The analysis of the image schemata in the literature book of grade eight with a cognitive semantic approach

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Abstract
The present study tries to analyze image schemata in the literature book of grade eight (2014) based on the Jonson's image schemata in a cognitive semantic framework. This study, first, provides general definitions and some theories regarding cognitive linguistics, semantics, cognitive development and image schemata. Then, based on the Piaget's cognitive development theory and its stages and image schemata the performance of 74 kinds of image schemata suggested by Johnson (1987) Iranian researchers and the author has been studied. The application of schema and its compliance to cognitive development theory revealed that the authors of the textbooks did their best in the development and the growth of the students' creativity and way of thinking. Also, the amount of the application of these schemata varied from one to 127 samples. Meanwhile, some of these schemata overlapped with each other. Suggesting more than 25 kinds of schema by the author shows the unlimited formation of various image schemata in the mind.

Keywords: cognitive linguistics, cognitive semantics, image schema, cognitive development, grade eight Persian books.
Significance of the study

Since the cognitive semantic field is new and growing, it can be influential in studying linguistic concepts. Specially, the image schema discussion is useful in analyzing the abstract concepts and can relate physical experience to cognitive domain. Moreover, with respect to the importance of cognitive development and learning phenomenon in teenagers, the study of the image schemata in textbooks, that are regarded as the foundations of the education, is essential and must be one of preliminaries in writing textbooks. Therefore, the author studied literature book of grade eight of high school by considering principles and applications of abstract concepts, metaphor, and specially image schemata that are the foundations of these concepts and metaphors. It is noteworthy that studying image schemata is very rare and limited.

1. Introduction

Cognitive linguistics is one of the new schools of linguistics with a flexible identity that studies the relationship between human language, mind and social-physical experience. They study language as a branch of knowledge and describe the role of the language. Their main incentive of studying language arises from the theory that language reflects thought and the features of human mind. (Kraft and Kruz 2004). Cognitive linguistics believes that no sentence even the simplest one cannot be recognized without cognitive means. In this approach both language and though have a system and structure that are reflected by the language (Licaf and Johnson 1999-1980). Their findings revealed that abstract concepts are organized in human mind based on the concrete concepts. Cognitive linguistics also study the way cognition is reflected in language. In their study, they consider not only the linguistic knowledge but also the coordination of this linguistic knowledge with other cognitive sciences. From their point of view, the most important and fundamental basis in cognitive linguistics is the meaning of the language and this meaning is dynamic, visionary, encyclopedic and application oriented. In this approach, language is the reflection of the mind. One of the most important branches of this school of thought is cognitive semantics that is also referred to as the science of meanings. This expression was first used by Michel Bereal in 1879. He designed French term, semantics based on Greek semantikos that was a compound word which consisted of (semsa) meaning symbol. (Lujan 2010, 286-310). Although cognitive semanticists such as Lankager and Likaf introduced semantic unit as linguistic symbol of Saussure, unlike it that designs symbols at the words’ level, they consider linguistic symbols at the sentence level. From their point of view, metonymy is a fundamental phenomenon in our categorization of the world and depends on our thinking and they relate it to fundamental structures such as image schemata. Cognitive semantics studies the relationship between meaning and their reference to the real world and it includes concepts and subjects such as metaphor and metonymy, encyclopedic meaning, categorization, prototype theory, mental spaces and mosaic concept. (Rasekh, Mahand, 2010,34) They define semantic structure as conceptual structure. They consider the relationship between objects and their surroundings as the result of this interaction that leads people to understand. For example in the sentence "علي تو فکر رفته" the abstract concept of mind is conceptualized like a container that we can enter it or come out of it. In fact, it is a kind of schema in which bodily experience and observation result in understanding the meaning of the sentence.
Another important means in cognitive semantics is the recognition and the study of encyclopedic meaning, that is, the result of our understanding of the world. Based on this view, it can be said that in cognitive semantics, conceptualization and conceptual structure are essential. They consider language as a means of analyzing the conceptual structure of the mind. From their point of view, observation of the objects and the experience that people gain from the surrounding world are stored as a series of concepts in the mind and using them for thinking is among the most important application of them. Semanticists in this approach believe that linguistic knowledge is a part of general recognition of human.

2. Image schemata

Image schemata are one of the most important conceptual structures from the cognitive semanticists’ point of view. They believe that when we do some actions such as walking, eating, sleeping, and understanding our surrounding environment, we form conceptual structures in our mind that are used for thinking about more abstract affairs. (Safavi, 2010, 373) The conclusion of Johnson’s findings is that our experience and observation of outside world create structures in the mind that can be expressed by the language. He introduces these conceptual structures as image schemata. Rasekh Mahand (2010, 43-45) introduces the following characteristics for image schemata.

