



*Journal of Teaching Language Skills (JTLS)*  
38(3), Fall 2019, pp. 159-187- ISSN: 2008-8191  
DOI: 10.22099/jtls.2020.36556.2790

## Trodden and Untrodden Paths: A Study of Cognitive Processes in Oral Responding and Questioning

**Mina Madadi \***

**Reza Rezvani \*\***

### Abstract

The present study was an attempt to provide a psycholinguistic account of cognitive processes underlying responding and questioning. It also strived to identify the potential differences between responding and questioning cognitive processes in Target Language Use Situation tasks. To accomplish the objectives, 65 Iranian general IELTS applicants from two foreign language learning institutes in Shiraz, with two different language proficiency levels (intermediate and advanced), were randomly selected. They were administered a normal responding and a reverse questioning IELTS oral tasks. Two seven-point Likert scale questionnaires were also used to measure the task difficulty and mental effort that the applicants perceived while doing the tasks. Additionally, the applicants' recorded voices in tasks were transcribed and analyzed to assess the number of grammatical errors and pause lengths. The analysis of the numerical data through descriptive statistics and paired-samples t-tests indicated that, in general, the cognitive processes underlying oral responding and questioning are significantly different in terms of mental effort, task difficulty, length of pauses, and the number of grammatical errors. More specifically, the results suggested that the applicants took more mental effort and perceived more task difficulty while constructing the questions for given responses irrespective of their proficiency levels. Both groups also paused significantly longer and committed significantly more grammatical errors when completing the questioning tasks. The paper discusses the study implications for second language teachers and assessors.

*Keywords:* Cognitive Process, Questioning, Responding, Mental effort, Task Difficulty, Grammatical Errors, Pause Length, IELTS Applicants

---

Received: 04/03/2020

Accepted: 20/06/2020

\* M.A., Department of English Language and Literature, Faculty of Humanities, Yasouj University, Yasouj, Iran - Email: madadi\_mina@ymail.com

\*\* Associate Professor, Department of English Language and Literature, Faculty of Humanities, Yasouj University, Yasouj, Iran - Email: rezvanireza@gmail.com, Corresponding author

It is claimed that the best condition for learning to take place is to provide a learner with an authentic situation that has a direct association with the experience or life of learners (Hart, 1983; Nummela & Rosengren, 1986). However, Powell (2010) acknowledged that there might be no truly authentic condition in classrooms though they can provide a wealth of opportunities for teacher-students and student-student interactions. Mercer and Littleton (2007) accordingly argued that teachers and students must have active talks to generate and negotiate a shared communicative space in order to provide conducive learning conditions. Chin (2007) also argued that students' engagement in class discussions, expressing their points of view, and generally, involvement in dialogic discourse increase students' creative thinking, which in turn, can result in good habits of mind such as "questioning."

Asking questions has been presumed as one of the most conventional learning and teaching devices in classrooms (Graesser & Olde, 2003). A review of various studies points to instructors' heavy reliance on questioning as one of the central pedagogical practices (Almeida, 2012; Graesser & Olde, 2003; Margutti, 2006). Margutti (2006) maintains that the method of questioning and answering has come down all the way from Socrates. In classrooms, teacher questions, with exceptions, however, are not genuine questions because they already know the answer and try merely to elicit some known information. Such questions, as instructional tools, are conceived of as shallow rather than deep and are thought to address explicit materials rather than inferences (Dillon, 1988). Further, since teachers' unidirectional display questions might hardly be modeled upon, it is not surprising that students are by and large poor in the reverse process of their questions (Graesser, Baggett & Williams, 1996; Rezvani & Sayyadi, 2015).

In language education, it is generally maintained that learners' questions stimulate interest in new subjects, ideas, and challenges. They also encourage them to be more reflective about their comprehension, assumptions, and

beliefs (Cotton, 1998). Teachers' questioning also as one of the main means to initiate and manage class interactions (Mozaffari & Yaqubi, 2015), is also deemed to be a useful strategy to motivate language learners to engage in discussions and, as a result, extend their conversing ability (Harlen & Qualter, 2004).

The accomplishment of language instructors' pedagogic objectives and their heavy reliance on questioning as the main pedagogical practice (Chin & Osborne, 2008; Graesser & Olde, 2003) along with improving learners' capacity for building well-formed interactions to fulfill various social and academic objectives are closely bound up with both instructors' and learners' practice of questioning in classroom discourse (Chin & Osborne, 2008). Although lots of studies have been conducted on teachers' questioning, little attention has been given to students' questioning ability. A growing literature (e.g., Almeida & Neri de Souza, 2010; Graesser & Person, 1994; Rezvani & Sayyadi, 2015; Willis & Willis, 2007) raised concern that learners' practice of questioning, unlike that of instructors', has been largely neglected in language learning classrooms.

The everyday conversation occurring in real-life discourse is a socially structured phenomenon since social activities such as requests, proposals, apologies, and appreciations are interactively built by participants (Hutchby & Wooffitt, 2008). On that account, participants' ability to pose questions enables them to make well-structured and naturally occurring conversations (Yule, 2006) and helps them achieve a range of communicative goals in real-life situations (Ausubel, 1968; Brown & Yule, 1983, Halliday, 1973). Learners' questions, as well, appear to play a primary role in meaningful learning, thinking and conceptual understanding, reasoning, and whatsoever interactions in instructional contexts (Almeida, 2012; Almeida & Neri-de-Souza, 2010).

