivation and its negative consequences.

1.5 Motivation and L2 proficiency

Learners generally evaluate learning processes and tend to form causal attributions for their learning outcomes. This influences them to strive for further learning. Perceived successes (high achievement) tend to energize future achievement behavior when ascribed to high ability or self-efficacy, while perceived failures (low achievement) tend to hinder further learning when ascribed to low self-efficacy (Dörnyei and Ushioda 2013). Indeed, L2 proficiency tends to associate with both L2 learning and L2 learning motivation (Gao et al. 2007; Tanaka 2015; Vandergrift 2005). As those with higher English proficiency tend to be more motivated (Gao et al. 2007; Tanaka 2015), their motivation may be less susceptible to the effects of an undesirable group work environment. Conversely, as those with lower L2 proficiency are more inclined to experience demotivating effects (Tanaka 2015; Vandergrift 2005), even a favorable group work environment may not increase motivation for these learners. As it is important to clarify the malleability of the environmental effects in relation to L2 proficiency, this study examined how L2 proficiency moderated the effects of the group work environment on motivation and achievement.
1.6 The present study

In summary, the following three gaps were identified in the literature. First, although the perception of group cohesion and peer engagement appear to have positive effects on motivation of individual learners (Chang 2010; Murphey et al. 2014), it is still unknown how group work environment operationalized by group cohesion and group engagement is associated with motivation and achievement in the group work setting. Second, it still remains unclear how group cohesion and group engagement separately contribute to motivation and achievement in the group work setting. Third, no previous study has investigated how environmental effects on motivation and achievement vary according to L2 proficiency in group work settings. To address these gaps, this study investigated the following research questions:

1. To what extent does the group work environment predict motivation and achievement?
2. To what extent do group cohesion, and group engagement separately predict motivation and achievement?
3. To what extent does English proficiency moderate the effect of the group work environment on motivation and achievement?

2 Method

2.1 Participants

The participants were second-year Japanese university students in the department of sports and health science at a private Japanese university. Each student was enrolled in a project-based English learning course and placed into one of 11 classes associated with the department’s core course regardless of their English proficiency levels. The course consisted of 15 total sessions over the course of a semester. Each 90 min class met once weekly. Here, students were divided into four or five groups containing a maximum of six members. This yielded a total of 45 groups. The main analysis used the data from 200 students (118 males and 82 females) who voluntarily consented to participate in the study, and completed the questionnaire.

Students stayed in the same group and undertook two group projects during the semester: a debate and a panel discussion. In the debate task, students chose a topic (for example, “Should children have mobile phones?”) and discussed its pros and cons. Each member was assigned the role of either a moderator, who also
explained the topic's background, or a presenter to explain the pros or cons. They prepared a presentation manuscript and PowerPoint slides for their argument as an out-of-class assignment, and then discussed and practiced it with their group members in class. The debate was conducted in Week 6 or 7 as a group presentation.

For the panel discussion, each group selected a group theme (for example, “How to become one of the world's top tennis players”), and all members had their own subtopic (such as, nutrition, sleep, or mental toughness). The panel discussion comprised each member’s individual work on a subtopic and the group’s general introduction and conclusion. The first and last panelists were in charge of the general introduction and the conclusion, respectively, in addition to their own topic. Each member prepared a small portion of their assigned part as weekly homework (a presentation manuscript and PowerPoint slides) and then discussed and practiced it with their group members in class. Midterm and final panel discussions were carried out in Week 9 or 10 and Week 14 or 15, respectively. In addition to oral presentations, each group submitted a manuscript and PowerPoint Slides of each group presentation, and one group paper that was a longer and written version of the final panel discussion.

The course was centered around project-based learning, and the students were required to initiate (by selecting a topic) and complete their project on their own. To improve the quality of their project, they frequently discussed it with each other while in groups. Thus, they were encouraged to actively cooperate to develop their project. Teachers also provided feedback, but worked mainly as facilitators to promote a learner-centered style of learning. Regarding their English use, although they were required to give presentations, write papers, and complete and practice weekly assignments in English, students were allowed to use Japanese during class to discuss the project and provide interpersonal feedback. In sum, the current study’s group work environment was situated within project-based learning, involving active cooperative learning with permission to use the first language for discussion.

