

## Task Complexity and Pre-writing Condition: Exploring Malaysian L2 Learners' Perceptions on Argumentative Writing

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### ABSTRACT

*This study examined the effects of task complexity and pre-writing condition on Malaysian L2 learners' perceptions of their argumentative writing concerning their perceived task difficulty, stress, confidence to perform the task, interest in the task, and motivation to complete the task. It investigated whether the dyadic and triadic pre-writing conditions for peer discussion modulate the effects of task complexity on L2 learners' perceptions of willingness to participate in the task and learning opportunities. In a repeated-measures design, 36 Malaysian university students performed six simple and complex argumentative writing tasks in different pre-writing conditions: individual, dyadic, and triadic. A set of questionnaires that collects L2 learners' perceptions was administered to participants upon task completion. Repeated-measures ANOVA revealed that while cognitively more complex writing tasks directly weighed on L2 learners' cognitive and affective domains as predicted by the Cognition Hypothesis, the pre-writing task condition with the dyadic peer discussion before the individual writing modulated their perceptions towards the complex writing task. A T-test revealed that the dyadic pre-writing task condition prompted L2 learners to be more confident and willing to participate in the task. Learners perceived performing the subsequent individual argumentative writing tasks as easier, more relaxing, more interesting, and more motivating. Practising educators may sequence class tasks based on the principle of natural progression in building learners' confidence to attempt the tasks. The dyadic peer discussion as the pre-writing condition strengthens learners' cognitive and affective domains for individual writing tasks.*

*Keywords: learners' perceptions; task complexity; task condition; task difficulty; argumentative writing*

### INTRODUCTION

Tasks are regarded as catalysts that make learners active agents in the Task-based Language Teaching and Learning (TBLT&L) field. Language learners engage in communicative tasks which drive them to use language to complete tasks and that help enhance second language acquisition (East, 2021). Tasks are adopted as a supportive methodological framework to create a natural context for language use and learning (Willis, 2021). Pedagogically, appropriate task design and implementation in task-based instruction potentially stimulate learners' cognitive and affective domains. One of the commonly adopted theoretical frameworks to postulate how tasks should be designed and sequenced for learners, the Cognition Hypothesis (CH) asserts that tasks manipulated with increased cognitive complexity entail a greater pedagogical potential for L2 learning (Robinson, 2001; 2007). It is hypothesised that learners with higher motivation tend to temporarily expand the resource pools which helps heighten their attention to and rehearsal of input in working memory. From the affective and ability perspectives, learners tend to perceive complex tasks as more difficult and stressful while their ability to perform the complex task was rated lower (Robinson, 2001). However, no directional hypotheses are provided for learners' interest in and motivation for tasks of different complexity levels.

Considerable research studies investigated how empirically validated task demands imposed on learners with various task features engage learners' perception of L2 production (Rahimi & Zhang, 2019; Révész et al., 2016; Robinson, 2001; 2007). Particularly, studies revealed that learners perceiving tasks as more difficult is attributed to tasks manipulated with higher cognitive complexity (Révész et al., 2016; 2017; Robinson, 2001). While this suggests that task complexity has a direct effect on learners' affective states and that influence their resource pools for L2 advancement as Robinson (2001) has proposed, how learners' perceptions are affected by different cognitive factors and whether task condition modulates learners' perception and their affective realms in the writing context is underexplored since many task characteristics and features that are potential in modulating the effects of task complexity on learners' perceptions. The direction of this claim requires further validation (Robinson, 2011).

From the cognitive-affective perspective, the current study addressed the research gap by adopting a posteriori methods to examine how L2 learners' perceptions concerning their perceived task difficulty, stress level, confidence to perform, interest in, and motivation to complete the task, willingness to participate in task discussion, as well as learning opportunities, may be affected by two task characteristics: the cognitive task complexity (i.e., +/- causal reasoning demands; -/+ planning time) and pre-task condition (i.e., individual planning; dyadic versus triadic discussions) in the writing context. First, it examines the extent to which task complexity and pre-writing task conditions influence learners' perceptions of individual writing tasks in different task complexity sequences. Second, it investigates the extent to which the pre-writing task conditions modulate the effects of task complexity on L2 learners' perceptions of individual writing.

## THEORETICAL FRAMEWORK

### THE COGNITION HYPOTHESIS

The CH rationalizes how task sequence and task design promote task-based L2 development (Robinson, 2001; 2007). One of the theoretical claims states that increasing the cognitive demands of tasks provides learners with ontogenetically natural contexts for the form-function mappings in L2 development. Cognitively more complex tasks are perceived as more difficult than the simpler counterpart tasks whereas learners with various abilities and affections contribute to a different degree of attention to, and uptake of information available in input (Robinson, 2001; 2005; 2007; 2011; Robinson et al., 2013). Concurring with the notions of multiple pools of attentional resources in human brain structures (Wickens, 2008), when performing a complex task, L2 learners can equally attend to form and meaning simultaneously without compromising accuracy and complexity. The sufficient capacity in the learners' resource pools allows them to access, store and retrieve the required linguistic information from the existing L2 knowledge and stretch their attentional resources, memory, reasoning, and other information-processing resources to meet the functional and communicative demands (Robinson, 2001; 2005; 2007).

### TRIADIC COMPONENTIAL FRAMEWORK

The Triadic Componential Framework (TCF) presents three main task characteristics: task complexity, task condition, and task difficulty (Robinson, 2007; 2011) for learning, practice, and design.

#### TASK COMPLEXITY

Task complexity is the cognitive demands that are derived from the pedagogic task like  $\pm$  number of elements (Robinson, 2001; 2007). Increasing the conceptual demands of the resource-directing dimension (e.g.,  $\pm$  causal reasoning demands,  $\pm$  few elements) of complexity in the task design directs learners' attentional and memory resources to L2 structures (Robinson, 2001; 2011), promotes the development and re-mapping of conceptual and linguistic categories as well as the L2 development of function-form mappings (Robinson, 2005) which eventually result in more accurate and complex performance (Robinson, 2011). Cognitive processing draws learners' attention to notice and encodes linguistic input in their working, short-term, and long-term memory which assists in the development of new linguistics (Robinson, 2003). The demands of task complexity,  $\pm$  are operationalized as continua (Robinson, 2001) in which the relatively less, - indicates fewer demands while the relatively more, + indicates more demands. However, task complexity and task difficulty are not identical (Robinson, 2001) as the former explains the consequence of the cognitive demands of a task that imposes on a learner whereas the latter describes the consequence of learner differences, concerning their available attentional, memory, and reasoning resource pools that are influenced by learners' ability and affective variables.