The past decade has seen a small number of research studies devoted to learners' questioning. Noting that students are generally expected only to

answer instructors' questions and not to ask their own questions, some researchers tried to focus conversely on learners' generated questions and their beneficial effect on language learning (Chin & Kayalvizhi, 2005). Along the same line, the primary interest of this study will be whether learners' questioning is different from responding in terms of their cognitive processes.

Stevick (1980), a strong advocate of humanism in language teaching, argues that being a successful language learner depends more on what goes on inside and between the people in the classroom and lesson materials, techniques, and linguistic analysis. The role of questioning as one of the central conversing tools and strategies which can be exploited to the largest extent in classroom interactions among the teacher and students could be elevated to a primary and effective instructional technique in language learning classes in particular. It should not surprise us that, as Dillon (as cited in Huang et al., 2017) arguably pointed out, children worldwide are educated to become masters at answering questions but remain novices at asking them. In classes where students are relegated to only answer questions, they are deprived of opportunities to more actively reflect on and take a more active role in their learning which would be of great service to and support for their cognitive development.

Questions are known as one of the psychological tools for thinking. Embedded questions in the discourse of collaborative peer groups, help learners co-construct knowledge inter-psychologically. This is supported by Vygotsky's (1978) argument that knowledge is appropriated or constructed intra-psychologically by the individual members. From a social-cognitive perspective, questioning in a group context can also encourage students to reassess their ideas in new ways because they are exposed to different peer viewpoints. Question-construction is thus an essential element in "talking science" (Hawkins & Pea, 1987; Lemke, 1990) in the social construction of knowledge (Driver et al., 1994).

As Chin and Osborne (2010) emphasized students ask questions because of the existence of a gap in knowledge, though not all students who have a gap in knowledge ask questions. Asking questions is a form of metacognition, in which a student identifies what he or she knows or does not know and also makes linkages with other ideas. Questioning also leads to the importance of discursive interaction to meaning construction in science (Chin & Osborne, 2010; Roth & Bowen, 1995; van Zee et al., 2001). Questions form the basis of dialogic meaning construction, which is primary in especially inquiry-based learning (Chin & Osborne, 2010).

As it was mentioned above, while there might be no truly authentic situation for EFL learners to practice language use, attempts can be made to improvise target language use situations (TLUS) and interactions among students and their teacher. Using TLUS tasks in class can simulate authentic learning and use conditions. Teachers can set up a learning context in which students become “used to” target language input and output to aid language learners in introducing and sustaining the target language while creating an engaging learning environment, which approximates authentic language communication (Moeller & Roberts, 2013). Integrating the best pedagogical praxis and TLUS tasks, with the purpose of maximizing the use of target language, will create a lively and engaging language experience that can approximate authentic language use and make language learning meaningful to learners. In such situations, questions and responses as most frequently used teaching and learning tools are to be used by learners to interact with the teacher and one another through pair work or group work tasks.

Albeit few might doubt the significance of learners’ practice of questioning, it has been, unlike that of instructors, largely neglected in language learning classrooms (Graesser & Person, 1994). Instructors’ questions have been presumed as one of the most conventionally utilized teaching and learning practices in classroom contexts (Almeida, 2012; Graesser & Olde, 2003; Margutti, 2006). In other words, questions and

answers are ubiquitous instructional tools in pedagogic tradition with the former broadly appreciated and practiced (Margutti, 2006, p. 314) by teachers and the latter almost exclusively assigned to learners. It is conceived by some teachers and even researchers that responding/responses and questioning/questions are not different in nature, and that when teachers use their privileged questioning device, the students' questioning would ensue automatically without their active use of the skill in class. The current exploratory study is motivated to examine how different questioning and responding to cognitive processes in TLUS might be. It has also strived to identify certain potential differences between questioning and responding to cognitive processes.

### Research Questions

This study aimed at exploring certain psycholinguistic features of questioning and responding. In an attempt to compare and contrast the specific features of the two literally polar cognitive processes, the study, more specifically, sought to answer the following questions across two different proficiency levels of intermediate and advanced IELTS applicants:

1. Is "mental effort" in questioning significantly different from that in responding in TLUS IELTS tasks?
2. Is the difficulty of questioning significantly different from that in responding in TLUS IELTS tasks?
3. Is the length of pauses in questioning significantly different from that in responding in TLUS IELTS tasks?
4. Is the number of grammatical errors committed in questioning significantly different from that in responding in TLUS IELTS tasks?

### Method

This paper reported on quantitative findings from a larger-scale project involving both qualitative and quantitative approaches used complementarily.

The questions addressed in the paper lent themselves to a quantitative analysis exploring, comparing, and contrasting the cognitive processes underlying questioning and responding.

### **Participants**

It is acknowledged that the larger a random sample size is, the more representative it will be (Ary, Jacobs & Sorensen, 2010). However, since it was practically demanding to recruit a large number of participants to perform multiple tasks, this study included only 65 participants selected from among 150 general IELTS applicants of two institutes in Shiraz. The participants' age ranged from 25 to 48. The students who attend the IELTS preparation classes take placement tests to attend intermediate or advanced preparation courses. Among the study participants, 50 participants were intermediate (25 male and 25 female), and 15 participants were advanced (9 females and 6 males).

It is worth noting that IELTS applicants when taking the exam preparation courses, have typically passed regular language learning classes and are supposed to be proficient enough to do TLUS tasks as the targeted aims of the examination (Rezvani & Sayyadi, 2015). As such, and since the study was concerned with responding and questioning processes in the TLUS the sample included general IELTS applicants. The study was undertaken in 2019 at two private language centers in Shiraz, Iran.

