

Investigating and Comparing Concept Formation between Iranian and Afghan Girls and Boys Primary Students

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Abstract: Human development domain is observing considerable increase in the number of study into cultural texture of people living in it. Researches that compare cultures and ethnic groups in cultural contexts inform us about the individual commonalities and differences in development. This study was conducted to investigate and compare concept formation between Iranian and Afghan Primary Girls and Boys students. This is a causal-comparative descriptive (retrospective) study, as the researcher does not have direct control on independent variable (i.e. Iranian and Afghan cultures) and only addresses its effect on the formation of concept in children. Statistical population includes all Iranian and Afghan Primary School Girls and Boys studying at primary level in school year 2002-2003. Here, convenience sampling method was used. Sample group includes 48 girl students (24 Iranian and 24 Afghan) and 48 boy students (24 Iranian and 24 Afghan) in the first-to-sixth grades. For collecting data, Vygotsky Concept Formation Test was employed. Conceptual reasoning tests do not concern about breaking down the components of mental constructs, rather the focus is on qualitative analysis of given subject. They create a completely homogeneous group by using quit specific issues, whose main property is qualitative classification. In these tests, the methodology used by the subject for problem solving is more important than the final result. In Kasanin-Honfmann test, as the data collection instrument in this study, 22 wooden blocks, varying in color, shape, height, and size, are given to the subject. He should show how parts are classified based on four different perspectives, and justify his methodology. This is also known as Vygotsky's blocks. In scoring the performance, each correction should be taken as 5-minute endeavor (the first block, given as a sample, is not regarded as a modification). Therefore, to obtain the final score, the number of corrections is multiplied by 5. In Vygotsky test, the number of corrected blocks refers to the amount of blocks a subject wrongly classifies in other groups, and the examiner corrects them by declassification. For data analysis, descriptive and inferential statistics were employed. Descriptive statistics was used for data classification and frequency calculation. In inferential statistics section of this study, to describe and explain the information obtained from the sample and to investigate the main hypothesis, both descriptive and two-sample t-test were used. Results showed that in the main question, the classification variable is only nationality, and both genders were put in the same groups. The assumption of a difference in concept formation between Iranian and Afghan students is rejected with 95% confidence. The first question, comparing concept formation between Iranian boy students and Afghan boy students (living in Iran), did not show any significant difference between the two groups. Comparing the means of both groups depicted better performance of the Afghan boy students, but this mean difference was not significant. The second question investigated the difference in linguistic concept formation between Iranian girl and boy groups. Results showed a significant difference in this regard between the two groups with 95% confidence.

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1. Introduction

Growing up children exhibit the same behavioural patterns towards themselves as other showed them earlier (Kozulin, quoted by Azabdafatri, 2002, p.157). They involve with strong interaction with adults right after the birth. Adults want to engage their children actively in their cultures, and share meanings treasure and methods of operating objects, gathered during the history. By learning each word, a child gains a historical experience and regulates his thoughts corresponding to his growth (Vygotsky,

translated by Ghasemzadeh, 2008, p.4).

Language that is integrated with the experience of the past generations and in general with human experience enters into a child's life few months after the birth. By naming the objects and showing their bonds and relations, adults create a new reflection of reality in a child's mind, which in terms of complexity is incomparable with what he/she has experienced by self. All of this process of knowledge transition and concept formation, which is the foundation of an adult's impact on a child forms the

basic process of the child's mental growth. If it was ignored in the course of breeding, understanding or explaining realities of child psychology would be impossible (Najafi, 1998, p.38).

Thus, those who monitor their children's experiences usually limit their learning opportunities to a certain cultural traditions. They also punish and reward their little children in a way that direct them towards the acceptance of their ancestors' cultural traditions (Mori Thomas, translated by Barabadi and Aaghmohammadi, 2004, p.172).

Since cultures can differ dramatically, an infant does not come into a material-social environment where everything is prepared for his/her growth; instead, Wallsinger (ibid, p.172) maintains that "children in a culture are socialized in a way so that to become the adults of the same culture".

Human development domain is observing considerable increase in the number of study into cultural texture of people living in it. Researches that compare cultures and ethnic groups within the cultural context inform us about the individual commonalities and differences in development (Barack, /2007, p.39).

Cross-cultural and multicultural research help us organize the cooperation between biological and environmental factors in terms of timing, order of appearance, and diversity of children and adults' behaviors. To many anthropologists and social psychologists, these studies are one reliable way for understanding individuals and paving the way for solving social problems (Mohseni, 1995).

Over last three decades, psychologists have focused on and investigated person-culture interaction, and carried out several research works. Lev Semyonovich Vygotsky is a well-known Russian transformational psychologists and theorist who introduced social-cultural theory in the early 20th century. This perspective concentrates on the way culture, heritage, beliefs, traditions, and skills of a certain social group are transmitted to the next generation.

