

Exploratory-cumulative vs. Disputational Talk on Cognitive Dependency of Translation Studies: Intermediate level students in focus

Samaneh Yazdani, PhD Candidate, Department of English, Isfahan (Khorasgan Branch), Islamic Azad University, Isfahan, Iran

Yazdani.Samaneh.2020@gmail.com

Hossein Heidari Tabrizi*, Associate Professor, Department of English, Isfahan (Khorasgan Branch), Islamic Azad University, Isfahan, Iran

Heidaritabrizi@gmail.com

Azizeh Chalak, Associate Professor, Department of English, Isfahan (Khorasgan Branch), Islamic Azad University, Isfahan, Iran

Azichalak@gmail.com

Abstract

The present study set out to determine the effect of implementing exploratory-cumulative talk in comparison to disputational talk on cognitive (meaning development and organization of thought as well as problem solving ability) dependency of intermediate level students in translation studies. In order to achieve the objectives of the study, a quasi-experimental-pretest-posttest-statistical study was conducted in which 63 linguistically homogeneous B.A students in translation studies at the IAU-Shahreza branch, in experimental and control groups were the participants. Administering cognitive dependency questionnaire before and after implementing the treatment, exploratory-cumulative talk, helps the researcher to find out the possible effect of it against the control group, disputational talk, in translator training courses. The results of the data analysis indicate that the difference between the posttest mean scores of the experimental and control groups do not reach statistical significance. However, by conventional criteria, the difference between the pretest and posttest scores of the experimental group was considered statistically significant by large effect size. The application of the present study findings in translator training courses may pave the way for translation teachers and translation students to follow more fruitful approaches.

Keywords: Cognitive dependency, disputational talk, Exploratory-cumulative talk, translator training courses

Introduction

Teaching as acceleration means in education and guided acculturation seeks to outpace the teacher's role. Emphasizing the important role of the teacher, Mercer has proposed a new neo-Vygotskian concept in which he joins the zone of proximal development and the concepts of scaffolding (Littleton & Mercer, 2013; Mercer, 2000; Mercer & Hodgkinson, 2008; Mercer & Littleton, 2017). He calls it the Intermental Development Zone. It is a zone, or a bubble, created by language in which either teacher or learners reason about and develop common knowledge. It also represents a continuing state of shared consciousness, focused on the task in hand and dedicated to the objective of learning (Littleton & Mercer, 2013). Building largely on Vygotsky's theories, many sociocultural researchers and educators have promoted the collaborative use of language in the classroom (Alexander, 2014; Barnes, 1969; Bowskill, 2010; Britton, 1970; Coultas, 2012; Enghag, Gustafsson & Jonsson, 2019; Harris & Ratcliffe, 2005; Howe, 1992;

Kerawalla, Petrou & Scanlon, 2013; Mercer, 1995; Rojas-Drummond, Torreblanca, Pedraza, Velez & Guzman, 2013; Sutherland, 2006).

According to T'sas (2018), nowadays the dominant theory is socio-constructivism, which can be defined as an approach according to which individual knowledge relies on its social construction. Particularly relevant in this respect are the communication processes that is learning dialogues occurring in situations where at least two persons try to solve a problem. International research on exploratory-cumulative talk found and confirmed its educational potential in collaborative activities in that learners improve their reasoning skills, work better together and also get better at solving problems as negotiation for meaning, both at group and individual level. In addition, teachers discover the added value of dialogic teaching by modelling exploratory-cumulative talk themselves by observing the results in their practice. Additionally, social cognitive theory is grounded in Bandura's (1986) emphasis on the reciprocal nature of interactions between behaviors, environmental factors, and cognition and affect. Self-regulation is seen by social-cognitive theorists as situation specific, and strongly influenced by students' self-efficacy beliefs. Accordingly, T'sas (2018) proposed a classification upon which exploratory-cumulative talk has four types of effects, including on cognitive dependency, which is in terms of two elements, meaning development and organization of thought as well as problem solving ability.

Mercer (1995) and Mercer and Littleton (2017) confirmed that opportunities for learners in such classes for real discussion about what they are learning in the classroom are rare. As stated by Kumaravadivelu (2012, p.41) "emphasis on learner needs and learner rights has the potential to pave the way for greater learner participation in classroom activities leading to increased and sustainable learner motivation." Finally, previous studies repeatedly showed that when students were taught how to reason together through exploratory-cumulative talk, they were able to transfer their reasoning skills to other educational experiences. As learners learn how to use exploratory-cumulative talk, primarily they improve language skills, which are inherent to this type of talk (Barnes, 1996, and Mercer, 1995).

Research Question

The focus of this study was to investigate the possible effect of implementing exploratory-cumulative talk versus disputational talk on cognitive dependency of intermediate level students. The following research question was, therefore, addressed.

Q. Is there any significant difference between the effect of using exploratory-cumulative talk as compared to disputational talk on the cognitive dependency of intermediate level students?

Review of Literature

As collaborative learning is one of the principles of social constructivism, it is obvious that various work forms have been developed to stimulate students to work together. Group work is one of the work forms that encourage the exploration of ideas (Barnes & Todd, 2005). In group talk learners can risk hesitation, confusion and rejection of their ideas by their peers. Moreover, when learners feel secure, they can think aloud, reshape, and interpret ideas (Enghag, Gustafsson & Jonsson, 2017). They have to develop their language skills and receive significant opportunities to practice by interacting with one another and as they participate in conversation more actively, their language development improves.