### **Instruments**

In order to assess cognitive load in this study, two rating scales were employed to measure both mental effort and task difficulty. Cognitive load can be defined as a multidimensional construct representing the load that performing a particular task imposes on the learner's cognitive system (Paas & Van Merriënboer, 1994a). In this measurement, the learners were asked to rate the amount of mental effort they have perceived in completing the task on

a seven-point Likert scale ranging from “very, very low mental effort” to “very, very high mental effort.” Thus, the “mental effort” self-rating scale proposed by Paas (1992) was employed to measure the amount of mental effort the applicants devoted to each task type in order to accomplish them. This mental effort scale is recognized as a reliable, valid, and unintrusive measurement (for details see Gimino, 2002; Paas, van Merriënboer, & Adam, 1994).

The second rating scale used in this study to determine the perceived intensity of task difficulty was a version of Bratfish, Borg, and Dornic’s scale (1972) for measuring perceived task difficulty. The seven-point Likert scale of task difficulty ranged from “very, very easy to very, very difficult”, suggesting difficulty level of tasks.

The applicants’ voices were also recorded while doing the tasks employing a digital voice recording. When transcribing the data, the length of the pauses was measured using a “stop-watch timer” android application in seconds and milliseconds by measuring the time interval between the last uttered words before the pause to the first word uttered after the pause.

As for the number of obvious grammatical errors, the transcribed tasks were rated by the researchers in terms of structure. Errors were identified in terms of subject-verb agreement, plural markers, rules related to tenses, word order, and wrong word usage in accordance with an English error categorization (Ghadessay’, 1980). The grammatically wrong uses were highlighted and tallied as raw data for data analysis.

### **Data Collection Procedure**

At first, IELTS advanced (n=15) and intermediate (n=50) applicants were divided into two groups of 7 and 8, and halves, respectively. In a counterbalancing design, all the groups alternated between constructing questions or responses. The questions were adopted from actual general IELTS oral interview tasks and respective answers were typical answers



suggested and approved by three experienced IELTS preparation teachers. The participants were administered the two scales just when they finished the tasks. The scales were employed to objectify and measure the perceived mental effort and perceived task difficulty. Both responding and questioning tasks lasted similarly from 8 to 9 minutes. Observation notes were also taken to obtain a more in-depth description of the participants' natural behaviors during the interview. An attempt was also made to record everything observed and heard during the interview sessions, particularly in order to measure the length of pauses and the number of grammatical errors each applicant committed during the task completion. It should be noted that the applicants were notified that their voices would be recorded and used only for the purpose of the current study.

### **Data Analysis**

The quantitative tabulated data were analyzed descriptively. Then paired samples t-tests were employed using SPSS (Statistical Package for the Social Sciences, version 25) to examine if there was any significant difference between questioning and responding in terms of the indicators of the cognitive processes. The same tests were utilized for the comparative groups of advanced and intermediate applicants.

### **Results**

The descriptive statistics of questioning and responding for mental effort, task difficulty, length of pauses, and grammatical errors among the intermediate and advanced IELTS applicants are shown in the following tables. As indicated in Tables 1, 2, 3, and 4, the mean differences for all four variables of interest in both tasks of questioning and responding are descriptively noticeable.

Table 1 displays the descriptive statistics of mental effort in questioning and responding tasks among intermediate and advanced IELTS applicants.

According to Table 1, the mean of mental effort in questioning was larger than that in responding tasks in both groups of applicants irrespective of their proficiency levels.

Table 1.

*Descriptive Statistics for Mental Effort in Questioning and Responding Tasks*

	responding mental effort	questioning mental effort
Valid	65	65
Missing	0	0
Mean	2.5692	4.0923
Std. Error of Mean	.17673	.20653
Median	2.0000	4.0000
Mode	2.00	3.00a
Std. Deviation	1.42488	1.66511
Variance	2.030	2.773
Minimum	1.00	1.00
Maximum	6.00	7.00
Sum	167.00	266.00

Table 2 summarizes the descriptive statistics of the variable “task difficulty.” As it is indicated in Table 2, task difficulty was higher in questioning task than that in responding task among all the applicants (intermediate and advanced levels).

Table 2.

*Descriptive Statistics for Task Difficulty in Questioning and Responding Tasks*

	responding task difficulty	questioning task difficulty
N Valid	65	65
Missing	0	0
Mean	2.3846	3.9846
Std. Error of Mean	.16941	.19549
Median	2.0000	4.0000
Mode	2.00	3.00
Std. Deviation	1.36579	1.57611
Variance	1.865	2.484

	responding task difficulty	questioning task difficulty
Minimum	1.00	1.00
Maximum	7.00	7.00
Sum	155.00	259.00

Table 3 also presents the descriptive statistics of the length of pauses in questioning and responding among intermediate and advanced IELTS applicants. According to Table 3, both groups paused longer in questioning tasks than in responding one.

Table 3.

*Descriptive Statistics for Length of Pauses in Questioning and Responding Tasks*

	responding pauses(second)	questioning pauses (second)
N Valid	65	65
Missing	0	0
Mean	2.4769	7.9385
Std. Error of Mean	.14889	.40184
Median	2.0000	8.0000
Mode	2.00	9.00
Std. Deviation	1.20036	3.23978
Variance	1.441	10.496
Minimum	1.00	2.00
Maximum	5.00	15.00
Sum	161.00	516.00

Table 4 summarizes descriptive statistics of all grammatical errors which occurred while the participants completed the tasks. The descriptive statistics for this variable also suggested that the applicants in both proficiency levels made more grammatical errors in questioning than in responding.

Table 4.