#### TASK CONDITION

Task condition explains the interactive factors that contribute to the information flow like classroom participation (e.g., one-/ two-way communication) and grouping of participants (e.g., number of participants) (Robinson, 2001; 2007). Incorporating interactive factors during task implementation provides interactional opportunities for learners to negotiate and comprehend the input. Interaction can occur either two-way (i.e., participants participate actively which both receive input and produce output) or one-way (i.e., one actively speaks to produce output while the other(s) listens to receive input) (Ellis et al., 2019). Not only does it allow learners to uptake the corrective feedback and integrate the pre-modified input, but also provides learners with the platform to notice the gap and reflect on the metalinguistics components through communication (Mackey, 2007; Robinson, 2011).

In a recent remark concerning engagement in active interaction, Van den Branden (2022) notes that active observation of others' interaction is beneficial for the latter adoption which attests to the modelling effects (Coe et al., 2020). Robinson (2001) advocates that a learning condition should be examined in a multi-level manner, as interactions available at one level may appear differently from those at another. To date, limited studies (Robinson, 2001) examined the extent to which task conditions modulate task design and L2 learners' perceptions. In this study, the number of participants (i.e.,  $\pm$  few participants) was manipulated in the pre-writing condition, i.e., individual planning, dyadic and triadic discussions.

#### TASK DIFFICULTY

Task difficulty delineates the available resources a learner brings to a task depending on a learner's ability and affective variables, which in turn affect learners' performance and perception of tasks (Robinson, 2001; 2007). When responding to the demands of tasks, the extent to which the attentional, memory, and reasoning resource pools a learner can draw on in performing a task may vary due to a learner's inherent ability or affective variables (Robinson, 2001). The temporarily limiting factors (i.e., motivation, confidence, and anxiety) tend to affect the size of a learner's

resource pool availability, for instance with heightened attention to and rehearsal of input in working memory to meet task demands temporarily (Robinson, 2001). The extent to which learners can fulfil cognitive demands while completing the task depends on the cognitive resources a learner brings to the task, this varies based on learners' affective states (Robinson, 2001; 2011). Though affective aspects are changeable and methodologically susceptible due to the temporal nature and range of factors that affect learners (Robinson, 2001), considering learners' affective aspects is crucial for the on-line methodological decisions about pairing and grouping students when implementing the syllabus.

## REVIEW OF EMPIRICAL RESEARCH

### TASK COMPLEXITY ON L2 LEARNERS' PERCEPTIONS

Learners' perceptions of a task are the awareness of the abilities (e.g., intelligence) as well as affective responses (e.g., anxiety) they bring to the task. Robinson (2001) revealed that learners rated the complex task as more difficult and stressful which corresponds to the studies of Révész, Michel, and Gilabert (2016) that greater cognitive effort is demanded on complex tasks and poses more difficulty. Révész, Michel, and Gilabert (2016) explored the usefulness of dual-task methodology, self-ratings, and expert judgments in assessing task-generated cognitive demands for task complexity manipulations. While findings show that the complex task was rated more useful for L2 learning and effective in directing their attention to the linguistic output, the lower anxiety experienced, greater self-confidence, and higher communicative competence in correcting peers' errors could be attributed to their advanced English proficiency that they developed strategies to overcome problems encountered during communication.

Robinson (2007) subsequently examined the effects of task complexity on spoken production and interaction-driven language learning opportunities. Learners with low anxiety generated more syntactically complex speech on complex tasks. However, task complexity showed no impact on the syntactic complexity production by high-anxiety learners. While no correlation was found for anxiety concerning accuracy but syntactic complexity, Horwitz (2001) asserts that low anxiety is crucial to building self-confidence as anxiety impedes language learning. This explains learners' confidence was rated lower when they experienced higher stress on the complex task (Robinson, 2001). Concerning the negative correlation between anxiety and language development, it is evident that learners with low anxiety possessed a higher tendency to hypothesis-testing their language production which results in syntactically more complex speech (Robinson, 2007).

Ratings of interest and motivation do not differ significantly and no loss of motivation or interest in the complex task (Robinson, 2001). Tasks that are challenging but achievable with support, and closely relevant to learners' needs motivate learners to engage deeply in the learning process (Van den Branden, 2016). Likewise, in Rahimi and Zhang's (2019) study, they examined the relationship between motivational beliefs and anxiety as well as L2 writing in simple and complex tasks. As supported by Shernoff and Csikszentmihalyi (2009), a cognitively more challenging task develops a higher flow in learners which in turn facilitates learners to focus on their mental state and engage their mental information processing. Saville-Troike and Barto (2016) explain that motivation largely determines the level of effort learners put into the tasks. As asserted by Dietrich (2003), the flow enables learners' implicit minds to take over information processing.

## TASK CONDITION AND L2 INDIVIDUAL WRITING

How tasks are implemented has been argued to potentially influence learners' affective domains which in turn may affect learners' cognitive processing. How learners' affective domains play their roles as determinants in facilitating cognitive processing has been claimed to be directly related to a learning condition (Baralt et al., 2016). Moderately challenging tasks with support are effective in enhancing learners' perceived L2 competence (Van den Branden, 2016) as it serves as an antecedent of intrinsic motivation for L2 learning. Learners tend to learn a language more effectively when they are involved in two-way communication as they are exposed to more learning opportunities when they listen to one another, adopt one another's expertise and ideas, and exchange feedback (Moranski & Toth, 2016). The interdependence of the cognitive and affective domains may contribute to learners' behaviour in terms of their willingness to participate in the tasks. Learners who enjoyed and were highly interested in the task prompted concentrated thinking in them.

This study raised the following research questions:

1. To what extent do task complexity and task condition affect L2 learners' perceptions of an L2 individual writing task in different progression (i.e., natural versus counter-balanced progression)?
2. To what extent does the difference in groupings (i.e., dyadic, and triadic) for peer discussion modulate the effects of task complexity on L2 learners' perceptions of an L2 individual writing task (i.e., natural versus counter-balanced progression)?