Language and Learning during Group Work

According to Rutter (2016), engaging in exploratory discussions through group work is seen as essential for students' current and future participation in key institutions of society. Contributing rather than just listening to exploratory talk will be conducive to students' educational achievement. Dawes and Mercer (2008) state that a teacher is required ensuring that group activities are well designed to elicit debate and joint reasoning. What does group talk look like? Higgins (2011) argues that in group talk there should be no authoritarian figure and taking turns has to be managed amongst the members. This gives students the opportunity to set their own ground rules, initiate questions, pool responses and draw their own conclusions. Sutherland (2006) reported that the quality and cognitive level of students' talk improves through group work. They are more focused when working in groups, participated more equally, asked a greater number of questions, including higher-order questions, and engaged in less off-task talk. However, implementing the group work approach effectively was not an easy task. One of the biggest challenges teachers felt they faced was being able to guide learners towards using the kind of talk that would develop their understanding without dominating the discussion, as this would prevent them from independent talk and thinking. Therefore, teachers who position themselves as fellow learners are more effective at developing group talk.

Finally, developing exploratory talk through group work is not just the teachers' responsibility. Curricular developers and educational policy designers also have a part to play in this process. They must consider the importance of developing teachers' skills in managing group work and promoting exploratory talk thus sowing the seeds of learners' understanding. It is essential to pay more attention to the whole process of learning in different courses as well as language classes. Cross-curricular development, over a sustained period of time may lead to use exploratory talk for a successful learning (Mercer & Hodgkinson, 2008).

Cognitive Effect of Exploratory-cumulative Talk

The context in which exploratory-cumulative talk has added value has been suggested by a number of studies in terms of psychological, social, cognitive and educational significance. As a matter of cognitive effect and according to Tsas (2018), in disputational talk, self-identity is challenged as it makes participants create their self-identity at the cost of the self-identity of others. In exploratory-cumulative talk, however, self-identity becomes irrelevant, as it is transferred to the group level. Nobody in the group has to lose his face as it offers the possibility to create shared ownership or, as Enghag (2019) call it, group ownership, which refers to the group's choice and control of the management of the task and how the task is determined, performed, and finally reported. Cognitive distribution is called as an equivalent of collaborative argumentation, Golanics and Nussbaum (2018), state that exploratory talk has been found to deepen subject matter understanding and cause conceptual change. In addition to knowledge building, collaborative argumentation promotes more complex and critical thinking when critical thinking can be defined as the ability to identify, construct and evaluate arguments.

According to Haavind (2019), cognitive presence grows among learners as they co-construct their understanding of new content. Bransford and the National Research Council, in *How People Learn* (2012), point out the value of such social interaction for cognitive engagement in group learning: Teachers must attend to designing classroom activities and helping learners organize their work in ways that promote the kind of intellectual camaraderie and the attitudes toward learning that build a sense of community. In such a community, they might help one another solve problems by building on each other's knowledge, asking questions to clarify explanations, and suggesting avenues that would move the group toward its goal.

The use of dialogue as a learning activity is also fruitful. Harasim (2015) identifies the emerging role for computer-mediated conversation described by Brown (2017) as the shift from seeing exploratory-cumulative talk as a cognitive delivery system to using it as a means to support collaborative conversations about a topic and the ensuing construction of understanding. Therefore, collaborative dialogue is a potent, new form of collaborative work. Bruffee (2017) highlights the potential of conversation for deepened thinking. Aviv (2018) describes asynchronous learning networks as cooperative learning enhanced by extended think time since the asynchronicity provides learners the opportunity to reflect and think through a response before responding. Bender (2018), suggests, teaching and learning could be thought as being comprised and communicated by the words that flow between teacher and student, as well as student and student. Specifically, invitations to learners to make comments to discussions of class readings, science investigations, or math problems; to peer-review one another's assignments; or to share questions and insights about a learning experience can prompt participants to collaborate, or co-labor. That co-laboring becomes collaborative dialogue. The researchers cited here focused on higher education by appropriate teaching methods. When describing the community of inquiry framework, Garrison (2019) points to design features, discussion facilitation, and pedagogic leadership that must blend social and cognitive issues and expectations in order to achieve an effective teaching presence in an asynchronous, text-based environment. He notes these considerations go well beyond deciding what content will be covered. The interplay among collaborative, constructive processes that effectively shape inquiry experiences can be revealed through case studies.

It maximizes the potential for learners to construct shared meanings and reach agreements, allowing for collective problem solving. Mercer (2011) finds exploratory talk most effective for solving problems through collaborative activity. As stated earlier, learning transfers changes (behaviorism) and creates new knowledge or increases information (cognitive skills). The constructivist perspectives of learning had a major theme that learning is an active process in which the individual learner constructs new ideas or concepts based upon their current/past knowledge. Finally, the educational benefit also serves the teachers, as they are encouraged to teach more dialogically and to create an interactive learning environment (Webb, 2016). He also showed exploratory-cumulative talk improves verbally explicit higher-level strategies in meaning development and organization of thought. Likewise, Rojas and Zapata (2014), based on Vygotsky (1978), remarked that argumentation represents a powerful tool for promoting collective and individual reasoning and clarification, which is related to critical thinking and problem solving.