*Descriptive Statistics for Grammatical Errors in Questioning and Responding Tasks*

		responding gr errors	questioning gr errors
N	Valid	65	65
	Missing	0	0
Mean		.6769	2.1846
Std. Error of Mean		.08800	.13674
Median		1.0000	2.0000
Mode		.00	2.00
Std. Deviation		.70948	1.10244
Variance		.503	1.215
Minimum		.00	.00
Maximum		2.00	5.00
Sum		44.00	142.00

Figure 1 depicts all the mean discrepancies for variables of interest in the study. The average level of mental effort, task difficulty, length of pauses, and grammatical errors are represented by the colored bars. The figure clearly suggests that the mean of all the four variables at stake are larger in questioning tasks than those in responding tasks.

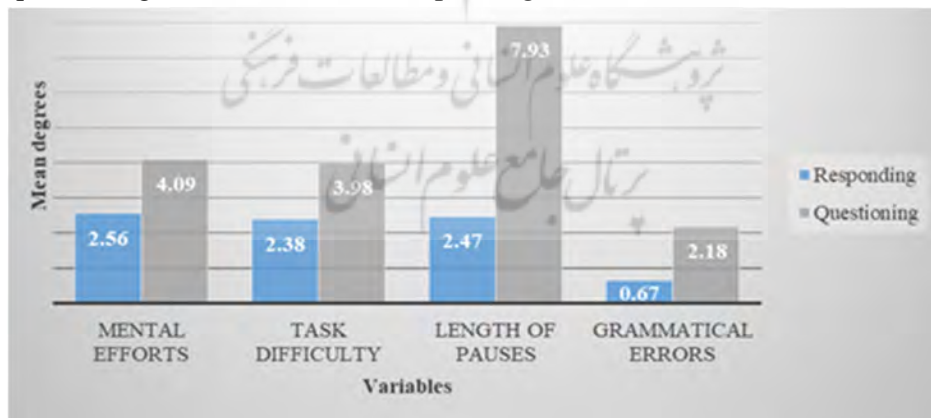


Figure 1.

*Graph of the Mean Discrepancies Among all the Applicants*

In order to examine the statistical significance of differences in terms of task difficulty, mental effort, length of pauses, and the number of grammatical errors between questioning and responding t-tests were run. In what follows the findings for each variable will be presented using tables.

### Mental Effort

Mental effort expended by the intermediate IELTS applicants in performing questioning and responding tasks was found to be significantly different ( $t = -7.48, p \leq 0.05$ ). More specifically, the results suggested that the amount of mental effort put into questioning ( $M=3.84, SD =1.51$ ) was significantly more than that of responding tasks ( $M= 2.34, SD=1.27$ ). In other words, the intermediate participants spared more mental effort when they had to make a question for the responses than when they, as usual, answered the questions.

Table 5.

*The Paired T-test between Mental Effort in Questioning and Responding Efforts (Intermediate IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	T	sig	Sig. (2-tailed)	correlation
mental effort in responding	2.34	50	1.27	0.17	-7.48	0.00	0.00	0.49
mental effort in questioning	3.84	50	1.51	0.21		0		

Further, to examine whether the same difference held across the proficiency levels, another paired-samples t-test was also run to compare mental effort differences among the advanced IELTS applicants. As shown in Table 6, the mean differences were statistically significant, which could be construed that the advanced applicants also devoted more mental effort in questioning ( $M=4.96, SD =1.90$ ) than responding tasks ( $M= 3.33, SD=1.67$ ).

Table 6.

*The Paired T-test between Mental Effort in Questioning and Responding Efforts (Advanced IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2-tailed)	correlation
mental effort in responding	3.33	15	1.67	0.43	-2.34	0.77	0.03	-0.08
mental effort in questioning	4.93	15	1.90	0.49				

In sum, the significant differences reported in Tables 5 and 6 indicated that the applicants invested more mental effort in questioning tasks regardless of their proficiency levels.

**Task Difficulty**

The task difficulty mean in questioning was also measured against that of responding using paired-samples t-tests. A comparison was also made between the intermediate and advanced-level applicants. Tables 7 and 8 present the significant differences between both skills across the proficiency levels. As displayed in Table 7, the mean of questioning task difficulty for the intermediate level (M= 3.92, SD= 1.53) was significantly higher than responding task difficulty (M=2.24, SD=1.23) in the same proficiency level.

Table 7.

*The Paired T-test between Task Difficulty in Questioning and Responding (Intermediate IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	T	sig	Sig. (2-tailed)	correlation
task difficulty in responding	2.24	50	1.23	0.17	-8.36	0.00	0.00	0.49

task difficulty in questioning	3.92	50	1.53	0.21
-----------------------------------	------	----	------	------

As Table 8 illustrates, it can be inferred that among the advanced applicants, similar to the intermediate ones, the questioning task (M= 4.20, SD= 1.74) was significantly more demanding than the responding task (M=2.86, SD=1.68).

Table 8.

*The Paired T-test between Task Difficulty in Questioning and Responding (Advanced IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	T	sig	Sig. (2- tailed)	correlation
task difficulty in responding	2.86	15	1.68	0.43	-2.16	0.90	0.04	0.34
task difficulty in questioning	4.20	15	1.74	0.44				

### Length of Pauses

In order to find out further differences underlying the questioning and responding tasks the applicants' pause length during task completion were compared using paired-samples t-tests. The results of the pause lengths of the intermediate applicants for both tasks were reported in Table 9. It is indicated that the intermediate applicants paused significantly longer in questioning (M = 8.1, SD= 3.13) than in the responding tasks (M= 2.58, SD= 1.23).

Table 9.