2.2 Instruments and procedures

This study employed a quantitative method for analysis. As research on group-level processes remains remarkably under studied (Dörnyei and Muir 2019; Fukada et al. 2020), clarifying the overall patterns can provide new insights to develop this strand of research in the field of L2 learning. The following three types of instruments were used in the current study: Test of English for International Communication (TOEIC), course grades, and two questionnaires (one each on
L2 learning motivation, and the group work environment). TOEIC scores were used to create an English proficiency index. Participants took the TOEIC mid-semester as a course requirement and reported on their scores in the survey at the end of the semester. As three out of 200 scores (1.5% of the total TOEIC data points) were missing, the mean value was imputed. Course grades were employed as the achievement index. Three different teachers assigned course grades to their students using the same criteria (class participation, homework, two types of midterm presentations—the debate and midterm panel discussion—a final panel presentation, and a paper), based on a 5-point grading system as follows: A+ (90 and above), A (80–89), B (70–79), C (60–69), and F (below 60). For the main analysis, these letter grades were coded as follows: A+ = 5, A = 4, B = 3, C = 2, and F = 1. Two types of questionnaires were administered during class at the end of the semester. Participants responded to all questionnaire items in Japanese according to a 6-point Likert scale (1 = Strongly disagree; 6 = Strongly agree). Two SDT constructs were used: intrinsic motivation (k = 5) and amotivation (k = 5) to measure L2 learning motivation. The items were adapted from Tanaka (2017b) and tailored for the project-based English learning course, including oral presentations. Construct reliability was analyzed using Winsteps 3.80.0 (Linacre 2013). The Rasch person reliability estimate, which is analogous to Cronbach’s alpha, revealed high scores for both constructs (0.87 and 0.84 for intrinsic motivation and amotivation, respectively). For English translations of the items used, please see the Appendix.

This study developed a new group work environment scale. Items were created by referring to the classroom climate inventory (CCI; Ito and Matsui 2001). The CCI was developed according to the Classroom Environment Scale (Trickett and Moos 1995); the Learning Environment Inventory (Fraser et al. 1982); and the Classroom Atmosphere Scale (Silbergeld et al. 1975) to understand the overall classroom atmosphere in Japanese middle schools (Ito 2011). Focusing on group cohesion and peer engagement, this study created 20 relevant items that were specifically tailored to group work environments in the L2 learning setting. After data were collected, an exploratory factor analysis was performed with a maximum likelihood procedure and promax rotation using SPSS 24 for Windows (IBM corp. 2016). Based on Kaiser’s rule stipulating an eigenvalue greater than 1, the scree test, and interpretability of the factor solution, two interpretable factors were extracted and labeled as group cohesion (k = 6) and group engagement (k = 6) (Table 1). These two factors cumulatively accounted for 63.69% of the variance and no items were loaded highly on both variables (Table 1). The Cronbach’s alpha values for both factors were high (0.91 and 0.85 for group cohesion and group engagement, respectively). The inter-factor correlation was also high at 0.63, thus indicating that the two factors measured the similar, broader concept of the group work environment. A Rasch analysis was then performed on items of the two extracted
factors using Winsteps 3.80.0 (Linacre 2013). In line with the high Cronbach’s alpha values, the Rasch person reliability estimate was high for both factors (0.88 and 0.83 for group cohesion and group engagement, respectively). This study used the Rasch person logits of the four factors (two from motivation and two from the group work environment) in its main analysis, because interval data (e.g., the logit scale) provide richer information than raw ordinal data (Tabachnick and Fidell 2007).