Webb (2016), based on Spearman, proposed that there is a common or general factor in mental ability, commonly known as Spearman's *g*. The Raven's Standard Progressive Matrices (RSPM) test has been described as the best assessment of abstract or non-verbal reasoning and is widely regarded as measuring the essence of the educative aspects (Jensen, 2016; Kaplan & Saccuzzo 2017; Lynn, 2014). The RSPM test is a widely used, well-established, reliable standardized psychological test of non-verbal abstract reasoning and problem solving (Kunda, 2019). The use of abstract representations in the test is a valued cognitive ability as many of the concepts and processes used. The RSPM provide a means to assess, measure, and compare a person's capacity for observation and clear thinking relative to other people, irrespective of past experience or present ability for verbal communication, the ability of a person to deal with new knowledge and figures, the ability to perceive the relationship between them, and the capacity for systematic reasoning.

Methodology

Design

In order to achieve the intended objectives of the present study and based on the nature of the addressed question, the quantitative experimental design was employed. The present study was conducted in a foreign language learning setting in the English department of Islamic Azad University (IAU), Shahreza Branch, where the researcher herself worked. The study comprised linguistically homogeneous groups of students regarding their language abilities in two experimental and control groups. Therefore, to answer the question and in order to make methodological triangulation, some ethnographic research methods such as questionnaires also were employed.

Participants

The participants included Iranian undergraduate translation studies students for whom non-probability sampling technique (convenience/opportunity sampling) was utilized. They were both male and female with the age range of 21 to 24. All of them were passing their two latest educational semesters. They had a similar educational background. Their first language was Persian and only spoke English as their foreign language, without any specific experience in translating or teaching English.

Materials and Instruments

Since the present study was run in translator training courses, the book *Literary Text Translation* by Khazae Far, SAMT publications and *Political Text Translation* by Birjandi, Gorjian, and Molonia, Rahnama publications were used. In order to control the language proficiency factor an Oxford Placement Test (OPT) was used since it is a highly reliable, validated, easy to administer and available test to provide accurate measure of a test taker's language ability. Another instrument was the Raven's Standard Progressive Matrices (RSPM), which is described as the best assessment of abstract or non-verbal reasoning in cognitive sphere and is widely regarded as measuring the essence of the educative aspects. It is a set of highly reliable and validated nonverbal group of questions typically used in educational settings to measure abstract reasoning undertaken by Webb (2016). The participants were asked to choose one of the answers based on the allocated time.

Pretest

In order to control the language proficiency factor, an Oxford Placement Test (OPT) was used. In order to check the possible changes in cognitive dependency, the cognitive dependency questionnaire was administered at the beginning of the semesters for both experimental and control groups. The cognitive dependency questionnaire was adopted from Webb (2016) to check meaning development and organization of thought and problem solving ability. It consists of 20 revised selected questions (based on defined age range of 18-25) of Raven's progressive matrices (RPM) items based on studies undertaken over a decade with similar designs using exploratory talk in the classroom to measure reasoning abilities. They took 30 minutes.

Posttest

In order to check the possible changes in cognitive dependency, the same cognitive dependency questionnaire was administered at the end of the semesters for both experimental and control groups. They took 30 minutes. As the cognitive questionnaire was non-verbal, it was needed to be printed in color on A4 paper. Although the first section of the questionnaire

addressed the participants' demographic information, a pseudonym was asked to make sure about the participants' privacy. However, they were wanted to use the same one in posttest to check the possible effect of the treatment.

Procedure

The first step to collect the needed data was administering OPT and Cognitive dependency questionnaire as the pretest for all of the students in both experimental and the control groups. The next step was implementing the treatment, exploratory-cumulative talk in translation training courses. The last step was administering the Cognitive dependency questionnaire as the posttest for all of the students in both experimental and the control groups to check the possible effect of implementing exploratory-cumulative talk in comparison to disputational talk.

Treatment

Taking into account the different aspects of applying the treatment, it was important to decide about the grouping of the students, the number of them in each group, what are they exactly supposed to do, how they were expected to engage into exploratory-cumulative talk in their groups and manage the connection among themselves, clearly define the role of teacher, and the way the teacher and the groups interacted. Employing the exploratory-cumulative talk to intermediate level students in translation training courses was the independent variable, or the treatment, and the extent to which their cognitive dependency changed compromised the dependent variables. In this regard, the students are not only learners, but they learn how to learn as well in this type of treatment. However, what does group talk look like? In group talk, there should be no authoritarian figure and taking turns has to be managed by the group's members themselves to provide the opportunity to set their own ground rules, initiate questions, pool responses and draw their own conclusions.

Accordingly, the students participated in 90-minute translation classes, one session a week, for 12 succeeding sessions and the classes were held at approximately the same time. Discussing the ideal size of groups, Wall (2016) found that tables of four (± 1 , based on the circumstances of the present study) were best suited to developing exploratory-cumulative talk through group work and produced many indicators of the positive impact of this kind of collaborative learning. Similarly, it was reported that small groups self-selected, usually on a friendship basis, work well, and there was a direct relationship between the length of time groups worked together and the amount of exploratory-cumulative talk engaged with (Edwards, 2015). It is also very evident that the longer learners work in groups on open-ended tasks the greater the authority of the students over their learning and development of higher level of reasoned thinking (Sutherland, 2006). They remained in the same group for the whole period of the semester.