*The Paired T-test between the Length of Pauses in Questioning and Responding (Intermediate IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2- tailed)	correlation
length of pauses in responding	2.58	50	1.23	0.17	-11.38	0.69	0.00	-0.05

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2-tailed)	correlation
length of pauses in questioning	8.10	50	3.13	0.44				

Another paired-samples t-test was run afresh to compare the length of pauses among the advanced applicants. As demonstrated in Table 10, the test results were suggestive of a significant difference between pause lengths in questioning and responding tasks ( $t = -5.43, p \leq 0.05$ ). In effect, the applicants, across both proficiency levels, paused significantly longer while completing the questioning tasks.

Table 10.

*The Paired t-test between Length of Pauses in Questioning and Responding (Advanced IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2-tailed)	correlation
length of pauses in responding	2.13	15	1.06	0.27	-5.43	0.88	0.00	0.04
length of pauses in questioning	7.40	15	3.64	0.94				

### Grammatical Errors

It is apparent from Table 11 that the results of paired-samples t-tests between the number of grammatical errors in questioning and responding tasks are significantly different ( $t = -5.13, p \leq 0.05$ ) among the intermediate applicants. Thus, it is inferred that the questioning task is considered as more demanding than the responding tasks.



Table 11.

*The Paired T-test between the Number of Grammatical Errors in Questioning and Responding (Intermediate IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2-tailed)	correlation
grammatical errors in responding	0.46	15	0.51	0.13	-5.13	0.18	0.00	0.36
grammatical errors in questioning	1.86	15	1.12	0.29				

Paired-samples t-tests results for the advanced applicants (see Table 12) are quite revealing, indicating that the number of grammatical errors committed by the advanced applicants during the questioning tasks (M=2.28, SD=1.08) was larger than that of responding tasks (M=0.74, SD= 0.75). Thus, it is concluded that, as for grammatical errors, the same significant difference follows across both proficiency levels.

Table 12.

*The Paired T-test between the Number of Grammatical Errors in Questioning and Responding (Advanced IELTS Applicants)*

	Mean	N	Std. Deviation	Std. Error Mean	t	sig	Sig. (2-tailed)	correlation
grammatical errors in responding	0.74	50	0.75	0.10	-8.29	0.91	0.00	0.01
gram errors in questioning	2.28	50	1.08	0.15				

## Discussion

### “Mental effort” in Questioning and Responding Tasks

It was reported above that regardless of the applicants’ proficiency levels, the applicants put in more mental effort while completing the questioning

tasks. The significant difference of mental effort between the two skills and the respective cognitive processes might be accounted for in the light of Langer's (1984) proposal of "mindfulness" in accomplishing tasks. Mindfulness entails active distinctions and mental elaborations, rather than the use of ready-made and readily available categories. Mindlessness, in contrast, is characterized as the absence of active conscious information processing (Langer, 1984). She further points out that when faced with familiar tasks, one tends to process information quite mindlessly due to "overlearning" from the past which enables them to fit well new demands into their anticipatory schemata. Therefore, when the structure of a task, be it oral or written, is consistent with one's previous experience(s), it might pose somewhat less serious challenges (Langer, Blank, & Chanowitz, 1978; Sotoudehnama & Farahanynia, 2014) and hence requiring less mental engagement and efforts.

It should be noted that mindfulness is not an inherent characteristic of the tasks. Interestingly, Langer and Imber (1979) also speculate that even demanding tasks can be processed mindlessly or conversely mindfully if perceived as familiar or unfamiliar, respectively. Thus, mental effort needed, depend on how the tasks are perceived and evaluated (Salomon, 1981).

In responding to the questions as the more familiar task (Rezvani & Sayyadi, 2015) with well-practiced and more readily available lexical/grammatical elements, comparatively less demanding challenges are faced with, and on this account, relatively less mental effort would be invested. In the questioning task, on the contrary, as an uncommon, atypical, and incongruent job, more mindful processing is required, which in turn engenders more mental effort in the processors/applicants.

Concerning the questioning tasks, some applicants had difficulty with the storage and retrieval of information from long-term memory, so as they were not able to recall quickly the information they heard. Consequently, they could not make grammatically and semantically correct questions since their focus should have been on too many aspects to make an appropriate question for

each answer. During the responding tasks, on the other hand, the applicants could remember the exact questions, some of which even rehearsed while thinking about the answers. In other words, the more they had to remember, focus on, and analyze, the more efforts they had to expend to be able to do the task.

### **“Task Difficulty” in Questioning and Responding Tasks**

The study results indicated that across both proficiency levels, the mean of task difficulty in questioning tasks was significantly higher than that in the responding tasks, suggesting that the applicants faced more difficulty in questioning task completion. In regard to task difficulty, a broad perspective has been adopted by Umbreit, Lane, and Dejud (2004), who argue that students do easy tasks quickly and accurately while they need more time for completing more difficult tasks. In the current study, questioning tasks turned out to be more difficult while the responding tasks, taken up as easier assignments, were done more quickly and more accurately. Robinson (2001) attributes task difficulty to the information processing demands such as attentional, memory, and reasoning imposed by the structure of the task on the language learner. That is, it is commonly observed that less cognitively demanding tasks would be completed faster than more complex ones (Robinson, 2001). It follows then that different levels of task's cognitive demands have a specific impact on how quick learners' production would be. Thus, not surprisingly, the applicants across both proficiency levels did the responding task more quickly and perceived it less difficult.

From Skehan's (1998) perspective, cognitive complexity is affected by two prime factors, that is, cognitive familiarity and cognitive processing. Thus, it is further argued that applicants' unfamiliarity with questioning as the untrodden path augmented the task difficulty. This, together with the cognitive demand, can account for the difference in the perceived difficulty.