Vygotsky believed that knowledge and understanding, as well as thinking are formed through cultural and historical contexts in which one is grown up. Every culture has its own intellectual means, bearing them for its members. These means include language, problem solving methods, and memory strategies. He has no doubt that superficial thinking is rarely used in some cultures; thereby, he put that cognitive development differs from one society to another, and depends on mental means valued and provided by a culture for its members (Sigelman and Reeder, /2007, pp.92-93).

The very first words a mother used to show things to a child have very important, although intangible, effects on the formation of the child's

mental processes. The mutual relationship between a child and adults is very significant as learning linguistic system encompasses reorganization of all major processes of the child's mind; therefore, a word that evolves the reflection of reality and creates new forms of attention, memory, imagination, thought and action, is a very important factor in mental activity (ibid, p. 49).

Concept formation is a product of a difficult activity in which all basic rational functions are shared. However, this process cannot be undervalued to imagination, attention, perception, deduction or oriented tendencies. All of them are necessary, but not sufficient, without the function of symbols or words. A symbol or word is like a mean that directs mental functions. It monitors their developmental course and directs them towards a path in which the given problem solving method is applicable. Symbol exists in the formation of word concept, which first plays the role of a tool in creation of a concept and then turns into a symbol of a concept (Vygotsky, /2008, p. 95).

Over the recognition process, a child not only learns how to communicate with others and objects, and changes his/her surrounding world, but also knows and evolves himself/herself. Here, speech plays an important part: Both as a mean for communicating with others and as a tool for comprehending relationships. These two aspects are gathered in the meaning of a word, and give an integrated and unified role to the language. Attention and emphasis on these two aspects led Vygotsky towards the role of word in thinking and conceptualization.

Vygotsky recommended general schema of cultural development in which the focus is on learning and using psychological tools, as a substitute for traditional method of understanding a child's growth, i.e. Maturation process. By choosing the meaning of a word as the unit of investigation, he not only paved the way for scientific observation (analysis), but also laid the ground for Inferences, conclusion and formulation (combination). Selecting the word meaning as the unit of investigation signified historical and cultural characteristics of language and thought (Vygotsky, /2008, p. 12).

Similarly, investigation methodology shifted from recalling a child's natural reactions to motivating him/her towards using artificial symbolic mediums. This methodology is known as double stimulation principle. In addition to the target stimuli (e.g., words that should be memorized and/or categories that should be concerned), aids (such as graphic cards, symbols, practice methods, etc.) that are potentially suitable for regulating a child's function should be provided to him (Kozulin, cited in Azabdaftari, 2002, pp. 189-190).

For studying the process of concept formation in different growth periods, Vygotsky et al. adopted a method, developed by their colleagues Sakharov L.S., which can be called "double stimulation". Two sets of stimuli are given to the subject. The first one consists of the topics of activities, and the other includes such symbols used for organizing the mentioned activities (Hanfmann-Kasanin, /2008, p. 2010).

Vygotsky believes that child's speech is associated with activity or action, and speech not only is related to action, but also has a specific role in performing that action. In his studies, he found out that children use not only their eyes and hands, but also their speech capability in solving scientific problems. This is very important that speech not only facilitates effective manipulation of the objects, but also controls a child's behavior. In fact, to Vygotsky, language should not be taken merely as a communicational mean, but also it organizes higher cognitive functions; since, without language development, human mental growth and evolution, which is based on his experiences, are not possible. Learning through language not only increases our knowledge and understandings, but also transforms our relationship with the environment (Loria, /2003, p. 67).

Vygotsky et al.'s studies showed that moving towards concept formation happens over three fundamental periods, each divided into a number of stages. These stages and periods are:

The first period: The conglomeration of objects by looking at peers, including following sub-stages: Trial and error, classification based on spatial and temporal proximity, and classification based on general impacts.

The second period: Complex thinking: it includes association, collection, chain, diffuse, and pseudo-concept sub-stages.

The third period: Potential concepts including abstraction based on maximum similarity and abstraction based on a single attribute stages. Actual concepts include such stages as using a word in the combination of abstracted traits and generalizing characteristics.

In the past, cross-cultural investigations emphasized on the vast cultural differences in terms of development. For instance, whether children in a certain culture achieve higher motor growth or perform better in cognitive tasks, than children in another culture. This approach forces us to erroneously conclude that a certain culture is superior over the others in boosting growth, and the other cultures are imperfect. On the other hand, this approach does not help us in understanding what types of experiences contribute culturally different behaviors (Breck, /2002, p.39).

Nowadays, the majority of studies investigate the relationship between certain cultural practices and growth, and Vygotsky's attempts have played an important role in this process. This perspective concentrates on the way culture-values, beliefs, traditions, and skills of a certain social group are transmitted to the next generation. To Vygotsky, social interaction, especially supportive conversations with informed people, is essential for a child to learn thinking and behavioral practices that are creating the society's culture. He believed that when adults and advanced peers help other children in learning some activities that are culturally meaningful, correlation between them becomes a part of the child's thought. When children internalize important properties of these conversations, they can deploy their inner language for guiding their thoughts and measures and learning new skills (ibid).

