

# Relationship of Image Schemata with Personality Variables Based on Bodily Communication

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**Abstract—** The form of the words and concepts in mind is the subject of this paper. So, bodily communication has been used to show it in the mind of people with individual differences. 200 students participated in the first phase of the study, while 95 of them participated in the second phase of it. In the first phase, a set of tests was given successively to determine the levels of certain personality variables. In the experimental setting, the participants were instructed to communicate certain words one by one nonverbally. The image schemata used by them and then the association between using different schemata and psychological variables were investigated. The results showed that the association between them is significant in some words. This significance was seen more in more stable and innate psychological characteristics.

**Index Terms—**Bodily communication, cognitive linguistics, image schema, psycholinguistics.

## I. INTRODUCTION

One of the less studied areas of cognitive science is bodily representations and bodily communication. On various occasions such as silent communication due to noise or distance and ‘the Silent Movie’ game, it is observed that people use their body parts or their whole body for representing entities and these bodily performances are metaphorical in the sense that they relate a given conceptual structure with bodily performance [1].

According to Reed [2], bodily representation constitutes a supramodal kind of representation. While the researchers such as Tversky, Bauer Morrison and Zacks [3] consider bodily representation distinctly as a cognitive commonality, it is claimed in this article that there may be individual differences in bodily communication performance as well.

The purpose of this study is not to study bodily communication merely; but it is a means to relate personality and cognition and then to unravel the image schemata related to each word.

Albeit the number of studies investigating the links between personality and cognition is few, almost all theories of personality textbooks (e.g. Pervin [4]; Ryckman [5]; Schultz [6]) devote a whole chapter to George Kelly’s theory

of personality that introduced a cognitive approach to personality.

According to Kelly [7], the basic unit of study in personality research is the notion of construct. That is why his theory is also known as the construct theory. Construct in the Kellyian sense is defined as ‘a way of construing, or interpreting the world; (...) a concept that the individual uses to categorize events and to chart a course of behavior’ [4], (p. 230).

Gezgin also investigated the relationship of bodily communication performance with cognitive and personality variables and expressed representations by body in terms of schemata and scripts within a cognitive framework that can be incorporated to a cognitively oriented model of bodily communication [1].

In this study, we want to investigate the relationship between image schemata observed in the bodily communications and psychological characteristics.

Schemata are ‘the patterns of expectations and assumptions about the world’ [8], (p. 73). The case studies will be discussed in terms of schemata. These case studies are presented to unravel the processes underlying bodily communication and accordingly, to know about the shape of the words in the students’ mind with personal differences.

An image schema is a recurring structure within our cognitive processes which establishes patterns of understanding and reasoning. Image schemata are formed from our bodily interactions, from linguistic experience, and from historical context. Some image schemata introduced by Lakoff and Johnson are Cycle schema, Source-Path-Goal schema (S-P-G schema), Orientation schema, Containment schema, and Force schema [9]- [10].

## II. METHOD

### A. Participants

200 BA students of Islamic Azad University whose mother tongue was Persian participated in the first phase of the study. 95 participants were enlisted for the final (experimental) phase.

63 participants (66.3%) were male and 32 participants (33.7%) were female. The ages of the samples ranged from 18 to 23 (Mean age= 20.9).

### B. Instruments

To determine the levels of introversion and extraversion, Eysenck Personality Questionnaire which comprises introversion and extraversion among its five dimensions was administered. To determine the levels of analogical reasoning and state-trait anxiety, Raven’s Standard Progressive

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Matrices Test and the State-Trait Anxiety Inventory were used respectively. Rosenberg Self-Esteem Scale was used to determine the levels of self-esteem.

C. Procedure

In the first phase of the study, 200 students were given a set of tests successively. After the evaluation of Raven’s Standard Progressive Matrices Test and Eysenck Personality Inventory scores, 4 possible combinations of subsamples are determined; (1) high analogical capacity and high extraversion, (2) high analogical capacity and low extraversion, (3) low analogical capacity and high extraversion, (4) low analogical capacity and low extraversion. Participants with scores more than 55 on Raven’s Standard Progressive Matrices Test were treated as high and those with scores lower than 48 as low analogical reasoning. Finally, the scores less than 50 on Raven’s Standard Progressive Matrices Test were treated as the low score group and more than 50 as the high score group. Participants with scores lower and more than 50 on extraversion items of Eysenck Personality Inventory were treated as the low and high extraversion group respectively.

strategies [11]. They suggested that there may be at least 6 strategies for bodily performances. The strategies were: form, referent’s typical actions, representer’s typical actions, perceivable effects, negating the opposite concept, and cultural representations. TABLE I: demonstrate 30 words used and the strategies suggested for them.