### **“Length of Pauses” in Questioning and Responding Tasks**

The range of length of pauses for the responding task was from 1 to 5 (average=2.47) seconds, while it ranged from 2 to 15 (average=7.93) seconds for the questioning tasks. So the comparison of the mean length of pauses as expected revealed that the applicants paused significantly more seconds while constructing questions than giving responses to the questions. Pausing is natural and necessary for breathing needs, a dramatic effect at certain points of speech, and for pragmatic use during speech (Ling, 2006). However, long and unnecessary pauses might have negative effects on speaking fluency with normal pauses. Fluency depends on frequency and length of pauses as well as the distribution of them in speech, therefore pauses of shorter durations are known as a key characteristic of native-like speech whereas long pauses are common in foreign language speaking leading to less natural or native-like language production. One factor affecting the length of pauses is information load or cognitive processing demands of some sort (Krivokapić, 2007). Information load is likely to be minimal if the learners are familiar with the tasks they have to perform. It would also be of a minimum load if the language learners are familiar with the topics they are going to talk about. Therefore, unfamiliarity with the tasks and the topics would give rise to high information load. Higher information load, in turn, makes cognition more careful and slower (Rabbitt, 1968; Robinson, 2001).

The applicants of the current study were familiar with the format of the responding tasks as well as typical topics like favorite flavor and TV programs. Such topics and questions about everyday life are commonly used on the test and practiced in IELTS preparation courses. Answering practiced questions very often demands little information processing load and less than that in the questioning counterparts. This is clearly reflected in the differential pause lengths (see Tables 9 & 10). In questioning tasks, the applicants had to construct questions from scratch, requiring them to use more of the cognitive mechanism resulting in a longer pause as an indicator of cognitive processing

and involvement. In short, more unfamiliar tasks imposed extra information load and more demanding conditions and cognition .

It is well worth noting that when doing the tasks, it was also observed that the applicants sometimes asked for the prompt repetition verbally or nonverbally. On average, in responding tasks they requested once, but in the counterparts, the requests rose noticeably to twice on average. Interestingly, there was an applicant who asked for prompt repetition once in the responding task, while four times for the questioning prompt each time twisting her face showing both agony and contemplation. This also suggests that they found the questioning tasks more demanding to figure out and needed more time to process them cognitively. As a concomitant of task demand, there might have been communication problems such as more clarification requests (Robinson, 2001), which emerged in this study as repetition requests .

It was also noted, when doing the questioning task, some applicants also asked to see the written forms of the responses complaining that they always had to respond to questions through their education and English learning. On this account, they looked for compensatory written forms, and when they were denied access, the task demand made them request for repetition and, in effect, took them more pauses.

### **Grammatical Errors Committed in Questioning and Responding Tasks**

The findings suggest that the questioning task was taken as cognitively more demanding because of the larger number of grammatical errors. Since longer chunks were observed in the applicants' attempts to build questions, a common-sense yet plausible account might be the fact that the more and the longer the chunks, the more the probability of commit grammatical errors .

The interview observation also revealed that although the applicants also made errors during responding tasks, they self-corrected themselves as soon as they noticed them, while grammatical errors in questioning very often remained untouched, and no self-correction occurred. From Kormos' (1999)

point of view, increasing the task's cognitive demands deviates processors' attention from monitoring, which is responsible for error correction. This adverse effect of task demand on monitoring and ensuing inaccuracy was also commonly noted in language learning (see for example Skehan, 1998; Skehan & Foster, 2001). Robinson (1995b; 2001a; 2001b) along similar lines contends that increasing task demands might take attention away from monitoring and planning as two essential components for accurate language use .

From another point of view if a parallel and balanced command of questioning and responding is assumed, and with the assumption made above that the former inflicts larger cognitive load on the processors, errors occur more frequently in tasks, in this respect questioning, because the processors cannot dedicate further resources and cognition mechanism space to the errors even if they are recognized (see Mehboob, Baloch, and Ghilzai, 2016 and Rabbitt, 1969 for discussion of error recognition).

### **Conclusion and Implications**

It is acknowledged that it was formidable for the researchers to recruit a large random sample of applicants to take four tedious measures. Thus the extrapolation of the results of this exploratory study beyond the sample of the study should be made with caution. In conclusion, from a psycholinguistic point of view, the results of this study suggest that questioning and responding though assumed to be parallel, differ to a noticeable extent in terms of the underlying cognitive processes. More specifically, analysis of the accumulated data indicated that across both proficiency levels, the applicants invested more mental effort when they were asked to make questions than when they answered typical oral IELTS questions. It was also indicated that the applicants regarded the questioning task as more difficult than answering the questions in TLUS because they had already experienced similar assignments. Comparative analysis of the applicants' length of pauses in both

tasks also revealed that the applicants paused differentially in the two tasks of interest due to the cognitive demand and familiarity. The questioning tasks as a more demanding and less familiar burden took significantly more seconds of pause. Similarly, the number of grammatical errors in the more demanding questioning condition was significantly larger than that of the responding conditions regardless of the language proficiency levels. It was also noted that in responding conditions errors were sometimes followed by the applicants' self-correction largely missing in questioning condition even if blatant errors were made.

The results of the study might have implications for language teachers, test developers, and second language (L<sub>2</sub>) learners. It is hoped that the results might raise L<sub>2</sub> teachers' awareness about the importance of learners' question building skill. Teachers are encouraged to dedicate a balanced share of class time and materials to work on the students' asking and answering questions. L<sub>2</sub> teachers, along with L<sub>2</sub> materials developers, tend to assume that these two abilities are of the same nature, and both develop through instruction and practice. The historical divide in the asking taken up by teachers and answering by learners is so deeply rooted that teachers rarely take note of learners' questioning and might seldom teach, practice, and assess it. Classroom interactions resemble natural and real-life communications only when both processes are involved.