## METHODS

### PILOT STUDIES AND PRELIMINARY FINDINGS

A detailed description of the research design, the type of tasks involved and how tasks were designed and operationalised is provided for research pedagogical transparency purposes (Samuda et al., 2018). A series of pilot studies were conducted (Soh et al., 2020): Pilot Study 1 tested the suitability of the intended population concerning the English language proficiency level; the preliminary findings revealed that participants with Bands 1 and 2 of the Malaysian University English Test (MUET) that match the Common European Framework of Reference for Languages (CEFR) A1 and A2 (Majlis Peperiksaan Malaysia, 2019) could not complete the simple writing task within the stipulated time, one hour. Pilot Study 2 focused on the selection of suitable participants, the concept of topics, design, validation of task complexity, and implementation of the argumentative writing tasks. To verify the appropriateness of the task complexity levels, the selected topics with respective task complexity parameters were emailed to Peter Robinson for feedback. Robinson suggested that the complexity level for the complex argumentative writing tasks increase to 6 causes and 6 effects while the pre-task time was manipulated (i.e., 15 minutes for simple; 10 minutes for complex). Participants with MUET Bands 3 and 4 matching CEFR B1 and B2 managed to complete both simple and complex tasks in different groupings within the stipulated time, two hours though they reported that the complex task took them longer to complete which corresponds to Révész (2014). Participants suggested several themes relevant to real-life, namely parenting, relationship, academic achievement, freedom, technology intervention, and mobile pedagogy. Pilot Study 3 verified the appropriateness and feasibility of the amendments

made based on findings from Pilot Study 2. Participants with MUET bands 3 and 4 completed both argumentative simple and complex writing tasks within 40 minutes respectively.

#### OPERATIONAL DEFINITIONS

Task complexity refers to resource-directing variable  $\pm$  *causal reasoning demands* manipulated in argumentative writing tasks. Tasks that prompt more reasoning demands are cognitively more complex than tasks with decreased reasoning demands (Robinson, 2005). Based on the TCF (Robinson, 2007), increasing the resource-directing variable, *reasoning demands* require higher cognitive demand in learners to generate an argument using logic and reasoning. As suggested by Robinson, the parameters for the relatively more complex (i.e., + causal reasoning demands) were operationalised as 6 causes and 6 effects while the relatively simpler (i.e., -causal reasoning demands) were operationalised as 2 causes and 2 effects for respective complex and simple tasks. The pre-task time was manipulated concurrently with task complexity, i.e., a 10-minute pre-task for a complex task while a 15-minute pre-task for a simple task. The pre-task condition was operationalised as the involvement of the number of participants (i.e.,  $\pm$  few participants), i.e., individual, dyadic, and triadic.

Learners' perceived task difficulty was operationalised as how difficult or easy a task they have performed is. Learners' stress was operationalised as how learners feel about their state of relaxation or frustration when performing each task. Learners' confidence was operationalised as how well they thought they have performed the task. Learners' interest was operationalised as how much learners wanted to perform the task. Learners' motivation was operationalised as how much enthusiasm learners have to perform identical tasks in the future. Learners' willingness to participate was operationalised as how much learners were prepared to engage in the pre-task discussion. Learning opportunities were operationalised as possibilities for any further learning when learners performed the task.

#### PARTICIPANTS

Thirty-six ( $N=36$ ) participants were recruited from a private university in Malaysia through a purposive sampling technique based on these criteria: 1) speak English as their L2, 2) they hold MUET bands 3 to 4 matching the CEFR levels of B1 to B2. Participants of these band scores are categorized as independent users of English ( $M=4.44$ ,  $SD=0.833$ ). They were first-year Malaysian undergraduates, males ( $n=27$ ) and females ( $n=9$ ) who majored in Science, Arts and Commerce fields, ranging in age from 20 to 23, ( $M=21.36$ ). Their participation was voluntary.

#### CONTEXT

In the Malaysian context, the argumentative writing genre is often employed in academic writing courses in tertiary education (Veerappan et al., 2013). The topics for the argumentative writing tasks were contextualised based on insights obtained from the pilot studies which not only allow learners to analyse, evaluate, and justify the topic but also help further develop their abilities to understand and explain the topic in the writing.

## INSTRUMENTS

### ARGUMENTATIVE WRITING TASKS

Tasks that are analytical in nature stimulate learners' attentional mechanisms and memory resources (Long, 2016). Based on the preliminary findings from the series of pilot studies mentioned above and suggestions by Robinson, the complex writing task (i.e., + causal reasoning demands) requires 6 causes and 6 effects while the simple writing task (i.e., -causal reasoning demands) requires 2 causes and 2 effects.

The six argumentative-based writing tasks are as follows: e.g., T1- *Parental pressure often does more harm than good*; T2- *Living together before marriage does more good than harm*; T3- *Having good grades does not determine success in life*; T4- *Using mobile phones in class brings more advantages than disadvantages*; T5- *Teenagers should be given more freedom by their parents*; T6- *Technological interventions cause more harm than good in human life*.

### QUESTIONNAIRES

Three sets of retrospective self-report questionnaires were adapted from Robinson's (2001; 2007) studies to measure L2 learners' perceptions. Each set of questionnaires consists of three major sections: a 9-point Likert scale response focusing on task complexity and task condition respectively, as well as the introspective self-report recall open-ended questions to better assess the cognitive or emotional domains of learners to enhance the empirical findings. A 9-point Likert scale adopted in this study is a linear set of responses that represents a continuum of different levels of intensity towards each measure. For instance, a measure of *perceived task difficulty*. A scale of 1 being the most intense towards a proposition, e.g., *I thought this task was easy* whereas a scale of 9 being the most intense towards a proposition of the other end of the continuum, e.g., *I thought this task was hard*.

The first section of the questionnaire contains five measures: the *perceived difficulty of tasks*, *ratings of stress*, *confidence to perform the task*, *interest in the task*, and *motivation to perform the task* to address the first research question that assessed L2 learners' perceptions about an L2 individual writing task in varied task complexity and task condition, as follows:

1. I thought this task was easy/ I thought this task was hard (difficulty of the task)
2. I felt relaxed doing this task/ I felt frustrated doing this task (stress level)
3. I did well on this task/ I didn't do well on this task (confidence to perform the task)
4. This task was interesting/ This task was not interesting (interest in the task)
5. I want to do more tasks like this/ I don't want to do more tasks like this (motivation to perform the task)

Besides these five measures, the second section of the questionnaire incorporates two additional measures: *willingness to participate in the task discussion* and *perceived learning opportunities* to address the second research question that assessed the extent to which differences in groupings (i.e., dyadic, and triadic) for peer discussion set during pre-writing condition modulate the effects of task complexity on L2 learners' perceptions about an L2 individual writing task as follows:

6. I participated actively in this discussion/ I participated passively in this discussion (willingness to participate in the discussion)
7. This task provided a lot of learning opportunities/ This task did not provide any learning opportunities (learning opportunities)

The third section consists of open-ended questions that allow learners to provide reasons concerning their rated perception.