Culture creates such tools that help human to overcome environment. The beneficial and reliable means are transmitted to the next generation through social interactions, and in this way they shape children thinking. The statement "historical basis of thinking" by Vygotsky exactly refers to the very subject pertaining to how the invention of tools over the history of a culture has caused changes in the way people of the same culture think. A certain culture at the certain point in the history lays the foundations required for children growth (Mohseni, 2004, p. 304).

Although the majority of researches inspired from Vygotsky's theory focus on the children, his views is applicable to the people of all ages. The important point is that cultures allocate some tasks to their members, and social interactions that are associated with these tasks cause number of skills, which are necessary for success in a certain culture. For example, in industrial countries, we can see that teachers enable people to read, drive, and use computer. Among the Zinacantecos of Mexico, the experts help young females in learning difficult knitting techniques. In Brazil, the chocolate children, with little or no education learn complex mathematical techniques from the process of purchasing chocolate from wholesalers, pricing with the help of adults or experienced peers, and haggling in the streets (Breck, /2002, p. 40).

Although Vygotsky's psychology tends to future, it is essentially established in the past and present and represented by emphasis on the cultural means evolved over the history and under social conditions in interacting with others. Prospective psychology of Vygotsky views individuals as a part of social life that evolves its means of interaction with the world through historical measures, and is directed towards cognitive extremity. It focuses on the future, thus relies on cultural means of interaction that based

on collective framework move towards a satisfactory future for simultaneous individual and social development. Therefore, individuals' personality is formed not only organically, but also in connection and interaction with social experiences (Smagorinsky, 2012).

Such findings show that children and adults have unique capabilities in every culture. Cultural perspective reminds us that research into the growth solely rests on a small minority of mankind. Without considering the whole world, we cannot assume that the development chains we observe are natural or the experiences that cultivate them are idea (Breck, /2002, p. 40).

Vygotsky believed that adults foster children's learning and development in an intentional and somewhat systematic manner, because young children learn mainly through interactions with other people in their immediate social world, everything they learn is colored by the expectations and norms of the specific social and cultural contexts in which they are situated (Goldstein, 2008). Vygotsky acknowledged inherited or biological traits but his primary focus was on the role of the environment in fostering cognitive growth (Ormrod 2008).

According to Fox, Vygotsky views human psychological development as historically situated and culturally determined. As human beings we are born already immersed in an evolved society that uses conventional tools and signs. Development proceeds through the internalization of social interactions, with the fundamental social interaction being interaction through language." (Fox 2008)

Adult help given to a child (whether by a teacher, psychologist, or parent) in working on learning difficulties, can be provided not only to support the process of assimilating a particular academic subject but also to promote other processes essential to developing children as active agents of their own learning (Zaretskii 2009).

Because language is the primary means for exchanging basic social concepts, Vygotsky assumes an essential role for it in cognitive development. In fact, he considered language acquisition as the most important aspect of a child development. Language has a significant role in the growth of new human skills and knowledge. When adults and peers help a child to master new task, the relationship between them becomes part of his thought. In practicing new skills, children deploy their linguistic capabilities to direct their actions (Atkinson, /2006, p. 116).

In studies into the formation of concept and culture, varieties of experimental methods and positions have been employed.

Berger (2005) stated that Vygotsky's theory of concept formation (1986) is a powerful framework

within which how an individual at academic level creates a new mathematical concept is explored. In particular, this theory is able to bridge the divide between an individual's mathematical knowledge and the body of socially sanctioned mathematical knowledge. It can also be used to explain how idiosyncratic usages of mathematical signs by students (particularly when just introduced to a new mathematical object) get transformed into mathematically acceptable usages and it can be used to elucidate the link between usages of mathematical signs and the attainment of meaningful mathematical concepts by an individual. He argued that Vygotsky's notion that all knowledge is semiotically mediated is necessary for understanding how students use mathematical signs to gain access to mathematical objects.

Towsey (2009) in a North African study entitled "Wolves in Sheep's Clothing and Other Vygotskian", examined new concept formation from early childhood to adulthood (Total= 60, 3 to 76 years old) using the Vygotsky/Sakharov Blocks procedure (also known as the functional method of double stimulation for the study of concept formation) to establish whether contemporary adults and children produced the same or similar patterns as those described by Lev Vygotsky. The study found correspondence with the processes of concept formation identified by Vygotsky and his colleagues in the 1920s and 1930s. A developmental trend consistent with Vygotsky's writings on the ontogenesis of concept formation was reflected in a positive correlation between the age of the participants and their modes of thinking. The greatest increase in this developmental trend occurred between the 11-year-old and 15-year-old participants. This finding verified Vygotsky's assertion that true conceptual thinking only becomes possible in adolescence. The functional equivalence of pseudo-concepts in role and structure led Vygotsky to call them wolves in sheep's clothing.