Given the current emphasis on students' critical thinking and student-centered pedagogy, it is essential that teachers make sure that L<sub>2</sub> learners are able to voice their concerns, needs, and learning satisfaction largely realized through their questions as one of the main sources of feedback. This might in the long run pay off and motivate L<sub>2</sub> learners to engage more actively in class activities and even management when they realize that their say and voice are taken seriously. When they follow procedures set exclusively by the teacher and are supposed to passively only answer questions asked almost exclusively by teachers (Rezvani & Sayyadi, 2015), apart from the loss of enthusiasm and

engagement, the least consequence would be imbalanced development of the binary but closely associated skills of L<sub>2</sub> proficiency.

This study might have implications for language test developers as well in raising their awareness that in order to capture the reciprocal nature of real-life communications, there have to be room and tasks, particularly in large-scale assessments such as TOEFL and IELTS to allow the applicants to ask questions as well. The results of this study suggest that the two processes are characteristically different from a psycholinguistic perspective. Unless otherwise explicitly indicated that a test assesses either of the skills, there would be validity concerns if one of them is not tapped into in the examination.

### References

- Almeida, P. A. (2012). Can I ask a question? The importance of classroom questioning. *Procedia: Social and Behavioral Sciences*, 31(1), 634-638.
- Almeida, P., & Neri de Souza, F. (2010). Questioning profiles in secondary science classrooms. *International Journal of Learning and Change*, 4(3), 237-251.
- Ary, D., Jacobs. L. C., & Sorensen, C. (2010). *Introduction to Research in Education* (8th ed). California: Wadsworth.
- Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. New York: Rinehart and Winston
- Bratfisch, O., Borg, G., & Dornic, S. (1972). Perceived item-difficulty in three tests of intellectual performance capacity. *Tech. Rep*, 29, 1-14.
- Bray, R. M., Kerr, N. L., & Atkin, R. S. (1978). Effects of group size, problem difficulty, and sex on group performance and member reactions. *Journal of Personality and Social Psychology*, 36(11), 1224.
- Brown, G., & Yule, G. (1983). *Discourse analysis*. Cambridge: Cambridge University Press.



- Chan, H. C., Tan, B. C., & Wei, K. K. (1999). Three important determinants of user performance for database retrieval. *International Journal of Human-Computer Studies*, 51(5), 895-918.
- Chin, C. (2007). Teacher questioning in science classrooms: Approaches that stimulate productive thinking. *Journal of Research in Science Teaching*, 44(6), 815-843.
- Chin, C., & Kayalvizhi, G. (2005). What do pupils think of open science investigations? A study of Singaporean primary 6 pupils. *Educational Research*, 47(1), 107-126.
- Chin, C., & Osborne, J. (2008). Students' questions: a potential resource for teaching and learning science. *Studies in science education*, 44(1), 1-39.
- Chin, C., & Osborne, J. (2010). Students' questions and discursive interaction: Their impact on argumentation during collaborative group discussions in science. *Journal of research in Science Teaching*, 47(7), 883-908.
- Cotton, K. (1988 or 1998). *Monitoring student learning in the classroom*. Portland: Northwest Regional Educational Laboratory.
- Dillon, J. T. (1988). The remedial status of student questioning. *Journal of Curriculum Studies*, 20(3), 197-210.
- Ghadessy, M. (1980). Implications of error analysis for second/foreign language acquisition. *IRAL-International Review of Applied Linguistics in Language Teaching*, 18 (2), 93-104.
- Gimino, A. E. (2002). Factors that influence students' investment of mental effort in academic tasks: A validation and exploratory study.
- Graesser, A. C., Baggett, W., & Williams, K. (1996). Question-driven Explanatory Reasoning. *Applied Cognitive Psychology*, 10(1), 17-31.
- Graesser, A., & Olde, C. (2003). How does one know whether a person understands a device? The quality of the questions the person asks when the device breaks down. *Journal of Educational Psychology*, 95, 524-536.
- Graesser, A., & Person, N. K. (1994). Question asking during tutoring. *American Educational Research Journal*, 31(1), 104-137.

- Halliday, M. A. K. (1973). *Explorations in the Functions of Language*. London: Edward Arnold.
- Hart, L. A. (1983). *Human brain and human learning*. New York: Longman.
- Harlen, W., & Qualter, A. (2004). *The teaching of science in primary schools* (4th Ed.). London: David Fulton Publishers.
- Hawkins, J., & Pea, R. D. (1987). Tools for bridging the cultures of everyday and scientific thinking. *Journal of research in science teaching*, 24(4), 291-307.
- Huang, X., Lederman, N. G., & Cai, C. (2017). Improving Chinese junior high school students' ability to ask critical questions. *Journal of Research in Science Teaching*, 54(8), 963-987.
- Hutchby, I., & Wooffitt, R. (2008). *Conversation analysis*. London: Polity Press.
- Kormos, J. (1999). Monitoring and self-repair in L2. *Language Learning*, 49(2), 303-342
- Krivokapić, J. (2007). Prosodic planning: Effects of phrasal length and complexity on pause duration. *Journal of phonetics*, 35(2), 162-179.
- Lance, C. E., Parisi, A. G., Bennett Jr, W., Teachout, M., & Harville, D. L. (1998). Moderators of skill retention interval/performance decrement relationships in eight US Air Force enlisted specialties. *Human Performance*, 11(1), 103-123.
- Langer, E. J., Blank, A., & Chanowitz, B. (1978). The mindlessness of ostensibly thoughtful action: The role of "placebic" information in interpersonal interaction. *Journal of personality and social psychology*, 36(6), 635
- Langer, E., & Imber, L. (1979). When practice makes imperfect: The debilitating effects of overlearning. *Journal of Personality and Social Psychology*, 37(4), 2014-2025.
- Langer, J. (1984). Examining Background Knowledge and Text Comprehension. *Reading Research Quarterly*, 19(4), 468-481. doi:10.2307/747918.

