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Watch Your Partner's Behaviors: Motivation Contagion in L2 Pair Work*

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Amid the increasing popularity of task-based language teaching, task motivation is considered one of the keys to success, but motivational influence among learners has not been sufficiently addressed in the literature. The purpose of this study is to investigate the process of motivation contagion in language learning pair work. Specifically, it tests the hypothesis that motivation contagion in pairs occurs either by observing the motivational orientation of the partner (i.e., priming), or as a result of the perceived expectations of the learning task (i.e., expectancy formation). A total of 140 Japanese university students worked in pairs on a picture description task. The analysis of the post-task questionnaires indicated that motivation contagion occurred both by priming and expectancy formation, but the impact of the latter was more significant. It was also found that highly motivated learners were strongly affected by expectancies about the quality of task involvement and interpersonal relations, while less motivated learners were influenced more by their partners' motivation levels. Through the learners' retrospective accounts, we also found that mutually supportive attitudes and behaviors play an essential role in boosting motivation contagion. The findings provide pedagogical implications for designing dyadic activities that can help learners motivate each other.

Keywords: task motivation, motivation contagion, pair work, priming, expectancy formation

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1 Introduction

Task-based language teaching (TBLT) has long been popular in second or foreign language (L2) education. It mainly seeks to: (1) make meaning the primary focus, (2) prioritize accomplishing the task, and (3) establish a clear outcome other than language use (Samuda & Bygate, 2008; Van den Branden, 2016). The common denominator in these features is that the participants' active involvement is essential for the task to be successful. However, not all participants (i.e., learners) will actively involve themselves in the task, and student motivation has a significant influence on this. It is ideal but not realistic that teachers cater to individual learners with low motivation and meet their motivational needs; the efforts of a single teacher in a classroom may be insufficient (Dörnyei, 2019a). One possible strategy is then to set up a device that allows learners to motivate each other in pairs or groups (Hiromori et al., 2021). Learners' attitudes and contributions to a task vary individually, and as a result, how much they can learn from the task also differs between learners. One of the critical factors that can explain this individual difference is the level of motivation to complete a language learning task (Kormos & Wilby, 2019). Therefore, it is imperative to study how participant motivation affects the concrete learning process within a particular task, i.e., "task motivation" (Dörnyei, 2019b).

In this study, we focus on how and to what extent a partner's motivation influences the learner's motivation during task performance, among other factors. Suppose a learner works on a task with a motivated partner. In that case, the transmission of motivation (i.e., "motivation contagion") will be more likely to occur between them, and as a result, they will be more likely to work actively on the task. This hypothesis was tested in the present study. Specifically, based on the findings of previous research in mainstream psychology, we will examine whether (1) the motivation contagion occurs directly by simply observing partners' motivational orientations (Friedman et al., 2010); or (2) the motivation contagion occurs indirectly via the formation of expectancies regarding task involvement and interpersonal relations (Wild & Enzle, 2002). Identifying how learners motivate each other to engage in the task will help L2 teachers better design effective interventions to impact students' behavioral engagement in the language task.

2 Literature Review

2.1 Research on L2 task motivation

Task motivation consists of general motivation and the learner's attitude toward the situation as a whole, namely, how the individual perceives the task and everything relating to it (Julkunen, 2001). In the L2 classroom, the kind of

task presented and how it is presented exerts a significant impact on learners' motivation (Dörnyei, 2019b; Kormos & Wilby, 2019). This recognition has led many researchers to investigate the relationship between task characteristics and task motivation.

Task content appears to play a major role in determining task motivation. There has been an increasing number of studies investigating the influence of task topic, novelty, and relevance on learners' task motivation during interactive tasks (e.g., Lambert et al., 2017; Mozgalina, 2015; Poupore, 2014). For example, Lambert et al. (2017) investigated the effects of learner-generated content as opposed to teacher-generated content on student engagement in L2 task performance. The results showed that tasks based on learner-generated content generated more positive attitudes toward tasks and greater engagement among students compared to tasks with teacher-generated content. Another factor that is strongly related to task motivation is task complexity (e.g., task difficulty and cognitive demands). When learners engage in a task, they evaluate the task's cognitive demand and predict whether they will be able to perform the task (Robinson, 2001). If the task is judged to be too difficult to manage, task motivation may decrease, and if the task is judged to be optimally managed, learners may be willing to engage in the task. Kormos and Préfontaine (2017) investigated how three narrative tasks with different cognitive demands affected learners' task motivation. The results revealed that task motivation and task-related anxiety were strongly associated with fluent task performance. Poupore (2014) also showed that cognitive complexity of a task (e.g., abstract versus concrete topics) plays a role in determining learners' motivational levels.

As seen above, many studies on L2 task motivation were conducted from a cognitive or linguistic perspective; only a small number of studies examined task motivation from a social perspective (Kormos & Wilby, 2019). For example, in a series of studies by Storch and her colleagues (Storch, 2002, 2007; Storch & Aldosari, 2012), the authors explained how learners are socially engaged in a task and demonstrated that social relationships between learners (e.g., Expert/Novice, Dominant/Passive) have a significant effect on task performance. Taking their cue, research on task motivation should pay more attention to the influence of a partner with whom the task is performed.