- Image schemata are interactive. That is, they are the result of physical interaction with the world. This can be found in image schema of “Power” because our understanding of the power is the result of our interaction with the world.
- Image schemata are not so simple and can contain complex structure. For example in image schema of movement, we can observe three components of departure, path and destination. This complexity makes profiling be done in different ways.
- Image schemata are not the same as mental images. Image schemata are abstract; they are placed in human understanding and conceptual system deeply as a whole.
- Image schemata contain meaning inherently since they are the result of physical understanding.
- Image schemata can be shifted from one schema into another. For example, when we are near cattle, we can count them one by one and the image schema is countable but when they are in the distance, we cannot count them; therefore, in this case we have mass schema. (Lakoff, 1987, 45)

Johnson (1987) believed that these schemata are inherently pre-conceptual, for example, volume schema results from body experience directly. The basis of the opinion of cognitive semanticists is that the root of abstract thinking is in human experience. Although, unconsciously, the basis of our thought consists of these image schemata, understanding these concepts seems difficult. Human babies gain these schemata before language learning by observation and interaction with the environment and later these schemata result in understanding linguistic concepts. From Lakoff and Johnson’s investigations, it is concluded that conceptual structure is organized as a metaphoric system and image schemata are experimental basis for writings in metaphoric understanding of an abstract concept.
3. Metaphor

Metaphor was first used by Aristotle in ancient Greece as a means for practical teaching for eloquence and fluency. He believed that metaphor was one of the special speech skills and it is the creation of a piece of art that belonged to literature. Jorge Lakoff and Mark Johnson, the authors of “metaphors we live with” discussed the study of metaphor from cognitive semantics in their book. They believed that metaphor was not a means of aesthetics and better understanding of our thoughts; rather they cause our understanding and perception of the world. (Bambini, 2012, 99-126)

Therefore, it can be said that continuity in conceptualization by the mind is based on the observation and objective experience from the surrounding world and any concept that is not acquired by physical interaction directly is considered metaphor and it shows that our mind uses objective concepts to structure and understand abstract concepts.

4. Metaphor and image schemata

Based on the Lakoff and Johnson, it can be said that image schemata are knowledge structures that are direct product of embodied experience and pre-conceptual phenomenon. These structures have meaning (Rushan and Ardebili, 2013, 129) for example in the sentence:

«تشنگی نتوانست او را به زانو در بیاورد»

“thirst could not make him bend” is an abstract concept that is expressed by power schema in metaphor format.

By analyzing the image schemata theory and their relationship with conceptual metaphor theory, we understand that abstract thinking that is expressed in metaphor format has an image schema basis.

او غرق در عبادت است.

He has drowned in worship.

That car does not catch my eyes.

5. Cognitive development

5.1. Piaget’s cognitive development

Jean Williams Fritz Piaget, a Swiss psychologist, biologist, logician, and cognitivist is famous for his activities and theories in developmental psychology and cognitivism. His preliminary studies were in biology and he believed that biological means are a collection of interactions with surrounding physical world. Interest in studying and activity in cognitive psychology and development led him toward children and teenagers’ mental phenomena and mostly the development of their cognition and understanding. Therefore his theory is called cognitive perceptual development. He believed that intelligence is an example of biological matching and the most fundamental factor of the interaction of the person with the environment.

Piaget’s cognitive development involves four main stages; it has one main product that is the ability to think up to adulthood. Although, these stages are not of the same
priority and one precedes the other, various inherent and environmental features influence the speed at which individuals go through different stages. He believed that richer, more complex and various living environments result in getting higher levels of mental activities easier and faster. (Parsa, 2003)

2-5- Stages of children cognitive development from Piaget’s point of view

1-2-5 Sensorimotor Stage (from birth to two years)

At this stage we can see practical contact of the child with outside world and the child shows innate behavior; early habits that provide the background for a kind of learning and conditioning.

2-2-5 Preoperational Stage (from 2 to seven years)

This stage is the beginning of reflection together with language, secret play, imitation, mental picture, and other coded activities. At this stage children perceive everything from their point of view. According to Piaget, the difference between the children and adult’s way of thinking mostly arises from development. The most prominent feature of this stage is personification; for example, imagining cloud, moon and other objects as alive happens a lot at this stage and children talk to these objects easily.

3-2-5 concrete operational stage (from seven to 11 years)

At this stage children are able to do concrete operations; it means, they think about what they did physically.

4-2-5 Formal operational stage (from eleven to 16 years)

This stage is the beginning of abstract thinking and intelligence. Thoughts that are often flexible, reasonable and organized are features of this stage. According to Piaget, this stage has the highest cognitive quality for teenagers. Teenagers understand the concepts of probabilities, the application of cases such as analogy, explanation and interpretation of metaphors and proverbs. They think about things that are not real.