3 The preliminary analysis

3.1 Descriptive statistics

Table 2 shows descriptive statistics for the variables used in this study. Student English proficiency levels varied greatly, as indicated by the highly disparate
TOEIC scores ($M = 418.69$, $SD = 111.64$). As indicated by their average intrinsic motivation levels ($M = -0.05$, $SD = 2.19$), these students did not particularly enjoy learning English. However, they were not demotivated as shown by their low amotivation ($M = -1.14$, $SD = 2.89$). They also perceived strong group cohesion ($M = 1.12$, $SD = 2.50$), but assessed the engagement of other group members as neither strong nor weak ($M = 0.04$, $SD = 1.83$). As shown in the bottom row of Table 2, group environment represented a single construct comprising all 12 items from group cohesion ($k = 6$) and group engagement ($k = 6$). The mean value was slightly higher than the average ($M = 0.43$, $SD = 1.53$). This indicated that students evaluated the group work environment as slightly favorable.

### 3.2 Path analysis

Two path models were created using EQS 6.2 for Windows (Bentler and Wu 2012). Model A (Figure 1) was built to examine the first research question regarding the impact of the higher-order latent variable of group work environment on L2 learning motivation and achievement. Model B (Figure 2) was created for the second research question about the separate effects of group cohesion and group engagement on L2 learning motivation and achievement. As the data exhibited a multivariate normal distribution, the parameters were estimated using maximum likelihood. The models showed good fit for the data with the following fit indices: $\chi^2(2) = 1.23$, $p = 0.54$, goodness of fit (GFI) = 1.00, adjusted GFI (AGFI) = 0.98, standardized root mean-square residual (SRMR) = 0.01, comparative fit index (CFI) = 1.00, and root mean square error of approximation (RMSEA) (90% confidence interval [CI]) = 0.00 [0.00, 0.12] for Model A; and $\chi^2(1) = 1.07$, $p = 0.30$, $\chi^2(1) = 1.07$, $p = 0.30$; $\chi^2(1) = 1.07$, $p = 0.30$.
GFI = 1.00, AGFI = 0.97, SRMR = 0.02, CFI = 1.00, and RMSEA [90% CI] = 0.02 [0.00, 0.19] for Model B. Note that the insignificant path from amotivation to course grades in Model A was deleted in Model B, as the inclusion made it a saturated model with zero degrees of freedom.

### 4 Results

#### 4.1 The effects of group work environment on motivation and achievement

Table 3 summarizes the estimates of predictors in Model A as to the impact of the higher-order latent variable of group work environment on L2 learning motivation and achievement. Concerning the impact on motivation, group work environment predicted intrinsic motivation and amotivation positively and negatively, respectively. In other words, while learners who perceived stronger group cohesion and greater group engagement during the project were likely to find learning
more enjoyable and be less prone to amotivation, those who perceived weaker group cohesion and less group engagement tended to display the opposite motivational patterns. Concerning the impact on achievement, group work environment was not a significant predictor of the course grade. However, given the positive effects of intrinsic motivation on achievement, and the positive effect of the group work environment on intrinsic motivation, the group work environment indirectly influences learning outcomes via motivation. Those who perceived a more positive group environment tended to enjoy learning more, which in turn brought about better learning outcomes.

Table 3: Parameter estimates for predictors in Model A.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>$B$</th>
<th>$SE$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work environment</td>
<td>Intrinsic motivation</td>
<td>0.57</td>
<td>0.11</td>
<td>5.46</td>
</tr>
<tr>
<td>Group work environment</td>
<td>Amotivation</td>
<td>-0.53</td>
<td>0.14</td>
<td>-3.93</td>
</tr>
<tr>
<td>Group work environment</td>
<td>Course grades</td>
<td>-0.09</td>
<td>0.04</td>
<td>-1.93</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>Course grades</td>
<td>0.72</td>
<td>0.04</td>
<td>2.05</td>
</tr>
<tr>
<td>Amotivation</td>
<td>Course grades</td>
<td>-0.03</td>
<td>0.03</td>
<td>-1.08</td>
</tr>
</tbody>
</table>

$N = 200$. T-values greater than $|1.96|$ are significant at $p < 0.05$. 
4.2 The effects of group cohesion and group engagement on motivation and achievement