After the introduction of the value of feedback and the opportunity of having frequent self- and peer-checks, the students were encouraged to provide it in their groups actively along with teacher's feedback that supports their learning. Since the desired type of relationship was applying exploratory-cumulative talk, didactic strategies, the ground rules, and the basic notions of implementing exploratory-cumulative talk were introduced to the students in order to interact effectively. That is, they were told that are expected to do activities such as peer-to-peer learning in small groups where students worked on their translations together independently from the teacher, share, challenge and counterchallenge opinions constructively, group decision-makings and reach to a consensus about how to solve and revise their translation problems, and engaging in evaluating their translation quality. In order to start the process, first, the different types of

using exploratory-cumulative talk have been modelled by the teacher to negotiating the meaning of ideas and made explicit her expectations of how students are supposed to talk together in their groups. In the next step, the teacher provided a set of prompts that were made visible to the students as they worked in a group. An example list of prompts is set out here. Why do not we try this equivalent? Do you agree? What do you think we should do? Is that right? How about this structure? I have a different idea. What else could we do? So do we all agree? I am not sure your idea can help us. Why do you think that? The teachers introduced the use of prompts with the students as they worked in groups across the curriculum. All the students cared about the progress of other members and the whole group as a unit of performance, since the key part of exploratory-cumulative talk was reaching a consensus. Finally, the ground rules or prompts were focused more closely by asking one of the groups to remodel the use of exploratory-cumulative talk in their group work. The students were asked to consider the same process in all of the following sessions of the semesters.

Control Groups

The control groups, the same as the experimental ones, took part in pretest and posttest, filled up cognitive dependency questionnaires in very similar circumstances. The only difference was that they were enjoying disputational talk in class. The students participated 90-minute translation classes, one session a week, for 12 succeeding sessions and the classes were held at approximately the same time. In these sessions they were supposed to do translation of the related textbooks at home, conventionally some of the students got the chance to read their translations in class with a small talk (as so called disputational) about their flaws and sometimes providing some suggestions by other students and finally, provided by proper translation of the teacher.

Data Analysis and Results

After systematic collection of data and according to the nature of the collected data, both descriptive and inferential statistics were essential. In order to answer the research question, the effect of using exploratory-cumulative talk in comparison to disputational talk on the cognitive (organization of thought as well as problem solving ability) dependency, the pretest and posttest scores collected from 20-item Raven's questionnaire were used to find out the cognitive dependency differences at the first and the last session in exploratory-cumulative talk groups via paired-samples t-test. The same statistical procedure was also used to compare the pretest and posttest scores of the disputational talk groups. Finally, one-way ANCOVA was conducted to compare the posttest scores of the experimental groups and the control ones.

In the pretest, the overall mean score of the experimental groups was 13, and it showed improvement by increasing to 16.87 in the posttests. To see whether this difference was statistically significant, the *p* value under the *Sig.* column in the paired-samples t-test table was checked as follows.

Table 1. Results of Paired-Samples t-Test for the Pretest and Posttest Scores of the Experimental Groups

	Mean	<i>N</i>	<i>T</i>	<i>df</i>	<i>Sig.</i> (2-tailed)
Experimental Groups Pretest	13	63	5.85	62	0.0001
Experimental Groups Posttest	16.87	63			

In Table 1., the p value was .0001, that is by conventional criteria, this difference is considered to be extremely statistically significant between the pretest and posttest scores of the experimental group. In addition, the effect size, computed through the eta squared formula was .21, which based on Cohen (1988), eta squared values larger than .14 imply large effect sizes.

The same procedure was adopted to compare the pretest and posttest scores of the control groups. The change of their mean scores was from 13.62 in the pretest to the 15.62 in the posttest. The p value in Table 2., below shows whether this improvement was of statistically significant.

Table 2. Results of Paired-Samples t -Test for the Pretest and Posttest Scores of the Control Group

		Mean	N	t	Df	Sig. (2-tailed)
Control Group	Pretest	13.62	63	3.26		.0014
Control Group	Posttest	15.62	63			

The p value equals 0.0014, that is by conventional criteria, this difference is considered statistically significant. The eta-squared value showed a moderate effect size (.07) for this comparison. Comparing the posttest scores of the experimental group and control group to see whether the difference between the two posttest mean scores was statistically significant, the results of one-way ANCOVA, are shown in Table 3.

Table 3. One-Way ANCOVA Results for the Posttest Scores of the Experimental Groups and Control Groups

Groups	Mean	Std. Deviation	N	F	Sig.	Partial Eta Squared
Experimental Group	16.87	0.53	63	2.94	.22	2.94
Control Group	15.62	0.88	63			

The p value was found as 0.22, which is greater than the significance level (.05). It indicates that the difference between the posttest mean scores of the experimental and control groups did not reach statistical significance. Therefore, the changes in cognitive dependency in exploratory-cumulative talk and disputational talk groups are not statistically different at $\alpha = 0.05$.

Discussion

The research question was: what is the effect of using exploratory-cumulative talk in comparison to disputational talk on the cognitive dependency? In order to check the possible changes in cognitive dependency, the cognitive dependency questionnaire was administered at the beginning and at the end of the semesters for both experimental and control groups. The cognitive dependency questionnaire was adopted from Webb (2016) to check meaning development and organization of thought and problem solving ability under the title of cognitive dependency. It was a selection of 20 revised questions (based on defined age range of 18-25) of Raven's progressive matrices (RPM) items. The change of the mean scores of control groups was from 13.62 in the pretest to the 15.62 in the posttest. The results of paired sample t -test between

pretest and posttest mean scores of control groups showed statistically significant difference and the eta-squared value showed a moderate effect size. The overall mean score of the experimental groups was 13, and it showed improvement by increasing to 16.87 in the posttests. In this case, by conventional criteria, the difference between the pretest and posttest scores of the experimental group was considered extremely statistically significant by a large effect size. The findings have presented via one-way ANCOVA suggest that the difference between the posttest mean scores of the experimental and control groups did not reach statistical significance. Then, the changes in cognitive dependency in exploratory-cumulative talk and disputational talk groups were not statistically different. Therefore, implementing exploratory-cumulative talk in comparison to disputational talk has greater positive effect and may lead to train more cognitively independent learners.