Rosenberg (2009) performed a study entitled "teacher-child interaction and concept development in kindergarten". This study analyses teacher-child interaction in kindergarten in order to describe teachers' discursive strategies for correcting children earlier statement to clarify the concepts given to them. Information analysis includes 90 teacher-child interactions in 7 kindergartens from suburban neighborhoods outside of Buenos Aires, Argentina. It was a qualitative process analysis: A constant comparative method. This method enabled researchers to identify and describe different ways by which teachers reconceptualized information given by the children, in a way that allows them to gradually determine, define, and describe concepts used in their speech, although with limited meaning. This also helps

children to distinguish better between the concepts. Such an expansion promotes the process of generalization and reconstruction of Hierarchical classification.

Fleer (2011) carried out a study entitled "Conceptual Play: foregrounding imagination and cognition during concept formation in early years education". He states that the international trend to increase the cognitive achievement of early childhood children has generated a need for better understanding how concept formation occurs within play-based programs. Yet the theories of play for supporting early childhood professionals were originally not conceptualized with this need in mind. In this study, concepts from cultural-historical theory have been used to theories how imagination and cognition can work together in play-based programs to support concept formation. A dialectical view of imagination and cognition is foregrounded, and through this a new theory of play, named as conceptual play, is introduced. It is argued that conceptual play will help teachers to work more conceptually with children in their play-based programs.

Lin et al. (2012) in a study entitled "Epistemological beliefs, motivation in learning science, and their relationships: A comparative study within the Chinese culture" investigated the difference between epistemological beliefs, motivation in learning science, and their various relationships in China and Taiwan. In this research, 310 Taiwanese high school students, and 302 Chinese high school students were investigated. The Taiwanese students in general believed that reality is an invented science. Development of scientific knowledge, that is always changing, depends on culture. Yet, Taiwanese students obtained higher score in anxiety test. In general, research results showed that culture could affect students' epistemological scientific beliefs and motivation to learn science.

As acknowledged by Vygotsky, high mental processes originate from human-environment relationship, which is both physical and social. Vygotsky knows such social interactions as speaking, a mean for transmitting scientific activities. Vygotsky stated that learning awakens in children a variety of internal developmental processes that can operate only when they interact with more competent people in their environment and in cooperation with peers (Gock, 2010).

Cross-cultural studies can trigger and provoke misunderstandings and disputes between different cultures, due to several differences in norms, values, experiences, etc. Knowing these differences leads to better comprehension and understanding of cultures, and more effective relationship. In addition to this, several factors and conditions including cultural,

social, and economic are involved with a child development. The effect of culture and society on people though is undeniable. In this research, we seek to apply "double stimulation" test to Farsi-speaking Iranian and Afghan children and investigate the obtained results, as such studies can help us in better understanding the characteristics of children from different conditions and cultures. It may also answer the question of whether substantive differences in different cultures, but from the same thought, are significant in concept formation. The findings will contribute to more clear and precise basis for educational planning for Farsi-speaking children.

Research Methodology

This is a (retrospective) causal-comparative and descriptive study; since, the objective of a descriptive research is to describe the investigated conditions or phenomena. This is a retrospective study, in which the researcher does not have direct control on the independent variable (i.e. Iranian and Afghan cultures) and only addresses its effect on the formation of concept in children. In causal-comparative and experimental methodologies, the minimum sample size of 15 subjects is recommended for each group (Delavar, 2007, p. 131). Here, convenience sampling method was conducted. The sample size was comprised of 96 subjects. Statistical population included all Iranian and Afghan Primary School Girls and Boys studying in school year 2002-2003 in Pakdash, Varamin. Statistical population consisted of 48 Iranian boy and girl students and 48 Afghan boy and girl students, studying in primary schools of the same city.

Data collection instrument was conceptual reasoning test. In this test, the concern is not breaking down the components of mental constructs; rather it is qualitative analysis of the given subject. This test is called "conceptual reasoning test".

In the Kasanin-Honfmann test, as the data collection instrument in this study, 22 wooden blocks, varying in color, shape, height, and size, are given to the subject, who should show how parts are classified based on four different perspectives, and justify his/her methodology (Ganji, 2007, pp. 227-228).

Procedure

With visiting the selected boys' and girls' schools, we picked 96 Iranian and Afghan students who were closely match in terms of school success, intelligence, and family status, according to the teachers. Researcher resided in a certain room. After meeting the students, one by one, they were told that they are going to play a game, which is not going to have any loser or winner, and then its procedure was explained to them. Beads were stacked on the table in front of him/her. The experimenter recorded the time in a way that the subject did not notice. In addition, all

selections of the subject were recorded. At the end of experiment, a small gift was given to the subjects by the experimenter for appreciating their cooperation.

In scoring the performance, each correction should be taken as 5-minute attempt (the first block, given as a sample, is not regarded as a correction). Therefore, to obtain the final score, the numbers of corrections are multiplied by 5. In Vygotsky test, the number of corrected blocks refers to the amount of blocks a subject wrongly classifies in other groups, and the examiner corrects them by declassification (Kasanin-Honfmann, /1989).