### RESEARCH DESIGN

N= 36	Condition I (n=18 individuals)	Simple Task Topic 1 (T1): 2 causes 2 effects	Individual planning 15 minutes	⇒	Individual writing 40 minutes	Break 15 minutes	Complex Task Topic 2 (T2): 6 causes 6 effects	Individual planning 10 minutes	⇒	Individual writing 40 minutes	⇒	Questionnaire
	Condition I (n=18 individuals)	Complex Task Topic 2 (T2): 6 causes 6 effects	Individual planning 10 minutes	⇒	Individual writing 40 minutes	Break 15 minutes	Simple Task Topic 1 (T1): 2 causes 2 effects	Individual planning 15 minutes	⇒	Individual writing 40 minutes	⇒	Questionnaire
	<i>Two-week Interval</i>											
	Condition II (n=9 dyads)	Simple Task Topic 3 (T3): 2 causes 2 effects	Dyadic Discussion 15 minutes	⇒	Individual Writing 40 minutes	Break 15 minutes	Complex Task Topic 4 (T4): 6 causes 6 effects	Dyadic Discussion 10 minutes	⇒	Individual Writing 40 minutes	⇒	Questionnaire
	Condition II (n=9 dyads)	Complex Task Topic 4 (T4): 6 causes 6 effects	Dyadic Discussion 10 minutes	⇒	Individual Writing 40 minutes	Break 15 minutes	Simple Task Topic 3 (T3): 2 causes 2 effects	Dyadic Discussion 15 minutes	⇒	Individual Writing 40 minutes	⇒	Questionnaire
	<i>Two-week Interval</i>											
Condition III (n=6 triads)	Simple Task Topic 5 (T5): 2 causes 2 effects	Triadic Discussion 15 minutes	⇒	Individual Writing 40 minutes	Break 15 minutes	Complex Task Topic 6 (T6): 6 causes 6 effects	Triadic Discussion 10 minutes	⇒	Individual Writing 40 minutes	⇒	Questionnaire	
Condition III (n=6 triads)	Complex Task Topic 6 (T6): 6 causes 6 effects	Triadic Discussion 10 minutes	⇒	Individual Writing 40 minutes	Break 15 minutes	Simple Task Topic 5 (T5): 2 causes 2 effects	Triadic Discussion 15 minutes	⇒	Individual Writing 40 minutes	⇒	Questionnaire	

FIGURE 1. Data Collection Procedures

An experimental repeated-measures mixed-method research design was adopted for data collection over a period of 20 weeks. Figure 1 shows the independent variable, task complexity was counterbalanced to eliminate practice effects while the moderating variable, conditions were held constant with a two-week interval to prevent sequence effects. The pre-writing task conditions were held constant to ensure the development and successful transfer of interactive schemata of learners (Robinson, 2011) for their subsequent individual writing.

Participants were assigned to two groups of individuals, two groups of dyads, and two groups of triads for each condition based on the natural progression of task complexity (i.e., simple to complex) and the counterbalanced task complexity (i.e., complex to simple). In each session, participants took about 2 hours and 30 minutes to complete both simple and complex tasks with a 15-minute break at intervals. Throughout each session, the participants' mobile phones were put on silent mode and aside. This is to prevent any possible extraneous variables (e.g., distraction) that may emerge in the study and affect the outcomes of the research. A set of questionnaires was administered upon completion of each condition. Participants spent about 15 minutes answering the questionnaire.



#### DATA COLLECTION PROCEDURES

During the individual session, two groups of 18 individuals participated in the natural progression and counterbalanced conditions respectively. Participants had five minutes to read and understand T1 and instructions before proceeding to 15-minute individual planning and noting. Then, each participant was given 40 minutes to write the argumentative task based on the notes made earlier. A 15-minute break interval with refreshments was provided before they proceeded to the T2. After the break, each participant had five minutes to read and understand T2 and instructions before proceeding to 10 minutes of individual planning and noting. Each participant was given 40 minutes to write the argumentative task based on the earlier notes. Upon the completion of T1 and T2, a set of questionnaires was administered to each participant. For the counterbalanced session, each participant experienced T2 first followed by T1. The same time allotment and procedures were applied. A set of questionnaires was administered to each participant upon the completion of T2 and T1.

Two weeks later, two groups of nine dyads participated in the natural progression and counterbalanced conditions respectively. Participants had five minutes to read and understand T3 and instructions followed by a 15-minute dyadic discussion and noting. Then, each participant was given 40 minutes to write the argumentative task based on the earlier notes. A 15-minute break interval with refreshments was provided before they proceeded to T4. After the break, each participant had five minutes to read and understand T4 followed by 10 minutes of dyadic discussion and noting. Each participant was given 40 minutes to write the argumentative task based on the earlier made notes. Upon the completion of T3 and T4, a set of questionnaires was administered to each participant. For the counterbalanced session, each participant experienced T4 first followed by T3. The same time allotment and procedures were applied. A set of questionnaires was administered to each participant after the completion of T4 and T3.

Two weeks later, two groups of six triads participated in the natural progression and counterbalanced conditions respectively. Participants had five minutes to read and understand T5 and instructions followed by a 15-minute triadic discussion and noting. Then, each participant had 40 minutes to write the argumentative task based on the earlier notes made. A 15-minute break interval with refreshments was provided before they proceeded to T6. After the break, each participant had five minutes to read and understand T6 followed by 10 minutes of triadic discussion and noting. Each participant had 40 minutes to write the argumentative task based on the earlier made notes. Upon the completion of T5 and T6, a set of questionnaires was administered to each participant. For the counterbalanced session, each participant experienced T6 first followed by T5. The same time allotment and procedures were applied. A set of questionnaires was administered to each participant after the completion of T6 and T5.

#### DATA ANALYSIS

The first two sections of the 9-point Likert scale questionnaire were analysed using the Statistical Package for the Social Sciences (SPSS) programme. The first section focuses on the effects of task complexity in varying pre-writing task conditions on participants' perceptions of their individual argumentative writing tasks. The five measures were analysed with the Repeated-Measures Analysis of Variance (RM-ANOVA). The assumptions for this statistical test were examined. No

severe violations were detected. However, the Greenhouse–Geisser correction was used when reporting all the findings in the counterbalanced session from the RM-ANOVA analysis.<sup>1</sup>

The second section focuses on whether the pre-writing task conditions for peer discussion modulate their perceptions of the individual argumentative writing tasks. The seven measures were analysed with the paired sample T-test. The paired sample T-test met all assumptions. The level of statistical significance was set at the alpha level of  $p < .05$  for all tests. Cohen’s *d* was measured for the effect sizes for T-tests; *d* values of .20, and .50 were considered small, medium, and large, respectively (Cohen, 1992). Finally, their open-ended responses were coded for specific qualities.