In the following sections, we highlight studies that specifically focused on the impact of one's partner on learners' motivation during task performance. Dörnyei (2002) examined how a fellow participant's level of motivation influenced actual task engagement in an oral argumentative task. The results indicated that partners' task attitudes were strongly associated with how many words/turns the learners produced/exchanged in the task. A partner's motivational orientation was also observed to exert a "pulling force" on the task attitude of an individual; that is, "if someone with a low task attitude is matched up with a more motivated peer, the chances are that the person's performance will improve" (Dörnyei, 2002, p. 152). Furthermore, the study

demonstrated that correlations between motivation and task engagement were much higher at the dyad level than at the individual level, concluding that "task motivation was *co-constructed* by the task participants" (p. 156; italics original). Kormos and Dörnyei (2004) followed up with Dörnyei's (2002) investigation to further examine how motivational factors affect the quality and quantity of student task performance in dyads (e.g., argumentation structure of the students' output). The results showed a positive relationship between a partner's motivational orientation and the quality/quantity of arguments the speaker produced, indicating that learners who were paired with a more motivated partner were more active in the task and came forward with more arguments than those who were paired with a less motivated partner. Therefore, the authors argued that "these results provide additional support for Dörnyei's (2002) argument that task motivation is indeed co-constructed by the task participants" (Kormos & Dörnyei, 2004, p. 12).

On the other hand, Konno and Koga (2017) investigated the relationships between learners' on-task behavior, their partners' motivational orientation, and their own motivational orientation. They counted tokens and turn-takings as performance (i.e., dependent) measures and used learners' task-specific motivation as independent measures. One of their findings was that highly motivated learners performed better when paired with similarly motivated learners than with less motivated ones. Subsequently, Konno et al. (2019) conducted a follow-up study and found that task performance correlated with motivational variables only in pairs with high motivation. Based on these findings, the authors agreed with Dörnyei (2002) that task motivation is co-constructed with task participants, but it tends to be true only for pairs with high motivation (i.e., H-H pairs).

The findings of these studies indicate that the influence of partners and the co-construction of motivation by learners when working on a task is a worthwhile subject for further research. However, the shortcoming of these studies is that they focus mainly on the product of task performance; it is not clear through what process a partner's motivation influences a learner's motivation. In mainstream psychology, the above phenomenon is called "social contagion of motivation" (or "motivation contagion") and has been the subject of much research (e.g., Aarts et al., 2004; Friedman et al., 2010; Radel et al., 2010, 2015; Wild & Enzle, 2002; Wild et al., 1992, 1997). That said, motivation contagion remains under-researched in the field of L2 education. We go on to summarize the main findings and limitations of earlier research on motivation contagion in psychology before presenting the purpose of the current study.

2.2 Research on motivation contagion

Motivation contagion is a term used to describe how perceptions of another person's motivation toward an activity can positively or negatively influence

the perceiver's own motivation toward the same activity (Wild & Enzle, 2002). Chartrand and Lakin (2013) emphasized that motivation contagion occurs rather frequently and that it can happen either consciously or unconsciously (see also Laurin, 2016).

Several studies have examined the mechanisms that underlie this motivation contagion effect. For example, Wild and Enzle (2002) proposed a social contagion model of the phenomenon. According to this model, in many dyadic interactions (e.g., between a teacher and a student; between a student and a student), perceptions of the other person's motivation to engage in a task affects the perceiver's (1) expected quality of task involvement (e.g., interest; pleasure) and (2) expected quality of interpersonal relations (e.g., collaborative attitude; autonomy support). In turn, these expectations influence the perceiver's motivation (see Figure 1).

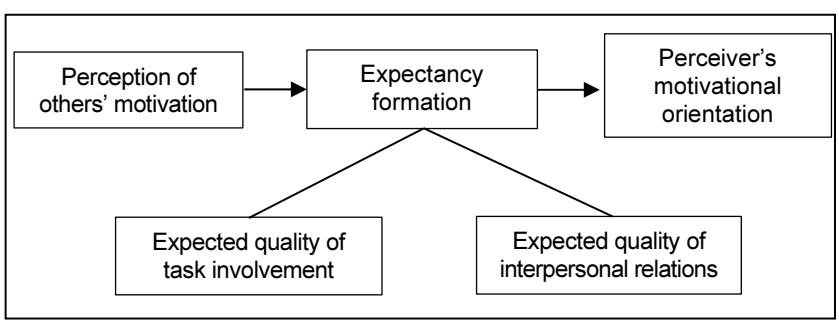

Figure 1. Social contagion model (Wild & Enzle, 2002, p. 147)

Studies have confirmed the existence of such an expectancy-based mechanism linking contextual information from other people's motivation to the perceiver's own motivation (Frenzel et al., 2009; Radel et al., 2010; Wild et al., 1992, 1997). For example, Wild et al. (1992, 1997) found that students merely believing that their teacher was intrinsically (operationalized as "working voluntarily") rather than extrinsically motivated (operationalized as "paid for a lesson") resulted in enjoyment of learning and increased intrinsic motivation—even though all other factors, such as course content, were controlled to be the same. Frenzel et al. (2009) also showed that teacher enjoyment and student enjoyment were closely linked, and that the effects of teacher enjoyment on student enjoyment were mediated by teachers' displayed enthusiasm. The results of these studies support the theory that motivation contagion can arise through formation of expectancies.