Research Objectives:

- Investigating and comparing the formation of concepts in Iranian and Afghan primary school girls and boys
- Investigating and comparing the formation of concepts in Iranian primary school girls and boys
- Investigating and comparing the formation of concepts in Iranian and Afghan primary school boys (living in Iran)

Research Questions:

- Is there any difference in the formation of concepts between Iranian and Afghan primary school girls and boys (living in Iran)?
- Is there any difference in the formation of concepts between Iranian primary school girls and boys?
- Is there any difference in the formation of concepts between Iranian and Afghan primary school boys?

Findings

For data analysis, descriptive and inferential statistics were employed. Descriptive statistics was used for data classification and frequency calculation. In inferential statistics section, to describe and explain the information obtained from the sample and to investigate the main hypothesis, both descriptive and two-sample t-test were used.

In the first part of analysis, data obtained from Kasanin-Honfmann test, using double stimulation, is described. As can be seen in tables 1-4, this test was applied to four groups of Iranian and Afghan girl and boy students each consist of 24 subjects, and all of them were living in Iran. Through this, following data was obtained:

Table 4-1. Descriptive information of the score of all four primary school students groups in terms of sex and nationality in concept formation test

Students in term of sex and nationality	number	Mean	Standard Deviation	Lowest-Highest
Iranian boy	24	50.54	23.84	93-20
Afghan boy (living in Iran)	24	60.25	27.39	129-18
Iranian girl	24	71.08	25.73	105-18
Afghan girl (living in Iran)	24	80.20	17.71	100-38

Tables 4-2 and 4-3 represent frequency of Iranian and Afghan boy students (living in Iran) in Kasanin-Honfmann concept formation test. According to Table 4-2, the highest frequency of Iranian boy students' score ranges from 21 to 40. In contrast, Table 4-3 shows that the highest frequency of Afghan boy students' score range, living in Iran, was 41-60. This has caused an increase in the mean scores of this group of students relative to Iranian boy students.

4-3 Table: frequency of Afghan boy students (living in Iran) in Kasanin-Honfmann concept formation test

Score/ range	Frequency	frequency percentage	Summative frequency percentage
0-20	1	4.2	4.2
21-40	5	20.8	25
41-60	7	29.2	54.2
61-80	4	16.7	70.8
81-100	6	25	100
101 and higher	1	4.2	...
Total	24	100	...

4-2 Table: frequency of Iranian students in Kasanin-Honfmann concept formation test

Score/ range	Frequency	frequency percentage	Summative frequency percentage
0-20	1	4.2	4.2
21-40	10	41.7	45.8
41-60	4	16.7	62.5
61-80	6	25	87.5
81-100	3	12.5	100
101 and higher	0	0	...
total	24	100	...

In diagram 4-1, frequency of Iranian and Afghan (living in Iran) boy students' scores in Kasanin-Honfmann concept formation test are presented with bright and dark colors, respectively. According to this table, we can conclude that Afghan boy student (living in Iran) showed better performance relative to Iranian boy students as they obtained higher score range.

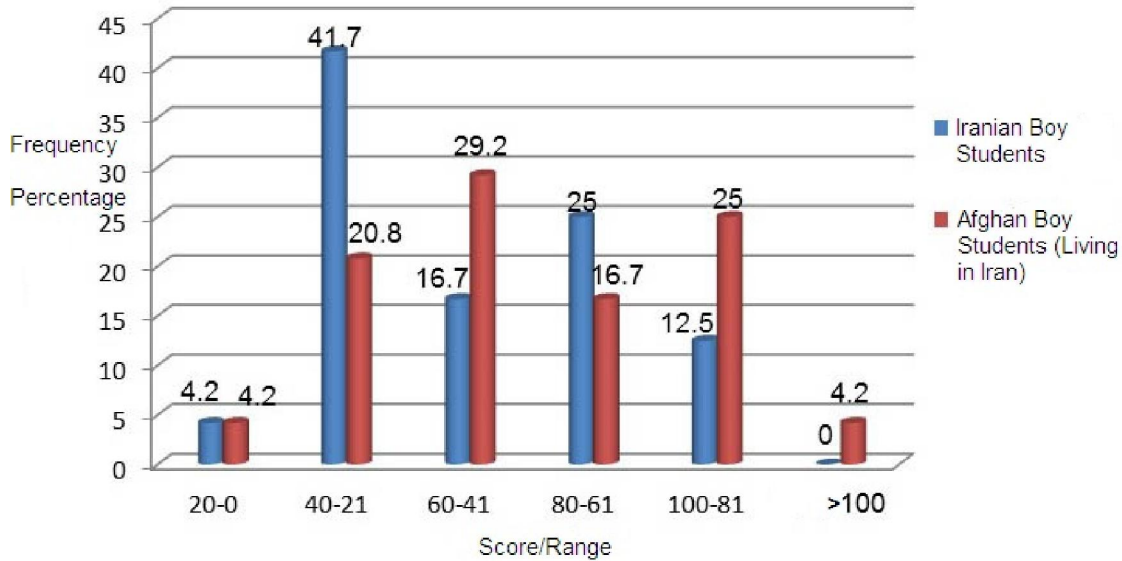


Figure 4-1: Performance frequency diagram of Iranian and Afghan boy students in concept formation test

Table 4-4 demonstrates the frequency of Iranian girl students' scores in concept formation test. As can be seen, the highest frequency of Iranian girl student score range was 81-100. In contrast, Table 5-4 presents the frequency of Afghan girl students' scores. Comparing this table with that of Iranian girl students suggests that both Iranian and Afghan girl students gained the highest frequency within the score range of 81-100.