- Lemke, J. L. (1990). *Talking science: Language, learning, and values*. Ablex Publishing Corporation, 355 Chestnut Street, Norwood, NJ 07648 (hardback: ISBN-0-89391-565-3; paperback: ISBN-0-89391-566-1).
- Ling, H. (2006). Long pauses in Chinese EFL learners' speech production. *Interlingüística*, (17), 606-616.
- Margutti, P. (2006). Are you human beings? Order and knowledge construction through questioning in primary classroom interaction. *Linguistics and Education*, 17(4), 313-346.
- Mehboob, A., Baloch, N., & Ghilzai, S. A. (2016). EFL Learners' Self-correction in Spoken Language. *Linguistics and Media*, 1(3), 34-47.
- Mercer, N., & Littleton, K. (2007). *Dialogue and the development of children's thinking: A sociocultural approach*. London: Routledge.
- Moeller, A., & Roberts, A. (2013). *Keeping It in the Target Language*. Multitasks, MultiSkills, MultiConnections. Selected Papers from the 2013 Central States Conference on the Teaching of Foreign Languages, ed. Stephanie
- Mozaffari, F., & Yaqubi, B. (2015). Learner initiative across question-answer sequences: A conversation analytic account of language classroom discourse. *Journal of Teaching Language Skills*, 34(2), 93-125.
- Nummela, R. M., & Rosengren, T. M. (1986). What is happening in students' brains may redefine teaching. *Educational Leadership*, 43(1), 49-53.
- Paas, F. G. (1992). Training strategies for attaining transfer of problem-solving skill in statistics: A cognitive load approach. *Journal of educational psychology*, 84(4), 429.
- Paas, F. G., & Van Merriënboer, J. J. (1994). Instructional control of cognitive load in the training of complex cognitive tasks. *Educational psychology review*, 6(4), 351-371.
- Paas, F. G., & Van Merriënboer, J. J. (1994). Variability of worked examples and transfer of geometrical problem-solving skills: A cognitive-load approach. *Journal of educational psychology*, 86(1), 122.

- Paas, F., van Merriënboer, J. J. G., & Adam, J. J. (1994). Measurement of cognitive load in instructional research.
- Powell, R. G., & Powell, L. (2010). *Classroom communication and diversity: Enhancing instrumental practice*. New York: Routledge.
- Rezvani, R., & Sayyadi, A. (2015). Instructors' and learners' questioning: a case of EFL classroom discourse in Iran. *Journal of Teaching Language Skills*, 34(3), 141-164.
- Robinson, P. (1995). Task complexity and second language narrative discourse. *Language learning*, 45(1), 99-140.
- Robinson, P. (2001). Task complexity, task difficulty, and task production: Exploring interactions in a componential framework. *Applied linguistics*, 22(1), 27-57.
- Robinson, P. (2001). Task complexity, cognitive resources, and syllabus design: A triadic framework for examining task influences on SLA. *Cognition and second language instruction*.
- Rabbitt, P. (1969). Psychological refractory delay and response-stimulus interval duration in serial, choice-response tasks. *Acta Psychologica*, 30, 195-219.
- Rabbitt, P. M. (1968). Channel-capacity, intelligibility and immediate memory. *The Quarterly journal of experimental psychology*, 20(3), 241-248.
- Roth, W. M., & Bowen, G. M. (1995). Knowing and interacting: A study of culture, practices, and resources in a grade 8 open-inquiry science classroom guided by a cognitive apprenticeship metaphor. *Cognition and instruction*, 13(1), 73-128.
- Salomon, G. (1981). Communication and education: Social and psychological interactions. *People & Communication*, 13(1), 9-271.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford: Oxford University Press

- Skehan, P. & Foster, P. (2001). Cognition and tasks. In Robinson, P. (Ed.), *Cognition and second language instruction*. (pp. 183-205) Cambridge: Cambridge University Press.
- Sotoudehnama, E., & Farahanynia, M. (2014). Cognitive task complexity and Iranian EFL learners' written linguistic performance across writing proficiency levels. *Journal of Teaching Language Skills*, 33(2), 107-128.
- Stevick, E.W. (1980). *Teaching Languages: A Way and Ways* (Rowley, MA: Newbury House).
- Umbreit, J., Lane, K. L., & Dejud, C. (2004). Improving classroom behavior by modifying task difficulty: Effects of increasing the difficulty of too-easy tasks. *Journal of Positive Behavior Interventions*, 6(1), 13-20.
- Van Zee, E. H., Iwasyk, M., Kurose, A., Simpson, D., & Wild, J. (2001). Student and teacher questioning during conversations about science. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, 38(2), 159-190.
- Vygotsky, L. (1978). Interaction between learning and development. *Readings on the development of children*, 23(3), 34-41.
- Williams, M. D., & Hollan, J. D. (1981). The process of retrieval from very long-term memory. *Cognitive science*, 5(2), 87-119.
- Willis, D., & Willis, J. (2007). *Doing task-based teaching*. Oxford: Oxford University Press.
- Yule, G. (2006). *The study of language*. Cambridge: Cambridge University Press.