The third section focuses on participants’ contextual answers complementing “how” and “why” concerning their rated perception in the first two sections. The open-ended responses were coded for patterns and themes using inductive coding (Thomas, 2006) and inductive thematic analysis (Braun & Clarke, 2006). For instance, verbatim expressions like “pour out ideas [...] two of us speaking” and “after discussing [...] with my group partner [...] get better ideas” in the dyadic session’s open-ended responses were extracted to form a theme related to active participation and productive idea generation as an explanation to their statistically significant-rated perceptions.

## FINDINGS

Research Question 1: To what extent do task complexity and task condition affect L2 learners’ perceptions of an L2 individual writing task in different progression (i.e., natural versus counter-balanced progression)?

### NATURAL PROGRESSION

TABLE 1. Descriptive statistics of L2 learners’ perceptions of individual simple and complex writing tasks in individual, dyadic, and triadic conditions in the natural progression.

	Individual Grouping				Dyadic Grouping				Triadic Grouping				
	Simple (Ind)		Complex (Ind)		Simple (Ind)		Complex (Ind)		Simple (Ind)		Complex (Ind)		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Difficulty	18	5.67	1.37	4.78	1.35	5.83	1.10	5.83	1.72	6.44	1.20	5.78	1.40
Sig/ effect	complexity: $p = .077$ , $\eta^2 = .172$ ; condition: $p = .805$ , $\eta^2 = .013$ ; complexity x condition: $p = .027$ , $\eta^2 = .216^*$												
Stress	18	6.17	1.38	4.78	1.93	5.94	1.26	5.44	1.95	6.39	1.65	6.39	1.54
Sig/ effect	complexity: $p = .154$ , $\eta^2 = .116$ ; condition: $p = .279$ , $\eta^2 = .072$ ; complexity x condition: $p = .021$ , $\eta^2 = .202^*$												

<sup>1</sup> The results of Mauchly’s test of sphericity in the counterbalanced session indicated that the assumption of sphericity for task condition and task complexity had been violated in several instances.

Confidence	18	5.33	1.64	4.56	1.58	4.94	1.66	5.72	1.67	6.22	1.59	5.83	1.76
Sig/ effect	complexity: $p=.004, \eta^2=.395^*$ ; condition: $p=.890, \eta^2=.007$ ; complexity x condition: $p=.103, \eta^2=.125$												
Interest	18	5.83	1.69	6.33	1.91	6.06	1.16	5.89	1.81	6.17	1.89	6.83	1.38
Sig/ effect	complexity: $p=.367, \eta^2=.048$ ; condition: $p=.146, \eta^2=.107$ ; complexity x condition: $p=.283, \eta^2=.072$												
Motivation	18	5.50	1.65	5.0	1.85	5.61	1.33	5.61	2.15	5.78	1.86	6.0	1.85
Sig/ effect	complexity: $p=.253, \eta^2=.076$ ; condition: $p=.394, \eta^2=.053$ ; complexity x condition: $p=.466, \eta^2=.044$												

Note. Ind indicates Individual, asterisk \* indicates statistical significance ( $p < .05$ )

### Perceived Difficulty, Stress, Confidence

The RM-ANOVA test detected a statistically significant effect on the interaction between task complexity and task condition on L2 learners' perceived difficulty:  $F(2, 34) = 4.694, p=.027, \eta^2=.216$ ; stress level was detected:  $F(2, 34) = 4.316, p=.021, \eta^2=.202$ ; and confidence level was detected:  $F(1, 17) = 11.103, p=.004, \eta^2=.395$ . The *post hoc* test with Bonferroni correction suggested that learners were more confident performing simple tasks compared to complex tasks (simple= 4.94, complex= 5.93).

### COUNTERBALANCED PROGRESSION

TABLE 2. Descriptive statistics of L2 learners' perceptions of individual simple and complex writing tasks in individual, dyadic, and triadic conditions in the counterbalanced session.

	Individual Grouping					Dyadic Grouping				Triadic Grouping			
	Complex (Ind)		Simple (Ind)			Complex (Ind)		Simple (Ind)		Complex (Ind)		Simple (Ind)	
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Difficulty	18	4.61	1.50	5.94	1.73	6.56	1.46	6.44	1.46	6.39	1.69	7.17	1.65
Sig/ effect	complexity: $p=.000, \eta^2=.689^*$ ; condition: $p=.002, \eta^2=.336^*$ ; complexity x condition: $p=.179, \eta^2=.097$												
Stress	18	5.17	2.09	6.78	1.59	7.22	1.31	7.0	1.85	6.61	1.72	7.06	1.55
Sig/ effect	complexity: $p=.081, \eta^2=.168$ ; condition: $p=.004, \eta^2=.296^*$ ; complexity x condition: $p=.039, \eta^2=.196^*$												
Confidence	18	4.50	1.72	5.22	1.60	6.39	1.20	6.28	1.56	6.28	1.60	6.94	1.26
Sig/ effect	complexity: $p=.001, \eta^2=.491^*$ ; condition: $p=.001, \eta^2=.327^*$ ; complexity x condition: $p=.256, \eta^2=.077$												
Interest	18	5.22	1.63	5.67	1.57	6.83	1.42	6.61	1.46	6.94	1.26	7.06	1.73
Sig/ effect	complexity: $p=.011, \eta^2=.322^*$ ; condition: $p=.002, \eta^2=.311^*$ ; complexity x condition: $p=.166, \eta^2=.103$												

Motivation	18	4.61	1.50	5.11	1.60	6.94	1.30	6.61	1.65	6.61	1.29	6.28	1.71
Sig/ effect		complexity: $p = .039$ , $\eta^2 = .228^*$ ; condition: $p = .005$ , $\eta^2 = .284^*$ ; complexity x condition: $p = .001$ , $\eta^2 = .339^*$											

Note. Ind indicates Individual, asterisk \* indicates statistical significance ( $p < .05$ )

### *Perceived Difficulty*

A statistically significant effect of task complexity was detected on L2 learners' perceived task difficulty:  $F(1, 17) = 37.679$ ,  $p = .000$ ,  $\eta^2 = .689$ . L2 learners perceived complex tasks as less difficult as compared to simple tasks (complex= 5.70, simple= 6.67). A statistically significant effect of task condition was also detected on L2 learners' perceived task difficulty:  $F(2, 34) = 8.597$ ,  $p = .002$ ,  $\eta^2 = .336$ . L2 learners perceived not as difficult to write argumentative writing in the individual session as compared to writing after dyadic and triadic discussions (individual= 5.53, dyadic= 6.17, triadic= 6.86).