Table 4 summarizes the estimates of predictors in Model B as to the separate effects of group cohesion and group engagement on L2 learning motivation and achievement. In line with the impact of the higher-order latent variable of group work environment, neither group cohesion nor group engagement had statistically significant effects on achievement. Concerning the impact on motivation, while group engagement predicted intrinsic motivation and amotivation positively and negatively, respectively, group cohesion did not have a statistically significant impact either on intrinsic motivation or amotivation. To further examine whether group cohesion indeed lacked significant impacts on motivation, Model C (Figure 3) was created. The parameters were estimated using maximum likelihood. The model fitted the data well with the following fit indices: $\chi^2(1) = 0.96$, $p = 0.33$, GFI = 1.00, AGFI = 0.98, SRMR = 0.02, CFI = 1.00, and RMSEA [90% CI] = 0.00 [0.00, 0.19]. As shown in Table 5, group cohesion predicted intrinsic motivation and amotivation positively and negatively, respectively when the model included the single independent variable for motivation. Although the paths from group cohesion to the two types of motivation were insignificant when controlling for the impact of group engagement (Model B), the effects of group cohesion would have merely been suppressed, as the two constructs of group cohesion and group engagement were moderately highly correlated ($r = 0.63$) and formed a broader concept of the group work environment. It should also be noted that group engagement appears to have greater influence on motivation than group cohesion in the current study context, given the lack of significance in the paths from group cohesion to motivations in Model B.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>$B$</th>
<th>$SEB$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group cohesion</td>
<td>Intrinsic motivation</td>
<td>0.02</td>
<td>0.07</td>
<td>0.25</td>
</tr>
<tr>
<td>Group cohesion</td>
<td>Amotivation</td>
<td>-0.10</td>
<td>0.10</td>
<td>-1.04</td>
</tr>
<tr>
<td>Group cohesion</td>
<td>Course grades</td>
<td>0.02</td>
<td>0.03</td>
<td>0.48</td>
</tr>
<tr>
<td>Group engagement</td>
<td>Intrinsic motivation</td>
<td>0.47</td>
<td>0.10</td>
<td>4.72</td>
</tr>
<tr>
<td>Group engagement</td>
<td>Amotivation</td>
<td>-0.36</td>
<td>0.14</td>
<td>-2.61</td>
</tr>
<tr>
<td>Group engagement</td>
<td>Course grades</td>
<td>-0.08</td>
<td>0.05</td>
<td>-1.83</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>Course grades</td>
<td>0.09</td>
<td>0.03</td>
<td>2.92</td>
</tr>
</tbody>
</table>

$N = 200$. T-values greater than $|1.96|$ are significant at $p < 0.05$. 


4.3 The moderating effects of English Proficiency

As discussed earlier, given that L2 proficiency influences learner motivation (Gao et al. 2007), the effects of the group work environment on motivation may vary according to English proficiency. The third research question therefore examined the extent to which English proficiency moderated the effects of the group work environment on motivation and achievement. This was approached through the moderation or interaction effects in the regression model. Prior to this analysis, the two constructs, group cohesion ($k = 6$), and group engagement ($k = 6$), were combined to create a single construct for measuring the group work environment. The resulting construct ($k = 12$) exhibited a high Rasch person reliability estimate of 0.89. A moderated regression was performed with R version 3.5.1 (R Core Team 2016). Here, the independent variable was the group work environment, the
moderating variable was English proficiency measured by TOEIC scores, and the dependent variables were the two types of motivation (intrinsic motivation and amotivation) and course grades. Three moderated regression analyses were conducted using each of the three dependent variables.

Table 6 shows the results of the interaction effects using intrinsic motivation as a dependent variable. In line with previous findings concerning the first research question, there was a significant main effect of the group work environment on intrinsic motivation. The main effect of English proficiency on intrinsic motivation was also significant, indicating that those with higher English proficiency were more likely to enjoy learning, while those with lower English proficiency tended to enjoy it less.