These are in line with the following findings about the positive effect of exploratory-cumulative talk on cognitive aspects in terms of higher problem solving abilities (Mercer, 2009; Rojas-Drummond & Zapata, 2014; Topping & Trickey, 2014); more critical thinking (Soter, 2018); better scientific and creative reasoning (Wegerif, Mercer & Dawes, 2009); better verbal and non-verbal reasoning (Topping & Trickey, 2014); general learning gains academic performance (Luby, 2014; Mercer, 2009; Rajal, 2012; Tin, 2013); internalization of reasoning strategies on individual level (Wegerif, Mercer & Dawes, 2009); better development of meaning and organization of thought (Brevig, 2016; Golanics & Nussbaum, 2018; Webb, 2016); stronger retrieval practice and better memory (Webb, 2016); and finally, increased confidence in writing (Robins, 2011).

Conclusion

The present study sought to investigate the effect of using exploratory-cumulative talk versus disputational talk in translator training courses for intermediate students with focus on cognitive dependency. Having the ability to transfer linguistic and non-linguistic knowledge as the highest demand for translators, they are required to be able to negotiate about not only words, grammatical and semantic aspects of language, but also mental images implied in the text. As a complex cognitive activity, assimilation of stereotyped patterns and rules in all situations seems not to be the proper purpose in academic translator training. On the contrary, translation students should instill a variety of translation strategies and techniques to choose the optimal options for different text styles. Then, overcomplexity of the content, ambiguous and inconsistent structure and terminology both semantically and syntactically as well as textual drawbacks in terms of typos, and even faulty punctuation can be corrected by a precise analysis of the text in group discussions.

On the other hand, according to the findings of the present study, exploratory-cumulative talk students benefit from learning exploratory-cumulative talk and become cognitively more independent. Therefore, teachers may facilitate exploratory-cumulative talk more frequently, especially in the initial stages of translation courses, as this is where students are forming and merging different concepts in both languages to put in texts properly. From a pedagogical point of view, by exploratory-cumulative talk teachers can put into practice what is essential for effective and constructive learning: the critical exploration of foreknowledge and personal experiences (as existing mental structures) to clear the path for new insights and knowledge. However, if this is going to be succeed, the ground rules of exploratory-cumulative talk must be embedded in the curriculum in a coherent way, making them a must-teach as a vertical line of development during education.

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Appendix

Cognitive Abilities Practice Test

The objective of the present questionnaire is to check the level of Cognitive Dependency. Your cooperation is highly appreciated and you may feel completely confident that your responses will be kept highly confidential and be limited to the present study analysis. None of the research outcomes or components will be used for any other purpose except purely academic. You may complete the questionnaire in 30 minutes.

Name-----

Age-----

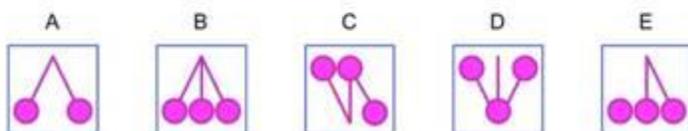
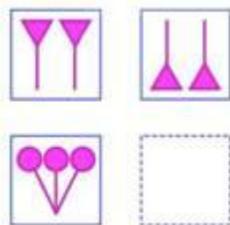
Gender-----

Semesters completed at university-----

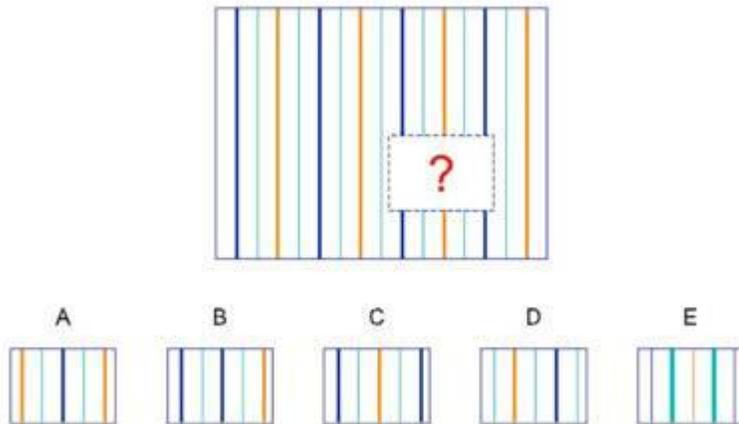
Select the answers instantly.

Time: 30 minutes

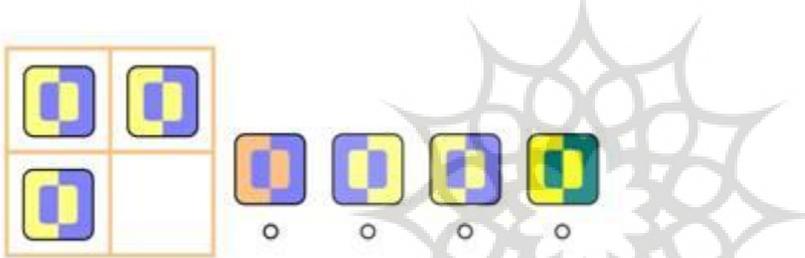
1. Look at the pictures in the top two boxes. Do you see how they go together in a certain way? Now look at the picture in the bottom row. Which picture goes with the picture on the bottom row the same way the pictures in the top row go together?