### *Stress*

A statistically significant effect was found on task conditions on L2 learners' perceived stress:  $F(2, 34) = 7.145$ ,  $p = .004$ ,  $\eta^2 = .296$ . Learners experienced the lowest stress in individual writing after triadic discussion than in individuals and dyads (individual= 6.08, dyadic= 6.69, triadic= 7.14,  $p = .001$ ).

### *Confidence*

A statistically significant effect of task complexity was detected on L2 learners' confidence:  $F(1, 17) = 16.401$ ,  $p = .001$ ,  $\eta^2 = .491$ . L2 learners were more confident when performing complex tasks than simple tasks (complex= 5.37, simple= 6.50). A statistically significant effect of task conditions was detected on L2 learners' confidence:  $F(2, 34) = 8.243$ ,  $p = .001$ ,  $\eta^2 = .327$ . L2 learners were most confident when performing the individual writing in the individual than after the dyadic and triadic discussions (individual= 5.39, dyadic= 5.75, triadic= 6.67).

### *Interest*

A statistically significant effect of task complexity was detected on L2 learners' interest in the task:  $F(1, 17) = 8.087$ ,  $p = .011$ ,  $\eta^2 = .322$ . L2 learners were more interested in complex tasks than simple tasks (complex= 5.91, simple= 6.87). A statistically significant effect of task conditions was detected on L2 learners' interest:  $F(2, 34) = 7.675$ ,  $p = .002$ ,  $\eta^2 = .311$ . L2 learners were most interested in performing the individual writing in the individual session than after the dyadic and triadic discussions (individual= 5.92, dyadic= 6.31, triadic= 6.94).

### *Motivation*

A statistically significant effect was found on task complexity on L2 learners' perceived motivation:  $F(1, 17) = 5.008$ ,  $p = .039$ ,  $\eta^2 = .228$ . L2 learners were more motivated in performing complex tasks as compared to simple tasks (complex= 5.56, simple= 6.50). A statistically significant effect of task conditions was detected on L2 learners' motivation:  $F(2, 34) = 6.742$ ,  $p = .005$ ,  $\eta^2 = .284$ . L2 learners were most motivated in performing the individual writing in the individual session than after the dyadic and triadic discussions (individual= 5.61, dyadic= 5.86, triadic= 6.61).

Research Question 2: To what extent does the difference in groupings (i.e., dyadic and triadic) for peer discussion modulate the effects of task complexity on L2 learners' perceptions of an L2 individual writing task (i.e., natural versus counter-balanced progression)?

NATURAL PROGRESSION

TABLE 3. Descriptive statistics of L2 learners' perceptions of individual simple and complex argumentative writing tasks following dyadic and triadic peer discussions in the natural progression.

	Dyadic Grouping						Triadic Grouping					
	Simple (Ind)			Complex (Ind)			Sig/ Effect	Simple (Ind)		Complex (Ind)		Sig/ Effect
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>		<i>SD</i>	<i>M</i>	<i>SD</i>		
Difficulty	18	5.89	1.45	5.72	1.78	$p=.604/d=.124$	6.83	1.25	5.56	.86	$p=.004/d=.798$	
Stress	18	5.89	1.49	6.28	1.64	$p=.218/d=-.302$	6.83	1.34	6.44	1.62	$p=.248/d=.282$	
Confidence	18	5.33	1.64	5.72	1.84	$p=.185/d=-.325$	6.28	1.53	5.89	1.57	$p=.218/d=.302$	
Interest	18	6.22	1.40	6.50	1.50	$p=.236/d=-.290$	6.22	1.70	6.78	1.35	$p=.288/d=-.259$	
Motivation	18	5.94	1.35	5.94	1.51	$p=1.0/d=.000$	5.94	1.83	5.83	1.65	$p=.695/d=.094$	
Participation	18	6.17	1.54	6.61	1.82	$p=.042/d=-.519$	6.33	1.68	6.44	1.58	$p=.631/d=-.115$	
Learning Opportunities	18	6.67	1.33	6.83	1.34	$p=.187/d=-.324$	6.44	1.89	6.39	1.91	$p=.834/d=.050$	

Note. Ind indicates Individual, asterisk \* indicates statistical significance ( $p < .05$ )

*Perceived Task Difficulty and Willingness to Participate*

The paired-samples T-test detected a statistically significant effect of the triadic discussion on their perceived task difficulty, simple ( $M=6.83$ ,  $SD=1.25$ ) and complex ( $M=5.56$ ,  $SD=.86$ );  $t(17)= 3.385$ ,  $p=.004$  and their willingness to participate in the task during the dyadic discussion, simple ( $M= 6.17$ ,  $SD= 1.54$ ) and complex ( $M=6.61$ ,  $SD=1.82$ );  $t(17)= -2.204$ ,  $p=.042$ .

COUNTERBALANCED PROGRESSION

TABLE 4. Descriptive statistics of L2 learners' perceptions of individual simple and complex argumentative writing tasks following dyadic and triadic peer discussions in the counterbalanced session.

	<i>N</i>	Dyadic Grouping				Sig/ Effect	Triadic Grouping				Sig/ Effect
		Complex (Ind)	Simple (Ind)	<i>M</i>	<i>SD</i>		Complex (Ind)	Simple (Ind)	<i>M</i>	<i>SD</i>	
Difficulty	18	7.06	1.80	7.44	1.46	$p=.030^*/$ $d=-.56$	6.44	.78	7.17	1.29	$p=.033^*/$ $d=-.547$
Stress	18	7.11	1.78	7.33	1.37	$p=.104/$ $d=-.405$	7.28	1.41	7.33	1.37	$p=.875/$ $d=-.038$
Confidence	18	6.28	1.56	6.50	1.29	$p=.163/$ $d=-.344$	6.33	1.57	6.67	1.33	$p=.462/$ $d=-.177$
Interest	18	7.06	1.47	7.06	1.35	$p=1.0/$ $d=.000$	6.83	1.29	6.83	1.50	$p=1.0/$ $d=.000$
Motivation	18	6.78	1.70	7.22	1.26	$p=.042^*/$ $d=-.519$	6.67	1.57	6.83	1.65	$p=.604/$ $d=-.124$
Participation	18	7.06	1.26	6.83	1.25	$p=.260/$ $d=.275$	6.67	1.68	6.61	1.54	$p=.868/$ $d=.040$
Learning Opportunities	18	7.11	1.49	6.83	1.50	$p=.135/$ $d=.369$	7.06	1.30	6.67	1.78	$p=.218/$ $d=.302$

Note. Ind indicates Individual, asterisk \* indicates statistical significance ( $p < .05$ )