On the other hand, other studies have explained motivation contagion from a different perspective. Specifically, individual motivational states can be primed or influenced simply by observing another person's motivational orientation. For example, Aarts et al. (2004) investigated whether individuals

adopt and pursue goals derived from another person's behavior. The results showed that participants who observed an actor's money-making behavior made more effort to create an opportunity to make money compared to those who observed the neutral behavior. Post-experiment debriefing also revealed that they did not originally have a conscious intention to adopt the observed goal and were not consciously aware that they had eventually done so. This suggests that motivation contagion can arise through a priming influence; that is, motivation contagion need not always result from the development of task expectancies. Friedman et al. (2010) also support this claim. In this study, the authors conducted an experiment where the target and participant performed different tasks to intentionally eliminate an expectation-based interpretation of the results. The results still demonstrated that the participant's motivational orientation was influenced through observation of the target's behavior and motivational orientation. Since the task of the target was different from the task of the observer, it was considered that the motivation contagion effect arose from a priming effect rather than shared expectations of the same task (Radel et al., 2015).

3 The Present Study

Although existing research in mainstream psychology has provided some insight into motivation contagion in the language classroom, there are several limitations in application. First, it remains unknown whether motivation contagion occurs directly via priming (Friedman et al., 2010) or indirectly via expectancy formation (Wild & Enzle, 2002). To the best of our knowledge, this phenomenon has not been empirically tested in a language learning context. Second, earlier studies have dealt mostly with motivation contagion between teachers and students; there remains a dearth of research focusing on such social influence between students. Third, most studies were conducted in laboratory settings. It is not clear whether the phenomenon of motivation contagion also occurs in natural settings such as regular classrooms.

Therefore, we designed this study to examine whether motivation contagion occurs directly through observation of a partner's motivational orientation or indirectly through expectancy formation. To increase the ecological validity of the experiment, we targeted pair work activities conducted as part of a regular course in a language classroom. The findings of this study will provide practical and concrete suggestions for L2 teachers on how to practice motivational teaching in the classroom.

The research questions of this study are as follows:

(1) Does motivation contagion occur through priming, or does it occur as a result of expectancy formation?

(2) Do learners perceive priming and expectation formation occurring when they are working on a task?
(3) What factors influence the process of motivation contagion?

4 Method

4.1 Participants

The participants were 140 university students (50 female, 90 male) learning English as a foreign language (EFL) in Japan. Of these, 98 (38 female, 60 male) were first-year students, and 42 (12 female, 30 male) were second-year students. They had studied English as a compulsory subject for at least six years in school before entering university. Their overall level of English proficiency was deemed to be approximately CEFR A2/B1 based on the results of the placement test and the observations of the teachers in charge.

4.2 Instruments

4.2.1 Task

The objective of the task is to draw and replicate a picture without looking at it. The better the replication, the clearer the communication between the students, who are required to work as dyads. In other words, the task aims to improve students' English communication skills, especially speaking and listening skills. The authors of this study obtained copyright-free pictures from the Internet (see Appendix 1 for a sample picture). These pictures were carefully chosen so as not to demand too much from students' cognitive resources but would still be interesting enough to them. One student in each pair (Student A) views the picture and explains it orally to the other student (Student B) in English. Student B, who is not supposed to see the picture, listens to the description and draws a picture based on their understanding of the description. Student B is allowed to ask Student A questions in English during the activity. The task is to be completed within five minutes. When the time is up, pairs compare their drawings with the original to check their work. This reflection gives the students an opportunity to objectively review their interaction during the task (e.g., whether their English description was accurately conveyed to the partner, etc.). After the reflection, the students exchange roles and repeat the same procedure using a different picture.

4.2.2 Questionnaire

A questionnaire was used in this study. It was administered immediately after the students finished the pair work. The questionnaire has three sections. The first section consists of items that collect personal data, including questions

about participants' self-perceived English proficiency and their preference for pair work activities.