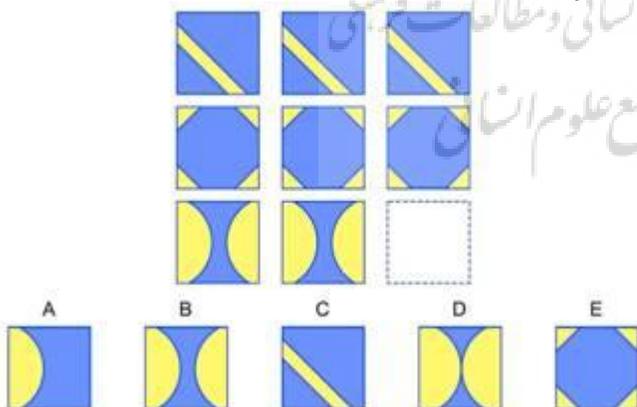
2. Parent: Say to your child - "Look at this puzzle." circle the answer.



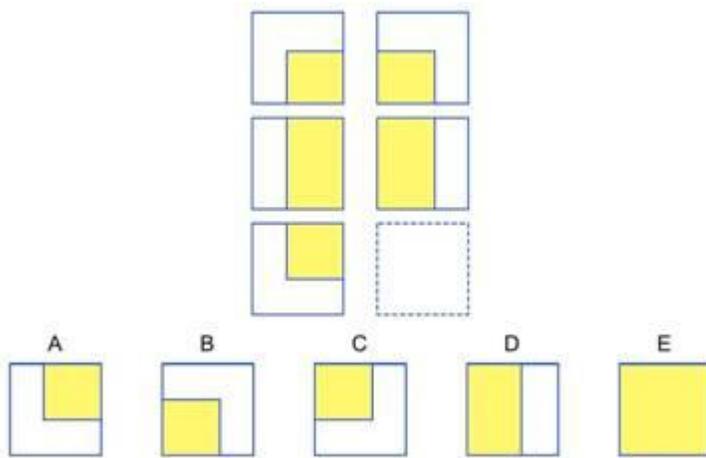
3. Look at the pictures in the top two boxes. Do you see how they go together in a certain way? Now look at the picture in the bottom row. Which picture goes with the picture on the bottom row the same way the pictures in the top row go together?



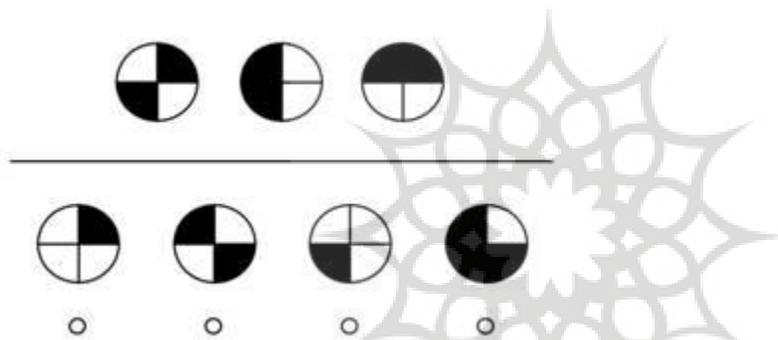
4. Look at the shapes in the boxes across the top. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the shapes in the next row will relate to each other in the same way as the shapes in the top row?



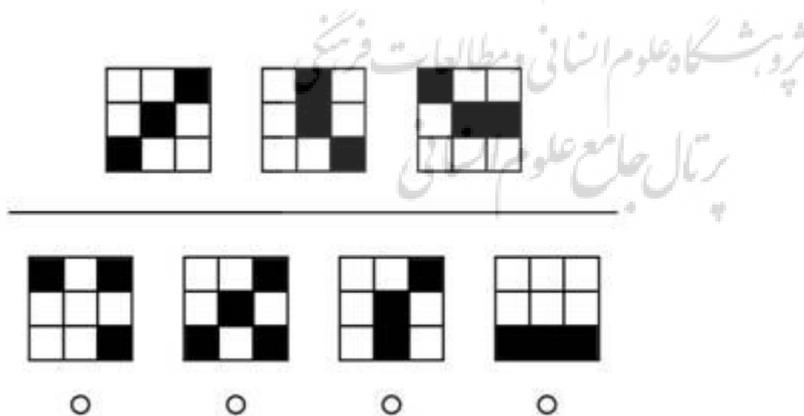
5. Look at the shapes in the boxes across the top. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the shapes in the next row will relate to each other in the same way as the shapes in the top row?



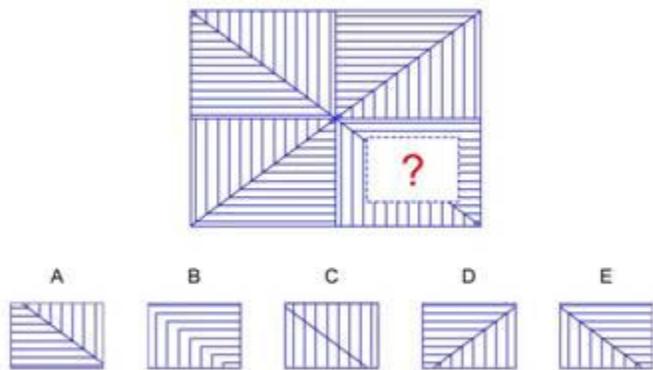
6. Look at the shapes on top. They are alike in some way and so they belong together. Choose one shape from the bottom row that belongs with the figures on top.