4-4 Table: frequency of Iranian girl students in Kasanin-Honfmann concept formation test

Score/ range	Frequency	frequency percentage	Summative frequency percentage
0-20	1	4.2	4.2
21-40	2	8.3	12.5
41-60	6	25	37.5
61-80	4	16.7	54.2
81-100	8	33.3	87.5
101 and higher	3	12.5	100
total	24	100	...

5-4 Table: frequency of Afghan girl students (living in Iran) in Kasanin-Honfmann concept formation test

Score/ range	Frequency	frequency percentage	Summative frequency percentage
0-20	0	0	0
21-40	1	4.2	4.2
41-60	3	12.5	16.7
61-80	8	33.3	50
81-100	12	50	100
101 and higher	0	0	...
total	18	100	...

Diagram 4-2 presents the frequency of Iranian and Afghan girl students (living in Iran) in concept formation test. According to this table, it can be said that both groups of Afghan girl students (living in Iran) and Iranian girl students, presented with dark and bright colors respectively, had better performance with higher score range.

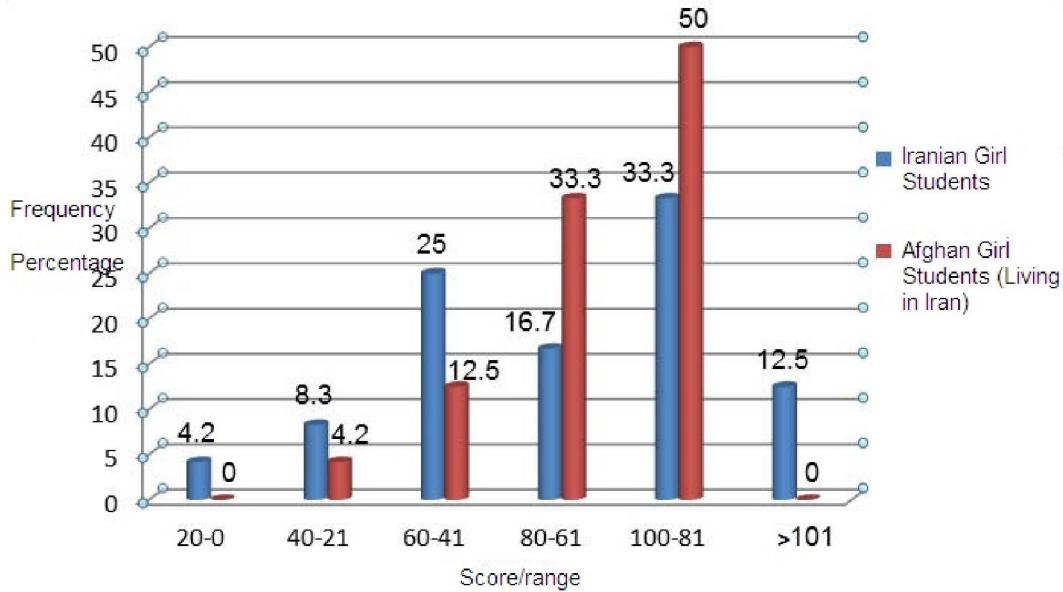


Figure 4-2. Performance frequency diagram of Iranian and Afghan girl students (living in Iran) in concept formation test

B) Inferential statistics

To examine research hypotheses, independent two-sample t-test has been used and the results are presented in following tables.

The main question: Is there any difference in the formation of concepts between Iranian and Afghan primary school girls and boys (living in Iran)?

Table 6-4. Statistics related to the concept formation in two groups of students with two different nationalities (Iranian vs. Afghan)

Test variable	Classification variable	Number	Mean	Standard Deviation	Mean Standard Error
Concept Formation	Iranian students	48	60.81	26.64	3.84
	Afghan students (Living in Iran)	48	70.22	24.94	3.60

Table 7-4. Independent two-sample t-test

Concept Formation	Equality Test Variance		t-test for equality of means						
	statistics F	Variance Equality Decision Criterion Sig.	statistics t	Degree of Freedom	Mean equality Decision Criterion Sig. (2-tailed)	Mean of Differences	Standard Error of Difference	class Distance	
								Lowest	Highest
Assumption of Equality of Variances	0.959	0.330	-1.78	94	0.077	-9.41	5.26	-19.87	1.04

In the main question of this study, nationality was the only classification variable, and both boy and girl students, of the same nationality (Iranian or Afghan), were placed into the same group. In this hypothesis, variance of the populations is equal with reported

freedom degree of 94. Decision criterion (sig.2tailed) is equal to 0.077, which with 95% confidence suggests that there is not any significant difference in the formation of linguistic concept between Iranian and Afghan students (living in Iran). Therefore, the

assumption maintaining that there is a difference in the formation of linguistic concept between Iranian and Afghan students is rejected with 95% confidence. Although, with comparing means of both groups of students, it is revealed that Afghan students (living in Iran) showed better performance, but testing this

hypothesis suggests that this difference is not significant.