The second section contains three scales (18 items in total; see Appendix 2) designed with previously validated constructs. For consistency, all constructs were measured on a 7-point scale with anchors of 1 (strongly disagree) to 7 (strongly agree). The three constructs are "student's motivational orientation," "perception of a partner's motivation," and "expectancy formation." "Student's motivational orientation" measures a student's intrinsic motivation (e.g., "I would like to learn many things about English."; four items). It was developed based on the Language Learning Orientations Scale (Noels et al., 2000). "Perception of a partner's motivation" assesses the perception that a student has toward their partner. As in earlier studies (Radel et al., 2010, 2015), we adapted the Global Motivation Scale (Ryan & Deci, 2000) to reflect the degree to which students perceived their partner as intrinsically motivated (e.g., "I think my partner wanted to learn a lot from the task."; four items). "Expectancy formation," according to Wild and Enzle (2002), consists of two aspects: quality of task involvement (e.g., "The content of the task was interesting."; five items) and quality of interpersonal relations (e.g., "My partner helped me to tackle the task."; five items). Since previous studies (Wild et al., 1992; Wild et al., 1997) measured the aspects using an experimental task, the present study prepared questionnaire items based on the constructs in these studies.

The third section was adapted from Baralt et al. (2016). It contains four open-ended questions regarding participants' views on pair work, their overall attitudes toward the task, and their relationships with the partners (e.g., "Provide three adjectives to describe how you felt during the task."; "What was your overall perception of the task that you just did with your partner?").

4.3 Procedures

The purpose of this study was to investigate the mechanisms underlying the social contagion of motivation in L2 pair work. In so doing, we examined the following hypothesis: perceptions of a partner's motivation to engage in a task influence the student's own motivational orientation either directly via observation (Friedman et al., 2010; see Path (A) in Figure 2) or indirectly via expectancy formation (Wild & Enzle, 2002; see Paths (B1) → (B2) in Figure 2). Based on Konno et al.'s (2019) arguments, we also examined whether students' motivational levels affect the motivation contagion process.

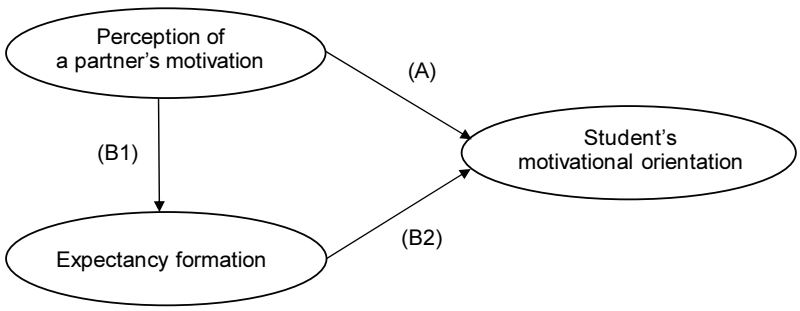

Figure 2. The hypothesized model of the relationship between the constructs

Before testing the hypothesis, the validity of the scale was verified. Specifically, descriptive statistics were checked, and exploratory and confirmatory factor analyses (EFA/CFA) were conducted. Two analytical approaches were used to test the hypotheses: First, structural equation modeling (SEM) was employed to examine the underlying process motivation contagion. SEM enables us to reveal the multiple and complex relationships among the observed (i.e., questionnaire items) and latent variables (i.e., constructs) under a hypothesized theoretical model (Kline, 2005). Multi-group SEM was also used to examine whether the effects of each path in the model (see Figure 2) differed between groups with high and low motivational levels. In conducting these analyses, IBM SPSS Statistics Version 26 and AMOS Version 26 were used. Second, to examine the process of motivation contagion in more detail, qualitative data obtained from open-ended questions were interrogated through thematic analysis (Nowell et al., 2017). The first two questions asked the students to describe their impressions of the task they were working on using adjectives, so we simply tabulated the answers. For the next two questions, students' accounts were first coded by one of the authors, then the other authors reviewed the coding categories and refined them. Adjustments and recoding were conducted as necessary, and the final coding was agreed upon by all authors.

5 Results

5.1 Preliminary analysis

Since questionnaire items were adapted or developed based on existing literature, we examined construct validity first, as a preliminary analysis. As for the distribution of normality, the univariate distributions of all 18 items were normal, and no items were considered to deviate significantly from the normal distribution. As a result, all 18 items were used in the later analysis.

Next, EFA was conducted to assess the underlying factor structure of the scale. Maximum likelihood extraction with promax rotation produced a hypothesized three-factor solution, which explained 65.29 percent of the variance. During the process, six items on the scale were deleted because of cross-loadings or low factor loadings. To further examine the claim that these three factors adequately reflected the constructs corresponding to each item, CFA was conducted (see Figure 3 for the results).