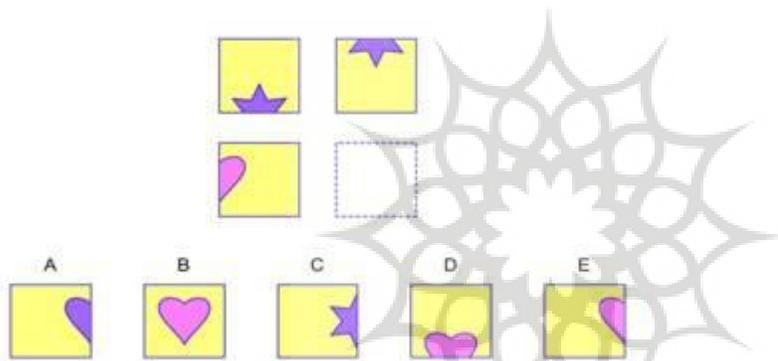
7. Look at the shapes on top. They are alike in some way and so they belong together. Choose one shape from the bottom row that belongs with the figures on top.



8. "Which of these answer choices goes here?"



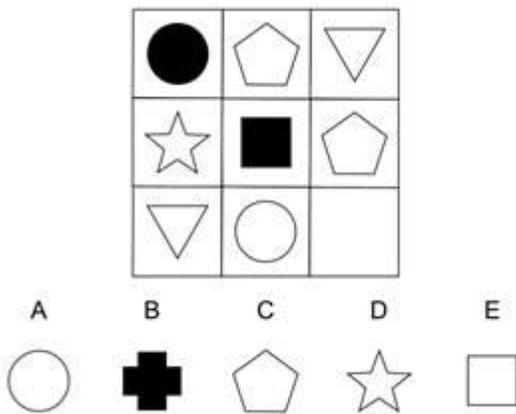
9. Look at the shapes in the boxes across the top. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the shapes in the next row will relate to each other in the same way as the shapes in the top row?



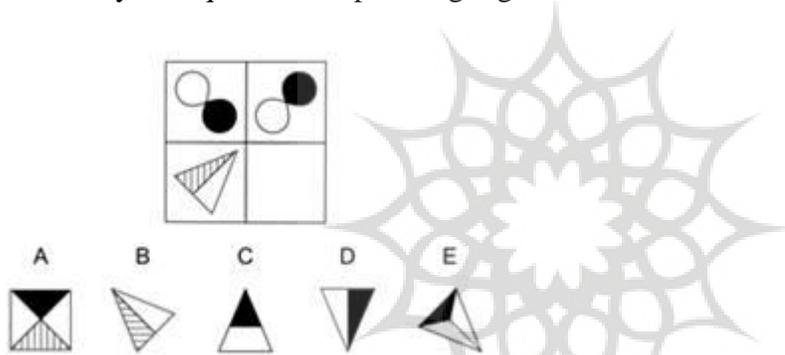
10. Take a look at the first box. There is a cell phone, a hairbrush, a wallet and a pen in Mommy's purse. She took the pen out. Then she put a pair of glasses in, along with a piece of candy. Mark the picture that shows what is in Mommy's purse now.



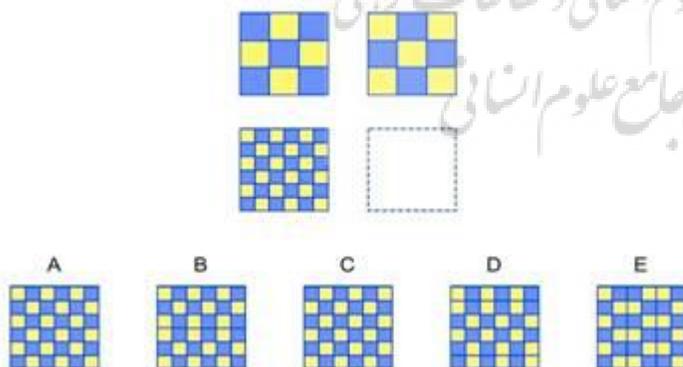
11. Look at the shapes in the boxes across the rows and up and down the columns. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the designs inside the rows and columns follow a pattern or rule?



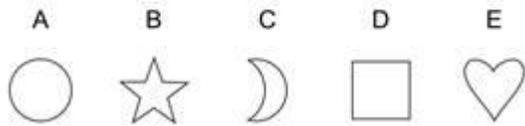
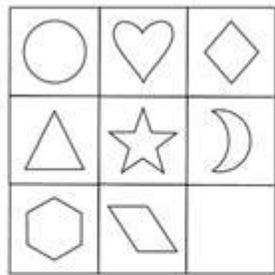
12. Look at the squares on top. They go together in a certain way. Choose the square among the answer choices that goes in the empty space because it belongs with the square(s) on the bottom the same way the squares on top belong together.



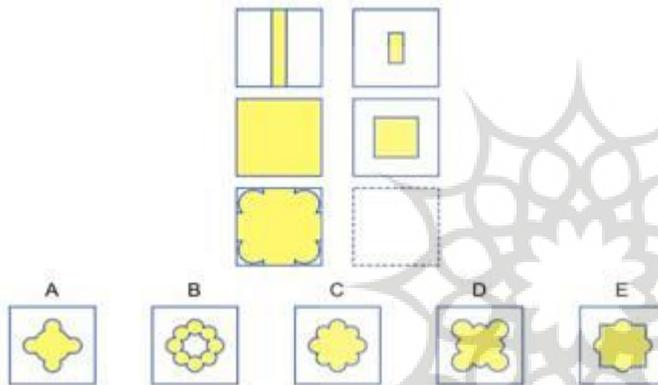
13. Look at the squares on top. They go together in a certain way. Choose the square among the answer choices that goes in the empty space because it belongs with the square(s) on the bottom the same way the squares on top belong together.