*Perceived Task Difficulty and Motivation*

The paired-samples T-test revealed that no statistically significant difference was detected from the effects of peer interaction in dyadic and triadic pre-writing conditions in learners' perceived stress, confidence, interest in the task, willingness to participate and learning opportunities. A statistically significant effect was detected during the respective dyadic, simple ( $M= 7.44$ ,  $SD=1.46$ ) and complex ( $M=7.06$ ,  $SD=1.80$ );  $t(17)= -2.364$ ,  $p= .03$  and triadic discussions on their perceived task difficulty, simple ( $M=6.44$ ,  $SD= .78$ ) and complex ( $M= 7.17$ ,  $SD= 1.29$ );  $t(17)= -2.32$ ,  $p= .033$ . A statistically significant effect was detected during the dyadic discussion on their motivation level, complex ( $M=6.78$ ,  $SD=1.69$ ) and simple ( $M=7.22$ ,  $SD= 1.26$ );  $t(17)= -2.204$ ,  $p= .042$ .

## DISCUSSION

Research Question 1: To what extent do task complexity and task condition affect L2 learners' perceptions of an L2 individual writing task in different progression (i.e., natural versus counter-balanced progression)?

In the natural progression session, L2 learners felt more confident in performing simple tasks than complex tasks as predicted by the CH (Robinson, 2001; 2007), the increased conceptual complexity in a complex task inflicted heightened formulation demands on learners (Robinson et al., 2013). While the lower cognitive demands of the simple task inflicted reduced demands and positively affected learners' overall self-efficacy which in turn led them to believe in their capacity to perform the task better, the dyadic discussion that affords a two-way interaction seems to have eased their conceptual loads and thus they felt more relaxed in writing a simple task than performing it in the individual condition. Learners reported that the dyadic grouping engaged them actively in discussion and further prompted them to express ideas effortlessly. In the open-ended section, Participants 2 and 11 responded that both of them and their peers actively produced output and received input as raised by Ellis et al. (2019) that active two-way interaction promotes output production and input reception. Moreover, the responses also suggested that they were more relaxed and confident:

I can manage simple writing better than complex one after discussing ideas together with my group partner because I get better ideas from him (group partner) (Natural Progression, Participant 2).  
[...] my peer can pour out ideas with me without fear [...] I also do the same because there are only two of us speaking (Natural Progression, Participant 11)

In the counterbalanced session, not only L2 learners perceived that they were more confident, interested in, and motivated to perform complex writing and that it was easier to perform complex tasks than simple writing in the individual session, but they also felt least stressed when performing the writing tasks in the individual session. Although these findings contradict the natural progression session, they correspond to findings in studies like Rahimi and Zhang (2019) that learners' motivation is more evident in complex tasks. A higher level of interestingness automatically contributes to increased attention in L2 learners and promotes their readiness for task involvement. As supported by Saville-Troike and Barto (2016), motivation largely determines the level of effort learners put into the tasks. The decreased mental load in the prefrontal cortex of mental states enhance L2 learners' self-reflective consciousness, memory, temporal integration, and working memory which prepared them to be more ready for task involvement (Dietrich, 2003). Moreover, L2 learners' interest in the complex task promotes learners' cognitive systems to work automatically, thus less effort is required for processing with faster and more effective language learning which boosted their confidence and motivation in performing the complex task. It is also supported by Révész, Michel, and Gilabert (2016) that the complex task was more useful and effective in directing learners' attention to the linguistic output for L2 learning.

As substantiated by Shernoff and Csikszentmihalyi (2009), a cognitively more challenging task develops a higher flow in learners which in turn facilitates learners to focus on their mental state and engage their information processing, i.e., the flow enables learners' implicit mind to take over (Dietrich, 2003). When learners felt motivated, their attention and interest would be automatically captured towards the task where less intentional effort is required. Learners reported that doing a complex task throughout an individual session helped them focus more on their

thinking, conceptualizing main ideas as well as writing skills. Participants 4, 7, and 15 responded that:

At first the 6 causal-effect writing task is challenging to do alone, I somehow enjoyed doing challenging tasks myself because I can concentrate on my points, [...] easier for my writing, no need to care about others' ideas if I have to discuss with others (Counterbalanced session, Participant 4).

[...] I like doing tasks that are not too easy just like playing video games if the games are of low level like the second task (2 causes and 2 effects), I am not driven to continue playing the game. But if the game is higher level, it will push me to explore and try more. It is fascinating like the first writing task (6 causes and 6 effects) (Counterbalanced session, Participant 7).

I prefer doing the complex task all by myself [...] you (I) can have all the time yourself (myself) planning for ideas and you (I) can give better ideas if you (I) think out ideas yourself (myself) [...] discussion you (I) need to organise their ideas (Counterbalanced session, Participant 15)

This justifies why learners felt more relaxed even though they performed the complex task individually as they needed to focus only on their mental states and noted down their ideas without having to worry about expressing or clarifying their ideas to others and processing opinions from peers. L2 learners were also more confident when their state anxiety was lower. Anxiety negatively correlates with language learning, the absence of anxiety strengthens self-confidence (Horwitz, 2001). This corresponds to Robinson's (2001) study that learners' confidence was lower when they experienced higher stress on the complex task.

While the individual condition seems to be L2 learners' refuge, learners reported that the dyadic pre-writing peer discussion motivated them to perform the latter complex argumentative writing task. Participants 6 and 9 commented that:

I quite like "arguing" my perspectives with my friend in the argumentative task because my friend is also arguing back [...] I think we learn from each other's argument (Counterbalanced session, Participant 6)

I have learned some new English words like phrases because initially I was thinking of the words in Chinese but could not think what are the words in English and I heard my group peer say the word in English, I note that down (Counterbalanced session, Participant 9)

Like Moranski and Toth (2016), L2 learners were stimulated by two-way communication where they were exposed to an interactive environment that allowed them to listen to each other, adopt each other's expertise and ideas, and exchange feedback. Particularly, active interaction comes with active observation (Van den Branden, 2022). The response of Participant 9 noted that both the participant and their peer practised active observation where their peer might have observed the struggles encountered by Participant 9 when expressing ideas, the peer then provided the word in English which allowed Participant 9 to model and imitate the language patterns noticed (Coe et al., 2020). They could learn the English language more effectively. When they performed the complex task individually, they focused more on ideas conceptualisation rather than grammar and language. Conversely, the interactive dyadic discussion exposed them to new ideas and had them learn how to express their ideas differently in English which directed their attention to language usages like vocabulary and sentence structure. Moderately more challenging tasks with support enhance learners' perceived L2 competence (Van den Branden, 2016) which serves as an



antecedent of intrinsic motivation for L2 learning. L2 learners deemed the triadic condition unpredictable for learning as they were beyond control when they needed to process ideas from two other peers and concurrently ensure the idea clarity was conveyed to others. This explains that learning conditions influence learners' affective domains and determine the extent to which the cognitive processing of learners is facilitated (Baralt et al., 2016).