The first question: Is there any difference in the formation of linguistic concept between Iranian and Afghan primary school boys?

Table 4-8. Statistics related to the concept formation in two groups of Iranian and Afghan boy students

Test variable	Classification variable	Number	Mean	Standard Deviation	Mean Standard Error
Concept Formation	Iranian Boy	24	50.54	23.84	4.86
	Afghan Boy Living in Iran	24	60.25	27.93	5.59

Table 4-9. Independent two-sample independent t-test

Concept Formation	Equality Test Variance		t-test for equality of means						
	statistics F	Variance Equality Decision Criterion Sig.	statistics t	Degree of Freedom	Mean equality Decision Criterion Sig. (2-tailed)	Mean of Differences	Standard Error of Difference	class Distance	
								Lowest	Highest
Assumption of Equality of Variances	0.280	0.621	-1.31	46	0.197	-9.70	7.41	-24.63	5.21

According to Table 4-9, significance ratio of *f* is reported as 0.621, which suggests equality of variance in both groups. Comparison of concept formation between Iranian and Afghan (living in Iran) boy students with freedom degree of 46, and according to decision criterion (sig.2tailed), is 0.197. This value shows, with 95% confidence, that there is not any significant difference in concept formation between Iranian and Afghan (living in Iran) boy students;

therefore, the hypothesis that maintains a significant difference in this regard is rejected with 95% confidence. In result, with comparing means of the two groups, we can see that although Afghan boy students (living in Iran) showed better performance, this difference was little and so insignificant.

The second question: Is there any difference in the formation of concepts between Iranian primary school girls and boys?

Table 4-12. Statistics related to the concept formation in two groups of Iranian boy and girl students

Test variable	Classification variable	Number	Mean	Standard Deviation	Mean Standard Error
Concept Formation	Iranian Boy	24	50.54	23.84	4.86
	Iranian Girl	24	71.08	25.73	5.25

Table 4-13. Independent two-sample t-test

Concept Formation	Equality Test Variance		t-test for equality of means						
	statistics F	Variance Equality Decision Criterion Sig.	statistics t	Degree of Freedom	Mean equality Decision Criterion Sig. (2-tailed)	Mean of Differences	Standard Error of Difference	class Distance	
								Lowest	Highest
Assumption of Equality of Variances	0.110	0.741	-2.86	46	0.006	-20.54	7.16	-34.95	-6.12

The second question investigates the formation of linguistic concept between boy and girl groups, but from the same nationality (i.e. Iran). According to Table 4-2, comparison of the mean of two student groups suggests that Iranian girl students showed better performance relative to Iranian boy students, but we must see whether this approximately 9-grade difference in the scores of the two groups is significant. In this test, like the earlier one, significance level of statistics f is reported equal to 0.741, suggesting equality between the populations' variance. The reported degree of freedom for these two groups is 46, and decision criterion (sig.2tailed) is equal to 0.006. This value shows with 95% confidence that there is a significant difference in the formation of linguistic concept between Iranian boy and girl students, in that the latter showed a better performance, confirming the given hypothesis with 95% confidence.

Discussion and Conclusion

In explaining the reason for the rejection of the main research question, it can be said that Iran and Afghanistan have common cultural, historical, social, and religious roots. What today is known as Afghanistan was part of the greater Khurasan, where Afghan people were living. After foundation of the Safavid dynasty by Shah Ismail I in 907 AH, he moved towards the greater Khurasan to quell the Uzbeks in 916 AH, and defeated the Uzbek army led by Muhammad Shaybani, and captured Herat, Balkh, and Marv, and finally established his rule in Herat and Balkh (Sha'bani, 2003, p. 511). For two short periods from 1000 to 1031 AH, and from 1047 to 1059, Iran temporarily lost control of Kandahar. This triggered a set of events ultimately separated Afghanistan from Iran, due to international policies of major powers in 1857AD/1273AH (Navae, 2005, p. 55). Another reason for the rejection of the main research question is that many of Afghan children are born in Iran and are affected by the culture of the region where they are living. In addition, Researcher-made tests may have not distinguished cultural indexes.