The last stage is the stage that the students of grade eight generally experience. Abstract thinking, mental reflection and spatial understanding are important characteristics of this stage. Surely, the improvement and enforcement of this stage influence learning process and reading efficiency of the students. This stage is one of the most important and critical periods of education and we can say that high school acts as a bridge to connect childhood to adulthood and it organizes and forms cognitive phenomena and the personality of the students.

6. The introduction of the Book

Literature book of grade eight (2014) is the first series of new books which are in accordance with fundamental revolution document. It is compiled by prominent professors such as Fereidun Akbari Shordareh, Masomeh Najafi Pazaki, Hossein Ghasem
Poormoghadam, Mohamadreza Sangari and Shahnaz Ebadati. This book includes seven chapters, five stories and seven texts and poems for fluency reading. They contain 1820 sentences all together. Students are mostly 13-14 years old and are at the last stage of Piaget's cognitive development.

7. Data presentation and analysis

At this stage the author, first, introduces different schemata suggested by Johnson (1987), Iranian researchers and those suggested by the author. Due to the limitation of the essay, five schemata are presented for each one along with examples and other schemata are presented in the table along with their application. Then, these schemata are analyzed and studied in accordance with Piaget's cognitive theory.

7-1- Johnson's image schemata (1987) in the literature book of grade eight

7-1-1- volume schemata (85 cases)

شاه به تنگنا افتاد

( the king was in the bottleneck. (abstract concept of bottleneck is a hole that the king fell into it.)

7-1-2- Movement schemata (75 cases)

در این لحظه فکری به خاطرم رسید.

( a new idea moves along a path that ends in my mind and finally reaches it)

7-1-3- Counterforce schemata

گرانی دماوند هر پشت را خرد می کند و در هم می شکند، مگر پشت ستبر و استوار و نیرومند فرزند ایران.

The heaviness of Damavand mountain breaks everybody's back unless that of you who are strong and powerful son of Iran. (the abstract concept of heaviness of responsibility and the power of offspring are two counterforce.

7-1-4- Collection schemata (70 cases)

جوشان و پرتوان خواهد کوشید که در آبادی و آزادی و شکوفایی و توانایی و پیروزی و بهروزی آن از هیچ تلاش و تکایوی باز نماند و دریغ نورزد.

He will try eagerly and enthusiastically to make it free, settled, able, flourishing and victorious and he will do his best in this way and never stops. (abstract concepts of settlement and freedom, flourish, ability and victory are a collection)

7-1-5- Balance schemata (60 cases)

وقتی نامه را خواندم چنان گل از گل حسین شکفت و نیرو گرفت.

When I read the letter the flowers of Hossein blossomed and he got energy. (reading the letter happily and getting energy are in balance)
Power domains (37), surface (27), rotation (6), mass (78), communication (27), absorption (45), far / near (5), quantity (14), contact (28), full / empty (9), the object (45), center (14), compulsion (22), Union (2), part / whole (25), gap (14), process (7), matching (8), iteration (5).


7-2-1- Nature schemata (17 cases)
فضایی طوفان خیز و پر گل و لای را پیش چشم آورد.Stormy weather and full of mud was in front of his eyes. (storm and mud are derived from nature)

7-2-2- Personification schemata (127 cases)
دل مرداب حتّی از بدن من هم سخت تر است.The heart of swampland was even harder than my body. (swampland has heart as alive people)

7-2-3 Body parts schemata (54 cases)
چشم دل باز کن که جان بینی.open the eyes of your heart to see the soul. (abstract concept that heart has eyes)

7-2-4- Family relationship schemata (6 cases)
تو ایستاده ای و پسران تو مردان نیایش و شمشیرند.
You are standing and your sons are the men of worship and sword. (there is family relationship between hometown and sons)

7-2-5- Beginning/End Schemata (10 cases)
آخرین نگاه‌های خود را در جستجوی آب فرستاد.
Send his last looks to look for water. (the abstract concept of look came with the last)

Schemata of concurrence (2), places (27), means (20), color (3), smell (5), ability (22), tension (16), find / hide (15), material (3), softness / hardness (4), taste (5), resistance (12), temperature (7), wet / dry (2), construction (3), weight (2), the direction (11), substantiality (3), ownership (17).

7-3-Proposed schemata of the author

7-3-1- Light Schemata (18 cases)
آن مرد از شادی چشمانتش درخشید.
The eyes of the man glow with happiness. (abstract concept of happiness produced light)
7-3-2- Mirror Schemata (3 cases)

ادبیات انقلاب، آینه انقلاب است.