The interaction effect between the group work environment and English proficiency was not significant, indicating that group work environments with stronger cohesion and greater engagement had positive influences on intrinsic motivation regardless of English proficiency levels. Figure 4 shows how the relationship between the group work environment (the predictor) and intrinsic motivation (the outcome) differs according to the two levels of English proficiency.

Table 7 presents the results of the moderated regression analysis with amotivation as a dependent variable. There was a significant main effect of the group work environment on amotivation. This is in accordance with previous findings concerning the first research question. The main effect of English proficiency on amotivation was also significant, indicating that while those with higher English proficiency were less likely to experience amotivation, those with lower English proficiency remained in a state of amotivation. The interaction effect between the group work environment and English proficiency was not significant, thus indicating that the group work environment had a mitigating effect on amotivation regardless of English proficiency levels. Figure 5 shows the relationship between the group work environment and amotivation for high and low levels of English proficiency.

Table 8 summarizes the results of the moderated regression analysis with achievement as a dependent variable. While the main effect of English proficiency on achievement was significant, the main effect of the group work environment on

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE B</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work environment</td>
<td>0.5572</td>
<td>0.0896</td>
<td>6.2214</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>English proficiency</td>
<td>0.0059</td>
<td>0.0012</td>
<td>4.7681</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Group work environment × English proficiency</td>
<td>−0.0006</td>
<td>0.0008</td>
<td>−0.8380</td>
<td>0.403</td>
</tr>
</tbody>
</table>
achievement was not significant. The interaction effect between the group work environment and English proficiency was not significant, thus indicating that the group work environment does not have a statistically significant impact on achievement regardless of English proficiency levels. Figure 6 depicts the relationship between the group work environment and achievement for high and low levels of English proficiency. Overall, the group work environment appears to beneficially increase intrinsic motivation and decrease amotivation regardless of English proficiency. Yet, it does not have a direct impact on achievement irrespective of English proficiency.

**Table 7:** Moderation model of predictors of amotivation.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$B$</th>
<th>$SE$</th>
<th>$T$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work environment</td>
<td>$-0.5678$</td>
<td>$0.1180$</td>
<td>$-4.8122$</td>
<td>$p &lt; 0.001$</td>
</tr>
<tr>
<td>English proficiency</td>
<td>$-0.0100$</td>
<td>$0.0016$</td>
<td>$-6.1590$</td>
<td>$p &lt; 0.001$</td>
</tr>
<tr>
<td>Group work environment $\times$ English proficiency</td>
<td>$0.0004$</td>
<td>$0.0010$</td>
<td>$0.3757$</td>
<td>$p = 0.708$</td>
</tr>
</tbody>
</table>
This study examined the structural relationships among the group work environment, motivation, and achievement in the L2 setting. Concerning the impact of the group work environment on motivation in the first research question, group work environment comprising both the constructs of group cohesion and group engagement tended to have the desired effect on motivation and confirmed the important role of learning environment in L2 group work settings. Concerning the separate impact of group cohesion and group engagement on motivation in the L2 setting.

Figure 5: Simple slopes equations of the regression of amotivation on group work environment at high and low English proficiency levels. The numerical values are in Rasch logits. TOEIC = English proficiency; ENV = Group work environment; AM = Amotivation.

Table 8: Moderation model of predictors of achievement.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE B</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work environment</td>
<td>-0.0168</td>
<td>0.0345</td>
<td>-0.4871</td>
<td>0.627</td>
</tr>
<tr>
<td>English proficiency</td>
<td>0.0043</td>
<td>0.0005</td>
<td>9.0258</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Group work environment × English proficiency</td>
<td>0.0002</td>
<td>0.0003</td>
<td>0.7612</td>
<td>0.448</td>
</tr>
</tbody>
</table>