Regarding the rejection of the first research question, Vygotsky states that the relation of thought to word is not a thing but a process, a continual movement back and forth from thought to word and from word to thought (Vygotsky, /2008, p. 168). Vygotsky's test provides quantitative results and investigates how and why of a process. Furthermore, if the test continued over the longer time and higher development stages, the question could be confirmed. Concept is a complex action and an original thought that is not learned by practice. It is learnt only when a child's cognition is adequately developed. Every concept is a generalization action at every age level once is visualized in form of a word. When a word is learnt by a child, it begins its initial development. At

the beginning, a word is the lowest level of generalization. Therefore, along with the development of a child's cognition, it is substituted for higher level of generalizations - a process that ultimately will form true concepts. The development of concepts, or word meanings, presupposes the development of many intellectual functions including deliberate attention, logical memory, abstraction, and the ability to compare and to differentiate (Vygotsky, /2006, p. 122).

Over the recognition process, a child not only learns how to communicate with others and objects, and how to change his/her surrounding world, but also knows and evolves himself/herself. Here, speech plays an important part: Both as a mean for communicating with others and as a tool for comprehending relationships. These two aspects introduced the role of word in the development of thought and conceptualization to Vygotsky (Vygotsky, 2006, p.12).

He believes that signs and symbols are very representation of words, serving as a social tool. When a child gains control over its application, he/she becomes capable of controlling his/her undeveloped (natural) functions, and systematizing and turning them into high (cultural) functions. Development of symbols requires internalization of social communication tools. Therefore, mental functions first arise at social level and then at cognitive level. That means, first it appears between people as an interpsychological category, and then within the child as an intrapsychological category (Kozulin; Azbodfetri, 2008, Trans., p. 94).

To Vygotsky, concepts are divided into so-called "scientific concepts" (non-spontaneous) and "everyday concepts" (spontaneous). Scientific concepts can only be acquired as a result of deliberate and systematic instruction in an educational setting, characterized by its logical and relevant organization. On the other hand, everyday concepts are spontaneously generated through the child's thinking about his/her direct and daily experiences (Kozulin; Azbodfetri, 2008, Trans., p. 94).

Piaget also distinguishes between a child's imaginations about reality which are mainly the products of his/her own mental attempts as spontaneous concepts, and thoughts that are greatly affected by adults as non-spontaneous concepts.

In the scientific concepts, which are acquired by a child in an educational setting, an early relationship is created between a scientific concept and object through another concept. Thus, scientific concept presupposes being in a certain condition in connection with other concepts, that is somewhere in a system of concepts. We believe that the preliminaries of system processing enter into the mind of a child first through his/her exposure to scientific concepts,

and then enter into the everyday concepts, and completely reinvents his/her psychological structures (Vygotsky; Ghasemzadeh, 2008, Trans., p. 133). It can be said that the development of spontaneous concepts of a child, in contrast to the scientific concepts, work upward, that is moving towards a more introductory and concrete level. Though scientific and spontaneous concepts evolve in reverse directions, the two processes are closely connected. The development of a spontaneous concept must first have reached a certain level for the child to be able to absorb a related scientific concept (ibid, p. 150).

Therefore, the process of instruction and provision of scientific concepts, which is in contrast to how a child acquires everyday concepts, completely transforms the child's psychological construct. This important impact and revolution of the child's cognitive construct, induced by education, fades the impact of cultural difference.

The second question that investigates the difference in the formation of linguistic concept between Iranian girl and boy groups is confirmed with 95% confidence, based on Table 4-13. It suggests that there is a significant difference in the formation of concepts between those groups, in that girl students have performed better.

In recent years, an increasing interest has been developed in the areas of studying sexual differences in language. These differences affect both the concept and style of language that is used and called sexual accent. They exist from the early childhood and can even be seen in adults. It is not surprising in 4-5 years old children that why parents/children verbal interactions differ based on their sex (cited from Owens, 2001).

Several studies suggest that girls are better than boys in the early development of words. The most common biological justification is faster physical maturation of girls. It strengthens the initial growth of the left cerebral hemisphere, which is the language area; on the other hand, mothers talk more with small girls than boys (Breck, /2007, Seyyed Mohammadi, Trans., p. 245).

Dian Halpern, a professor at the California State University, in San Bernardino, and the author of "the Effect of Sexual Differences in Cognitive Abilities" argues that based on the studies, women are better than men in using language. This difference starts to appear from the early years of life. In that, girls start talking sooner than boys and in general speech impairments are reported more common among boys. Furthermore, from the early years of life, girls acquire wider range of words, and use more complex and diverse sentences. Previous examinations have shown that women are more capable than men in linguistic skills such as classification of multi-block

words with the same initials. Some researchers also believe that women are more capable of men in learning foreign languages (Ghaffari, 1997, p. 89).

Mayers Levy (1994) postulates that the right cerebral hemisphere is associated with processing non-verbal, visual, and spatial-visual information and men rely on this part of the brain in their activities. In a study, Colt and Heart (1975) showed that women perform better in verbal activities, and are more dependent on their left cerebral hemisphere, according to the evidence. Bernstein et al. (1980) believed that the superiority of the women in using left cerebral hemisphere is associated with their use of verbal strategies in information processing. The left cerebral hemisphere's advantage of women drives them to use verbal tools for problem solving. Therefore, this relative ascendancy in women is an effective factor in the process of language learning (Rahmatian, 2007).

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