Revolutionary literature is the mirror of revolution. (literature reflects the revolution image like mirror)

7-3-3- Creation Schemata (5 cases)
امروزه که دشمنان این ملت از راه این ابزارها جنگ نرم را بی هیاهو آغاز کرده اند تا غوغایی بیافرینند.

Today, the enemies of this nation begin soft war through these means without obvious propagation to create propagation. (abstract concept of propagation is created)

7-3-4- Crying/ Laughing Schemata (4 cases)
برق از شوق که می خندد بدین سان قاه

Light laughs with happiness ha, ha (laughing is a sign of vivacity and light creates vivacity by making the environment bright.)

7-3-5- life/death schemata (5 cases)
نور کم رنگ شادی در قلب او جان گرفت.

The glowing light of happiness became alive in his heart. (the abstract concept of happiness returned to his life in the heart.)

Schemata of invitation (2), loss (4), darkness (7), purity (9), territory (9), complexity (3), amalgamation (2), sadness (6), requirement (3), sewing (1), death / life (8), new / old (7), teacher (2), creation (5), Reliance (2), link (3), qualified (3), dark / light (3), state (18), deposits (1), caress (1), profit (5).

7-4- The following table shows the number of frequencies and the percentage of suggested schemata by Johnson, Iranian researchers and the author relative to the whole extracted schemata. 1280 cases

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As it can be seen from the table, the entire literature book of grade eight which includes more than 1820 sentences (poetry and prose) has been studied and the application of 74 image schemata has been analyzed and 1280 examples of these schemata are extracted from the body of the texts. The table shows that nearly 70.32% of the entire book contains different kinds of image schemata from which 58.44% belongs to Johnson’s image schemata, 30.7% belong to Iranian researchers and 10.86% belongs to those suggested by the author. Image schemata of personification, volume, path, balance, mass, body parts and collection have the most application and among Johnson’s image schemata, unity schemata has the least application in this book. Teenagers can imagine themselves separate from real world and think about situations which are not real and are imaginative. Schemata such as ability, path, volume, rotation, gap, family relationship, start/end, body parts, softness/hardness, hidden/clear, taste, temperature, color and place can strengthen the teenagers’ imagination and abstract thinking. Also, teenagers can involve in thinking about abstract affairs and idealization in social and moral affairs. Schemata such as relationship, balance, mirror, concurrence, unity and matching can strengthen these characteristics. (Arbab, 2013)

This table shows that in most cases, authors were successful in developing abstract reflection and mental creativity of the teenagers by using different schemata. Application of 70.32 percent of schemata in the body of the book reveals this fact. However, based on the four stages of Piaget's cognitive development" personification" relates to the second stage, pre operational stage, which includes children from 2 to seven years. At this stage children consider concrete objects as alive but at the fourth stage children consider abstract concepts as alive. Representation of personification in the body was mostly concrete objects and phenomena. Since this book is for teenagers, it is better to use abstract things to strengthen teenagers’ schemata making. Schemata that develop logical reasoning and argument, abstract thinking and mental creativity must mostly be used.

8. Conclusion

Cognitive semantics is one of the most important branches of cognitive linguistics in which the main structure of the language is a reflection of cognition and the language analysis is not possible without concentration on meaning. Image schema is one of the conceptual structures that semanticists pay attention to. It is a kind of conceptual structure that is presented in the language based on our experience and interaction with the world. The transformation of abstract concepts into objective concepts is the subject of this study and we can introduce them as the basis of metaphor. Understanding abstract things have attracted the attention of cognitive psychologists such as Jean Piaget. In his cognitive development theory, he suggested four stages for the development from birth to 16 years (teenage). The last stage, that is, formal stage is abstract thinking stage and spatial mental appreciation and definitely strengthening this stage influence learning process and reading efficiency of high school students. This stage includes configuration and systematizing cognitive and personal phenomena of the teenagers.

According to the evidence obtained from studying literature book of grade eight, in addition to general types of schemata specified by Johnson, other various schemata are used in this book. Studying extracted schemata based on the Piaget's cognitive development shows that authors tried hard to develop creativity and abstract thinking in teenagers by using image
schemata in poetry and prose in accordance with mental features of this age stage. Also, in most cases, various schemata like volume and full/empty and personification and ability, contact and body parts overlap each other. Moreover, this research emphasizes that due to various and unlimited observations and experiences of human beings in outside world, the creation of image schemata can be various and unlimited. Finally the author suggests that for strengthening this stage of development, schemata such as removing obstacle and stability be used to encourage teenagers to overcome hardships and difficulties of life. Moreover, taste, smell and temperature schemata can be used to reinforce hypothesis making and abstract thinking; unity and concomitance schemata which were rarely used are important for developing cooperation and condolence in teenagers and must be considered in devising textbooks.
References


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