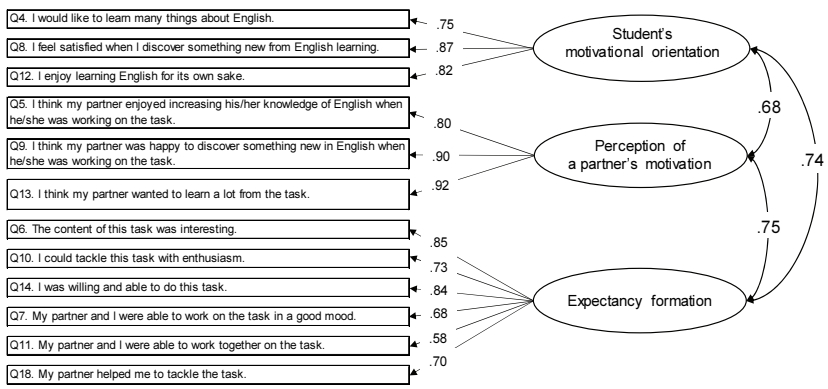

Figure 3. Results of confirmatory factor analysis

The goodness-of-fit indices of the model were GFI = .939, AGFI = .891, CFI = .984, and RMSEA = .057. Therefore, we confirmed that the fit between the model and the data was good enough; that is, the model explained the data well. It should be noted that, theoretically, expectancy formation can be divided into two sub-concepts (i.e., expected quality of task involvement, expected quality of interpersonal relations; see Figure 1). Therefore, the four-factor solution was also examined in the same manner. However, the fit between the model and the data was lower than that of the three-factor solution (GFI = .920, AGFI = .857, CFI = .970, and RMSEA = .072). This suggests that although it may be theoretically and/or conceptually possible to distinguish between task involvement and interpersonal relations, in reality, the two concepts are so closely related to the level of learners' perception that it is not easy to make a clear distinction between them. In fact, the correlation coefficient between the two was r = .68, confirming a strong relationship. In other words, it is thought that the two are closely related and form the expectancy for the task, namely, because the task is interesting, they can cooperate with their partner, and conversely, because they have a cooperative relationship with their partner, the task becomes interesting.

5.2 Assessing the relationships and sizes of effects between the three constructs

SEM with the maximum likelihood method was used to assess the relationship between the three constructs. In the hypothesized model (see Figure 4), it was examined whether the perception of a partner's motivation influences the student's own motivational orientation directly (i.e., direct effect) or indirectly via expectancy formation (i.e., indirect effect). The fit of the model was confirmed to be satisfactory (GFI = .913, AGFI = .856, CFI = .964, and RMSEA = .077).

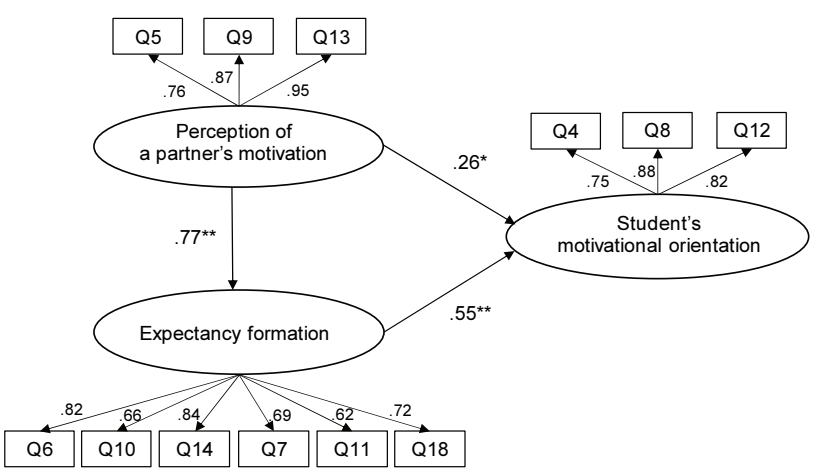

Figure 4. Results for the structural equation model

Note. Path coefficients represent standardized estimates (** $p < .01$, * $p < .05$; all paths connecting latent factors with their indicators were significant at the 1% level).

Perceiving partner's motivation influenced the student's own motivational orientation directly (standardized coefficient = .26) and indirectly via expectancy formation (standardized coefficient = .42 [.77×.55]). This result suggests that (1) motivation contagion occurs through both priming and expectancy formation, and (2) the magnitude of the effect from expectancy formation was 1.6 times larger than from priming.

Table 1 summarizes the effects of factors that determine students' motivational orientation. As for the total effect, the effect of perception of partner's motivation explained about 46% (.68×.68) of the variance in student motivation, which demonstrated how partner motivation has a significant impact on learners' motivation in pair work activities.

Table 1. Effects of Factors That Determine Student Motivation

Type of effect	Perception of partner's motivation	Expectancy formation
Total effect	.68	.55
Direct effect	.26	.55
Indirect effect	.42	—

We also examined how the motivation contagion process differs depending on learners' motivation levels using a multi-group SEM. Specifically, in the "student's motivational orientation" scale, the total mean score of the three items was 16.70 (standard deviation = 3.00, minimum score = 7, maximum score = 21). Therefore, learners with a total score of 17 or higher were classified into the highly motivated group (HMG: n = 82), and those with a total score of less than 17 were classified as the less motivated group (LMG: n = 58), and the differences between the two groups were compared (see Figure 5). The fit of the model was confirmed to be satisfactory (GFI = .897, AGFI = .860, CFI = .957, and RMSEA = .060). For simplicity, only the structural model (paths connecting latent factors) is presented, and the measurement model (paths connecting latent factors with their indicators) has been omitted.