5 Discussion

This study examined the structural relationships among the group work environment, motivation, and achievement in the L2 setting. Concerning the impact of the group work environment on motivation in the first research question, group work environment comprising both the constructs of group cohesion and group engagement tended to have the desired effect on motivation and confirmed the important role of learning environment in L2 group work settings. Concerning the separate impact of group cohesion and group engagement on motivation in the...
second research question, while group engagement tended to have significant effects on both intrinsic motivation and amotivation, group cohesion lacked significant effects on both types of motivation while controlling for the effects of group engagement. Although the lack of significance is assumed to be caused by the suppression effects of the common properties shared by the two constructs of group cohesion and engagement, group engagement appears to be more influential than group cohesion in this study context. Given the critical role of group cohesion demonstrated in the literature (Chang 2010; Clément et al. 1994; Forsyth 2014; Greer 2012; Pescosolido and Saavedra 2012; Slavin 2014), the finding was somewhat surprising. However, it may be explained with reference to the nature of group cohesion. The magnitude of the effects of group cohesion generally vary according to the context, task, and analysis (Forsyth 2014; Greer 2012). One of the factors relevant to this study is task design. In general, the degree of interdependence varies according to task type, as some tasks require more complex interdependence than others. To illustrate, basketball is considered one of the most complex sports requiring team interdependence, while baseball is one of the least

Figure 6: Simple slopes equations of the regression of achievement on group work environment at high and low English proficiency levels. The numerical values for ENV are in Rasch logits. TOEIC = English proficiency; ENV = Group work environment; GRADES = Course grades.
complex, as it requires pooled interdependence (Pescosolido and Saavedra 2012). As described in the Section 2, although the students in this study performed group projects and presented outcomes in the form of group presentations and a group paper, there was a certain amount of independent assignments that each member was required to complete. Specifically, all members had their own subtopic (for example, nutrition) to contribute to the accomplishment of the group’s overall theme (for example, “How to become one of the world’s top tennis players”). Although each member was required to provide feedback on the other members’ assignments to reciprocally develop the overall group project for the better, some task aspects required pooled interdependence. This might have attenuated the impact of group cohesion on motivation in this small group work context.

Further, group engagement may be more influential for its regulatory power. Group cohesion has a malleable nature in itself, and can have both positive and negative consequences (Forsyth 2014; Pescosolido and Saavedra 2012). As group cohesion is a controlling force to regulate a commitment to the group norms and orientation toward shared values within a group, it can result in dysfunctional behaviors and unproductivity when a group places a low value on a task (Pescosolido and Saavedra 2012). Dörnyei and Kormos (2000) have also demonstrated that group cohesiveness tends to produce negative consequences (low performance) among students with low-task attitudes in the field of L2 learning. Therefore, group cohesion needs to be coupled with group values or norms for high performance to exert an optimal effect. As group engagement can regulate the direction of group cohesion’s effects, it might be more influential than group cohesion.

Concerning the impact of the group work environment as well as the separate effects of group cohesion and group engagement on achievement, results revealed that none of them had a direct link with achievement. However, this does not necessarily indicate that environment plays a negligible role in the L2 learning setting. Indeed, the group work environment did affect individual learner motivation. As intrinsic motivation is a direct predictor of course grades, the group work environment may lead to the learning outcomes indirectly via intrinsic motivation.

This study’s third research question examined the extent to which English proficiency moderated the effects of the group work environment on motivation and achievement. Concerning the effects on achievement, the group work environment did not have a direct effect on learning outcomes irrespective of English proficiency. However, the effect of the group work environment on motivation was evident, regardless of English proficiency. Participants with higher English proficiency tended to have lower amotivation and enjoy learning more. Despite the effect on motivation, while a favorable group work environment reinforced such tendencies, an undesirable environment induced higher amotivation and deprived students of enjoyment in learning. Conversely, although the participants with
lower English proficiency tended to experience demotivation and enjoyed learning less, the group work environment boosted motivation and mitigated amotivation even for such learners. One possible explanation for this might be use of L1 in class. In general, learners with extremely limited English proficiency have few opportunities to interact in English only EFL classrooms. In such a situation, some may feel like outsiders who are present physically but not psychologically in their group. This tendency is generally reinforced in a close-knit group. As mentioned earlier, the participants of this study were allowed to use Japanese for feedback and discussion. As learners with low English proficiency can participate more in group activities and build rapport with the other members through use of Japanese, they did not feel isolated but present in the group, which might have increased their enjoyment in learning and mitigated their amotivation.