Research Question 2: To what extent does the difference in groupings (i.e., dyadic, and triadic) for peer discussion modulate the effects of task complexity on L2 learners' perceptions of an L2 individual writing task (i.e., natural versus counter-balanced progression)?

The different grouping formats set in the pre-writing condition for peer discussions modulated the effects of task complexity on L2 learners' willingness to participate, perceived task difficulty, and motivation level. As asserted by Walker (2008), learners possessed a higher flow of interest and motivation in team activities as they enjoyed engaging and interacting with others. L2 learners in the study participated more willingly in the dyadic simple task discussion in the natural progression. This is attributed to the nature of the grouping as Participant 11 stated there were only two of them, thus either peer took active turns to conceptualise, clarify, and exchange ideas. In the responses by Participants 1 and 6, they revealed that the opportunity to discuss overcame their nervousness as the ideas generated provided them with the confidence to fulfil high demands in the complex writing task and produce writing with high demands.

Group discussion is always better than working alone especially you (I) feel relieved writing the complex writing essay after discussing ideas [...] it became so much easier because you (I) got many ideas from others also, you (I) can write a lot (Natural Progression, Participant 1)

Simple writing task needs only two ideas each(2 causes and 2 effects) and my partner and I can take turns to give ideas [...] we are more ready to give ideas because when my partner's ideas make us think, I want to come out with even more ideas (Natural Progression, Participant 6)

Likewise, in the counterbalanced session, L2 learners also perceived that it was easier to perform the complex writing task after the triadic and dyadic discussions. L2 learners further reported that the dyadic format for discussion has motivated them to go in-depth into the topic and idea conceptualization when debating the content while considering another party's viewpoints. What Participants 3 and 8 responded corresponded to Sheen's (2008) lower classroom anxiety promoted the intended efficacy of recast.

Two of us discussed our stands and try to persuade each other to see our point in 6 causal-effect writing [...] that urge me to think to counterargue his (the partner's) ideas [...] some points had us rephrase our ways of expressing our ideas as we discuss [...] it was not as hard (Counterbalanced session, Participant 3)

Of course, the first task (6 causes and 6 effects) was way more tougher than the second task at the first glance, but having able to analyse the situation with our friends and talk through our thoughts no matter two person or three helped ease the difficulty (Counterbalanced session, Participant 8)

Not only did they enjoy the intellectual arguments as they defended their own opinions, but they also perceived that listening to each other reduced their burden in writing the complex task individually as it strengthens their resource pools for more effective information processing. This promotes the elaborative rehearsal in the encoding process for effective information processing and retention when connecting new information to the prior knowledge as

attention leads learners to notice where information transfers from short-term memory for noticing then to long-term memory. Flow is the focused mental state and mental engagement that a person can experience when completing a task that is more challenging (Shernoff and Csikszentmihalyi 2009). In this study, the flow might have facilitated the process of the more effortful integration of encoded stimuli, i.e., deep thinking, and schemata activation in long-term memory, i.e., connection-making with new incoming information and information that is already stored in long-term memory. The higher motivation in L2 learners strengthened the consolidation of the new information in memory which helps them retrieve readily available information easily from their long-term memory for their individual writing.

While unequal opportunities to communicate during the triadic peer discussion led learners to passive participation, and observation of the others in the active engagement of interaction (Van den Branden, 2022), in this study, the input recipient(s) who observed the output producer(s) benefitted in modelling process (Coe et al., 2020) with the enriched surrounding stimuli. L2 learners' cognitive system was stimulated and engaged deeply as noted by Ellis et al. (2019), a one-way interaction allows the passive participant receives input while listening to the active one to produce output. As hypothesized by the CH, the higher demands in the complex tasks have heightened and directed learners' attention to the increasing stimuli for noticing. They felt that performing the complex task was easier after listening to peers. Demanding tasks are achievable with support, and they motivate learners to engage deeply in the process (Van den Branden, 2016). Likewise, learners tend to work intensively toward completing group tasks (Mitchell et al., 2019). Learners reported that the discussion provided them with opportunities to plan, exchange ideas, and give and obtain immediate feedback for more effective idea production, pooling, and incorporation, into their complex individual writing. The grouping format produces a motivational basis for L2 learning since the emotional response to the L2 is inextricably entwined with the social context. L2 learners perceived that brainstorming during the triadic collaborative discussion session deepened their thinking and strengthened their understanding of the topic through idea contribution, negotiation, and feedback exchange which helps them tackle the individual writing task more effortlessly.

## CONCLUSIONS AND PEDAGOGICAL IMPLICATIONS

The current study investigated the extent to which task complexity and pre-writing conditions affect L2 learners' perceptions of individual argumentative writing. First, the task complexity in the natural progression boosted learners' confidence. Second, the seemingly debate-like discussion in dyads stimulated and deeply engaged learners' cognition and is more interesting and motivating for learners to perform better in the latter complex individual argumentative writing. Third, the dyadic pre-task condition is a predictable learning environment for learners to be more in control of expressing and processing ideas in the latter writing. Fourth, regardless of how task complexity was sequenced, dyadic and triadic pre-task peer discussion helped ease learners' perceived task load as more resources are pooled from discussions. While cognitively more complex writing tasks directly weighed on L2 learners' cognitive and affective domains, the thought-provoking pre-writing dyadic discussion enables L2 learners to perform the subsequent individual argumentative writing tasks more easily, relaxingly, interestingly, motivationally, and confidently. Course designers may consider implementing dyadic discussions during the pre-writing stage to strengthen learners' cognitive and affective domains in the L2 writing context.

These findings, however, should be interpreted with caution as the sample size was small, and the participants were recruited from one Malaysian private university. The sample may not be generalizable to the entire university student population or other L2 contexts. Future research with a larger sample size and of different regions is warranted. Additionally, while a retrospective questionnaire was used to minimize potential intervention during learners' performance on tasks, it might not succinctly capture learners' momentary mental state. Future research may administer the questionnaire set after each individual writing task to better capture their momentary experiences. Lastly, future research studies investigating L2 learners' perceptions in other genres of writing with the manipulation of task complexity and implementation as well as how L2 learners' perceptions, e.g., perceived task difficulty impact their L2 individual writing are warranted.

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