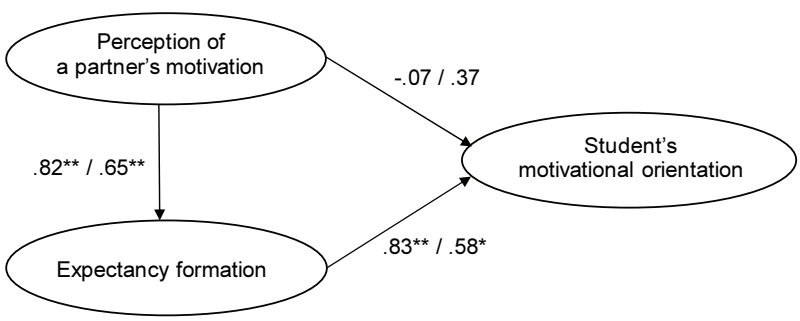

Figure 5. Results of multi-group SEM according to students' motivation levels
Note. Highly motivated group (n = 82) / Less motivated group (n = 58); Path coefficients represent standardized estimates (** p < .01, * p < .05).

A noticeable difference was found in the path coefficient from the perception of a partner's motivation to the student's motivational orientation. Learners who were less motivated were affected by their partner's motivation (standardized coefficient = .37), while learners who were highly motivated were not affected at all by their partners' motivation (standardized coefficient = -.07). On the contrary, highly motivated learners were strongly influenced by their expectations of the task (e.g., "The content of the task was interesting.") and their interpersonal relations (e.g., "My partner helped me to tackle the task.").

In sum, it can be said that for learners who are motivated to learn English, expectancies formed during the task may play a particularly important role. On the other hand, for learners who are not so motivated, the perception of partners' motivation and expectancy formation may have the same degree of impact on their own motivation.

5.3 Factors that influence the process of motivation contagion

To examine the process of motivation contagion in greater depth, we analyzed retrospective accounts collected through open-response format questions. We tabulated, coded, and categorized all the answers and/or statements given to a total of four questions.

The first two questions related to learners' feelings while they were working on the task (Q1: "Provide three adjectives to describe the task."; Q2: "Provide three adjectives to describe how you felt during the task."). Table 2 reports the top five adjectives with the most responses (note that the percentages do not necessarily add up to 100% because of the multiple responses). Most of the adjectives were related to difficulty (e.g., "difficult") and enjoyment (e.g., "enjoyable"; "interesting/interested"; "pleased"). This means that while the learners found the activity difficult and challenging when working on it, they also perceived it as fun and interesting.

Table 2. Answers to Q1 and Q2

Rank	Adjective	Frequency	Proportion (%)
1	Difficult	82	58.57%
2	Enjoyable	75	53.57%
3	Interesting	53	37.86%
4	Cute	15	10.71%
5	New	11	7.86%
1	Pleased	99	70.71%
2	Difficult	97	69.29%
3	Interested	58	41.43%
4	Happy	28	20.00%
5	Nervous	8	5.71%

Note. Proportion is the percentage of frequency over number of participants.

Next, Table 3 shows how learners felt about the task in which they worked with their partners (Q3: "What was your overall perception of the task that you just did with your partner?"). To this question, one participant's response sometimes contained several different elements. In such cases, one response was counted in more than one category so that every relevant element could be considered in our analysis. The most common category of response that emerged was "fun of working in pairs" (56.43%): more than half of the

learners mentioned it in their responses (e.g., “It was fun to work with my partner on the activity.”). As with the first and second questions, many students had the impression that the task was difficult but fun (i.e., “appeal of the task”; “difficulty of the task”). These categories correspond to the quality of interpersonal relations and quality of task involvement, respectively, as described by Wild and Enzle (2002). Therefore, it is clear that the expectancies formed of the task had a great influence on learners’ actual engagement in the task, which is consistent with the results of the questionnaire survey.

Table 3. Answers to Q3

Category	Frequency	Proportion (%)
Fun of working in pairs	79	56.43%
Appeal of the task	55	39.29%
Difficulty of the task	48	34.29%
Noticing aspects of language use	31	22.14%
Lack of English proficiency	16	11.43%

Note. Proportion is the percentage of frequency over number of participants.

Finally, Table 4 shows the results of the participants’ perceptions of whether they worked cooperatively as a pair during the task (i.e., Q4: “Do you think you and your partner tried to contribute in the same way when you were working on the task? If so, how?”). It was conspicuous that there were many statements regarding the mutually supportive attitudes and behaviors such as “easy-to-understand explanation” (e.g., “I think we were both trying to explain as much detail as possible to the other, and to make drawing as easy as possible.”); “questioning” (e.g., “We asked questions to confirm each other’s understanding so that we could get closer to the right answer.”); and “active attitude toward communication” (e.g., “We were actively trying to communicate with each other.”). This may suggest that, in order to facilitate pair work and cooperation, it is vital for the pair to show mutually supportive attitudes and behaviors toward each other, resulting in higher expectations for the task and promoting contagion of motivation.