This study has demonstrated that group work environments with strong cohesiveness and high member engagement can enhance learner motivation. Pedagogical implications include the following. First, appropriate use of L1 in group and class may help build group cohesion, which in turn enhances motivation. When learners in the same group and class have varying levels of L2 proficiency, teachers can promote a creation of better group work environment by allowing for judicious L1 use among students in group and class. Second, as consequences of group cohesion can be determined by group values and norms, it may not be appropriate to merely strengthen group cohesion, without also enhancing group value on a task. Teachers may be able to lead students to place a higher value and more diligently engage in the project by explaining the merit to be gained from accomplishing the aims of the project. Greater group engagement may not only enhance motivation but also regulate group cohesion in a positive direction.

6 Conclusion

This study has demonstrated that the group work environment, either directly or indirectly, has a positive impact on motivation and learning outcomes in the small group work setting, regardless of English proficiency levels. However, several limitations should be highlighted. First, the participants of this study were allowed to use Japanese when discussing their projects within the group during class. The group work environment may not have a similar impact in a context that restricts the use of one’s first language in class, particularly for learners with lower willingness to communicate in English or lower English proficiency. Second, although this study identified the group work environment as the direct and indirect predictor of motivation and achievement, these relationships were analyzed using path and moderation models. Although the path direction was specified in the
models, any causal relationships were only inferred through such cross-sectional analyses. Third, although the constructs and models used in this study displayed high reliability, the study focused on a small number of variables for motivation and group work environment. Incorporation of other relevant variables, such as extrinsic motivation and group norms, would provide a more comprehensive picture of the learning environment and motivation in the group work settings. Fourth, this study’s data were collected mainly based on self-reporting (except the course grades) and analyzed using quantitative methods only. For future research, an inclusion of various forms of data (e.g., interviews and observations) would strengthen the validity of the findings. Fifth, the findings of this study were based on how individuals perceived their group work environment. In order to clarify the effects of environmental differences among groups, advanced statistical analysis, such as multilevel analysis, needs to be employed for future studies. Despite these limitations, this study found significant associations between the learning environment, motivation, and learning attainment in small group work settings. Context regulates and shapes an individual learner’s motivation (Ushioda 2009). As research on group-level processes on L2 learning motivation still remains underexplored (Dörnyei and Muir 2019; Fukada et al. 2020), further research is called for to clarify the nuanced effects that the group work environment may have in various types of pedagogical contexts.

Appendix

English Translation of the Questionnaire Items About Motivation

**Why do you study English?**

<table>
<thead>
<tr>
<th>Factor 1: Intrinsic Motivation (IM)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IM1</td>
<td>Because learning English is enjoyable.</td>
</tr>
<tr>
<td>IM2</td>
<td>Because delivering a presentation in English is enjoyable.</td>
</tr>
<tr>
<td>IM3</td>
<td>Because I feel pleasure about increasing my English proficiency.</td>
</tr>
<tr>
<td>IM4</td>
<td>Because I feel pleasure about increasing my English presentation skills.</td>
</tr>
<tr>
<td>IM5</td>
<td>Because I like learning English.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 2: Amotivation (AM)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AM1</td>
<td>I won’t get anything out of learning English.</td>
</tr>
<tr>
<td>AM2</td>
<td>I don’t know what I am getting out of learning English.</td>
</tr>
<tr>
<td>AM3</td>
<td>Learning English is useless.</td>
</tr>
<tr>
<td>AM4</td>
<td>I cannot see why I have to study English.</td>
</tr>
<tr>
<td>AM5</td>
<td>Learning English is meaningless.</td>
</tr>
</tbody>
</table>

All the questionnaire items are randomly ordered 6-point Likert scale items.
References


Fraser, Barry J., Gary J. Anderson & Herbert J. Walberg. 1982. *Assessment of learning environments: Manual for learning environment inventory (LEI) and my class inventory (MCI) (3rd version)*. Perth, Australia: Western Australian Institute of Technology.


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