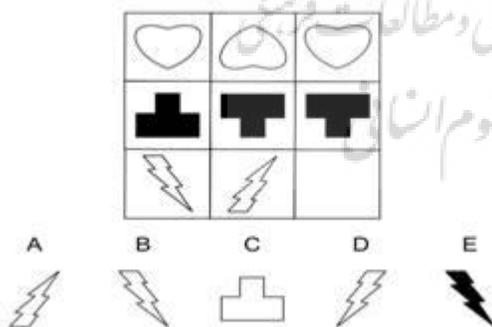
14. Look at the shapes in the boxes across the rows and up and down the columns. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the designs inside the rows and columns follow a pattern or rule?



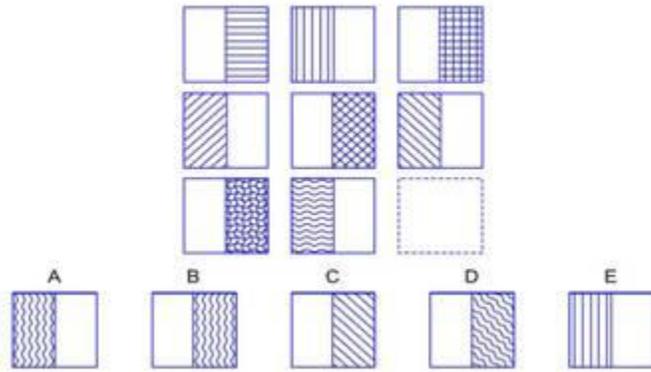
15. Look at the squares on top. They go together in a certain way. Choose the square among the answer choices that goes in the empty space because it belongs with the square(s) on the bottom the same way the squares on top belong together.



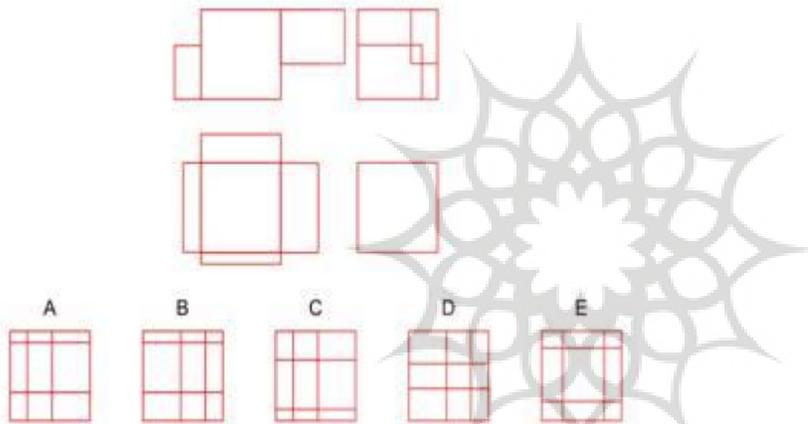
16. Look at the shapes in the boxes across the rows and up and down the columns. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the designs inside the rows and columns follow a pattern?



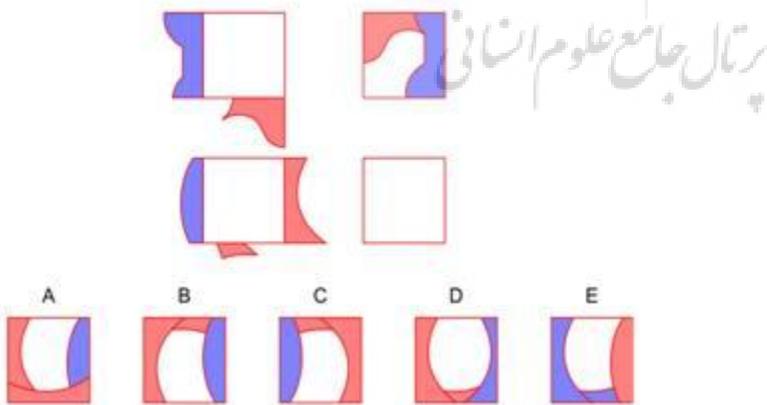
17. Look at the shapes in the boxes across the rows and up and down the columns. Do you see how they are related to each other? Can you find the answer that goes in the empty box so the designs inside the rows and columns follow a pattern?



18. Look at the pictures on top. When the outside pieces of the first square are folded in, it will look like the picture on the top right. Now look at the picture in the next row. If the outside pieces of the first square are folded in, it will look like one of the answer choices. Can you find the answer that shows what this square will look like after the outside pieces are folded in?



19. Look at the pictures on top. When the outside pieces of the first square are folded in, it will look like the picture on the top right. Now look at the picture in the next row. If the outside pieces of the first square are folded in, it will look like one of the answer choices. Can you find the answer that shows what this square will look like after the outside pieces are folded in?



20. Look at the pictures on top. When the outside pieces of the first square are folded in, it will look like the picture on the top right. Now look at the picture in the next row. If the outside pieces

of the first square are folded in, it will look like one of the answer choices. Can you find the answer that shows what this square will look like after the outside pieces are folded in?