Table 4. Answers to Q4

Category	Frequency	Proportion (%)
Easy-to-understand explanation	50	35.71%
Questioning	29	20.71%
Active attitude toward communication	26	18.57%
Confirmation of common understanding	24	17.14%
Consideration for the partner	20	14.29%
Active listening	14	10.00%

Note. Proportion is the percentage of frequency over number of participants.

6 Discussion

The present study examined whether motivation contagion in L2 pair work occurs by simply observing the motivational orientation of the partner (i.e., priming), or whether it occurs as a result of the perceived expectations of the learning task. The results showed that (1) motivation contagion occurred in both processes, but the magnitude of the effect from expectancy formation was more substantial than that from priming; (2) the effect was moderated by learners' motivation levels—less motivated learners were greatly influenced by the motivation of their partner, while highly motivated learners showed no such influence; and (3) mutually supportive attitudes and behaviors boosted motivation contagion through expectancy formation, as revealed through learners' responses to open-ended questions. The following sections discuss each of these points in more detail.

6.1 Two processes of motivation contagion

This study found that motivation contagion occurs via two different pathways: priming and expectancy formation. The fact that simply observing a partner's (un)motivated behavior prompts a corresponding change in a learner's motivational orientation means that, unknowingly, as observers, we are affected by another person's behavior through "vicarious experience" (Bandura, 1977, 1986). Learners in this study might feel enjoyment after observing how their partner worked hard with enthusiasm on the task; the partner as a contagious facilitator can impact the co-participant through their attitude and behavior.

At the same time, a partner's motivation indirectly influences the learner's motivation via expectancy formation for the learning task (i.e., quality of task involvement and interpersonal relations). In our study, its impact was about 1.6 times larger than by observation of the partner's motivation alone, demonstrating that a learner's motivation was more strongly influenced by expectation formation than priming. This also suggests that the expectation of the learning task plays a crucial role in motivating learners. Therefore, when seeking to implement highly motivating pair work in the classroom, it is crucial for teachers to consider task development and lesson design so that learners can have high expectations for the task. In this regard, teachers will find it beneficial to refer to earlier studies on task motivation that examined various task characteristics (e.g., task content; task topic; cognitive demands).

6.2 The impact of a partner's motivation on learners

Another important finding of this study is that the influence of a partner's motivation can vary depending on the motivational state of the learner. Dörnyei (2002) pointed out that the motivations of dyads working on communicative

tasks are co-constructed with each other, and that when learners with a low task attitude are paired with learners with a higher motivational state, the performance of the former is likely to improve (i.e., "pull-force" effect). In contrast, Konno et al. (2019) argued that such co-construction of motivation can only occur when highly motivated learners are paired together.

The findings in this study appear to be in line with those of Dörnyei (2002). However, although less motivated learners may become more motivated when matched with highly motivated learners, for highly motivated learners, their partner's motivation itself is not so important, as Figure 5 demonstrates. This means that learners who are not as actively engaged in the task may become more interested in the task if they are paired with a partner who understands the significance of doing the task and leads their partners. On the other hand, for learners who have already developed a sufficient level of motivation, the expectations of task interest and interpersonal relations can be more important than the motivation of their partners. On the basis of these findings, it is possible to conclude that the function of partners' motivation may differ according to the motivational characteristics of learners.

6.3 The relative importance of expectancy formation in motivation contagion

The importance of expectancy formation in motivation contagion was also confirmed by examining students' responses to open-ended questions. As shown in Table 3, students' overall perceptions of the task were characterized by the top three categories, namely, "fun of working in pairs," "appeal of the task," and "difficulty of the task," suggesting that students paid most attention to the two sub-concepts of expectancy formation: quality of interpersonal relations and quality of task involvement. It appears that learners' task engagement was more strongly influenced by expectancy formation than by priming effects, which is consistent with the findings of the questionnaire survey.

In addition, the results revealed an intriguing point about the relationship between the two sub-concepts of expectancy formation. To the question about their perception of the task (i.e., Q3), many participants' responses (more precisely, 43 out of 140 participants) contained two different but related categories, namely "fun of working in pairs" and "appeal of the task." This shows the possibility that participants who expressed positive impressions about what they just did in pairs might have experienced expectancy formation for both interpersonal relations and task involvement, and that they did not necessarily distinguish the two, at least in their retrospective account after the task. This is also consistent with the high correlation coefficient between the two in the questionnaire survey (i.e., r = .68; see Preliminary Analysis). Another implication is that the interest in a task itself could be supported significantly by the fact that the task involves interpersonal relations; conversely, the quality of interpersonal relations could be enhanced by the content of the task. Hence, the pedagogical implication is

that there is no need to specifically separate these two elements when designing pair work tasks. Rather, it is expected that setting a task that is moderately difficult and enjoyable for learners, which enhances their relationship with their partner, will encourage expectation formation and a positive impact on the process of motivation contagion.

The categories that emerged from the open-ended questions provide implications for better designs of pair work activities that could foster motivation contagion. Namely, it is necessary for learners to have mutually supportive attitudes and behaviors during the task in order to form sufficient expectations for a language task. There are some remarkable ways in which learners in pair work practically demonstrate such attitudes and behaviors (see Table 4). To achieve this in the classroom, it can be argued that encouraging learners to take specific actions such as providing clear explanations, asking questions, confirming common understandings, and active listening may contribute to positive motivation contagion through expectancy formation. As a new dimension to previous research on task motivation, the findings of this study, which focus on the importance of interpersonal relationships and interaction processes, can fill some existing gaps in educational practice.

It is also noteworthy that our study clarified the specific content of the collaborative attitude proposed by Wild and Enzle (2002). Motivation contagion in pair work would be well fostered when the student expresses a positive attitude toward communication as well as a willingness to listen and question to better reach a common understanding. This notion is consistent with the claim by Sato and Viveros (2016) about the importance of collaborative mindset, which is "a learner's psychological approach toward the partner and/or task" (p. 92). Their study suggests that training learners to increase their awareness of pair/group work would help them become more collaborative by listening to what the partner says and supporting each other's contributions. Our study supports this educational implication.

7 Conclusion

There is no doubt that task characteristics significantly impact learners' task engagement. However, this study suggests that, along with several other findings from the perspective of motivation contagion, we need to pay greater attention to the partner who works together on the task. The fact that there was a difference in the motivation contagion process between the highly motivated learners and the less motivated ones is another key finding of this study. In addition, this study conducted an exploratory analysis of learners' perceptions of the task and the factors contributing to motivation contagion among partners. As a result, the learners were explicitly aware of the two sub-concepts of expectancy formation, which specifies that expectancy formation was involved in the motivation contagion, as shown in the previous study. We also proposed

a new finding that mutually supportive attitudes and behaviors can be an essential factor in motivation contagion through expectancy formation.

If we want to implement TBLT more effectively in the L2 classroom, we need to consider not only the cognitive and linguistic aspects of the task but also the social aspects—such as the pairing of partners—and the affective aspects—such as learners' own motivation. As a pedagogical suggestion, to enhance motivation levels in pair work, it is desirable to pair a learner who is not very active in the task with a partner who takes the initiative in the task. Moreover, for learners who are already well motivated, it is advisable to devise task development and lesson designs that will create high expectations for the learning task.

As with all studies, this study had several limitations. One limitation pertains to the language task that we employed for the analysis. This study used a picture description in dyads as an interactive task. Since learners' task motivation may change depending on the content, topic, and difficulty of the task (Kormos & Wilby, 2019; Lambert et al., 2017), it is necessary to examine a wider range of tasks and partners in future studies. Second, for motivation-based pairing, there were three combinations: learners with high motivation (i.e., H-H pairs; $n = 52$), learners with low motivation (i.e., L-L pairs; $n = 28$), and learners with different motivational levels (i.e., H-L pairs; $n = 60$). In this study, we were unable to set up these three combination patterns in a balanced manner. If we had been able to achieve motivation-based pairing under controlled conditions, we might have been able to deepen the discussion regarding the pairing issue. The third notable limitation is related to the research method adopted. By using the advanced statistical technique (i.e., SEM), this study was able to examine the relationship between latent variables more precisely than previous studies. However, to discuss the causal relationships among variables more rigorously, it is essential to conduct longitudinal surveys. Therefore, in future research, it is necessary to examine how the relationships among the variables change (or do not change) after pair work has been conducted multiple times.

By integrating these perspectives, future research on L2 motivation can provide more detailed, contextualized, and soundly theorized analyses of task motivation. Consequently, it will further expand the possibilities that TBLT can bring to language learning and teaching. We believe that the new findings presented in this study will serve as a foundation for future studies.

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Appendix 1

A sample picture used in the study

Appendix 2
Questionnaire items used in the study

I. Student's motivational orientation
4. I would like to learn many things about English.
8. I feel satisfied when I discover something new from English learning.
12. I enjoy learning English for its own sake.
16. I think it's fun to increase my knowledge of the English language. *

II. Perception of a partner's motivation
1. I think my partner enjoyed the task itself. *
5. I think my partner enjoyed increasing his/her knowledge of English when he/she was working on the task.
9. I think my partner was happy to discover something new in English when he/she was working on the task.
13. I think my partner wanted to learn a lot from the task.

III. Expectancy formation — Expected Quality of task involvement
2. The content of this task was of interest. *
6. The content of this task was interesting.
10. I could tackle this task with enthusiasm.
14. I was willing and able to do this task.
17. I could focus on this task. *

IV. Expectancy formation — Expected Quality of interpersonal relations
3. My partner consulted with me on how to tackle the task. *
7. My partner and I were able to work on the task in a good mood.
11. My partner and I were able to work together on the task.
15. When we were working on the task, my partner valued my opinion. *
18. My partner helped me to tackle the task.

* As a result of the analysis, these items were eventually removed.

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