D. Analyses

The analyses were described using SPSS 18.0 for Windows to see whether there is any relationship between schemata used in nonverbal communication and psychological variables.

III. RESULTS

As already mentioned, bodily communication performance for all 30 words was done by 95 participants to screen them based on their psychological characteristics to establish the relationship between these characteristics and the schemata used.

The observation showed that all participants were the same in the performance of 10 words; including bird, singer, woman, statue, coldness, hotness, phone, weight, pencil, and comb. However, different schemata were seen when the participants tried to perform the other 20 words nonverbally.

TABLE II displays different schemata used in bodily communication for 20 words.

In order to determine the relationship between the schemata used by different participants and their various psychological characteristics, Chi-square test was conducted. In those words that p-value is less than 0.05, there is significant difference between people with different personalities.

TABLE III displays the descriptive statistics for different performances according to the participants’ psychological characteristics.

Demonstrated in TABLE III, the schemata used in the representation of 14 words were significantly different (p-value< 0.05) in one of the psychological groups, i.e. the group that was formed according to analogical reasoning and extraversion/ introversion. These 14 words were Tree, Bread, Dragon, Wind, Mud, Salt, Patience, Health, Life, Festival, Wedding.

However, the significant difference in the representation of only 5 words in the other psychological group, i.e. the group formed based on the level of self-esteem, shows that the role of this variable, i.e. self-esteem, is less than the previous variables in making different schemata.

The role of the third personal variable is the least. In other words, anxiety causes to have significant difference in only 2 words. So, in the representation of the other words, there is no significant difference between the participants of the groups.

The interesting point is that these two words are “Dragon” and “Lightness” which are significantly different in all psychological groups. In other words, the schemata used in bodily performance to represent these words are significantly different in all groups. So, all personality variables lead to difference in the schemata of the mentioned words.

TABLE I: WORDS USED IN THE STUDY AND SUGGESTED STRATEGIES

Words Used in the Study	The Representational Strategy
Woman	Shape
Tree	Shape
Pyramid	Shape
Statue	Shape
Beard	Shape
Bird	Referent’s Typical Actions
Fish	Referent’s Typical Actions
Dragon	Referent’s Typical Actions
Singer	Referent’s Typical Actions
Boxer	Referent’s Typical Actions
Coldness	Effect
Hotness	Effect
Wind	Effect
Mud	Effect
Lightness	Effect
Phone	Representer’s Typical Actions
Salt	Representer’s Typical Actions
Weight	Representer’s Typical Actions
Pencil	Representer’s Typical Actions
Comb	Representer’s Typical Actions
Patience	Negation
Adult	Negation
Health	Negation
Life	Negation
Lie	Negation
Festival	Culture
Worship	Culture
Funeral	Culture
Wedding	Culture
Wise	Culture

As stated before, this contrasting methodology formed 4 groups. Among the participants, 36 were from the first group; 11 were from the second group; 40 were from the third group and finally 20 were from the fourth group.

In addition two groups formed based on low and high anxiety as well as self-esteem. Finally, the participants were instructed to play ‘Silent Movie’ with 30 words shown to them. The words, selected in a former pilot study, were in 6 sets corresponding to Ricci Bitti and Poggi’s 6 cognitive

TABLE II: THE SCHEMATA USED IN BODILY COMMUNICATION

Words	No schema	Cycle schema	S-P-G schema	Orientation schema	Containment schema	Force schema
Tree	5 (5.3)	31 (32.6)		59 (62.1)		
Pyramid	39 (41.1)			56 (58.9)		
Bread	65 (68.4)	12 (12.6)	18 (18.9)			
Fish	17 (17.9)			78 (82.1)		
Dragon	74 (77.9)	3 (3.2)		18 (18.9)		
Boxer	33 (34.7)		62 (65.3)			
Wind	29 (30.5)	30 (31.6)	36 (37.9)			
Mud	30 (31.6)	3 (3.2)	19 (20)	14 (14.7)		29 (30.5)
Lightness	19 (20)		3 (3.2)	70 (73.7)		3 (3.2)
Salt	55 (57.9)	6 (6.3)		34 (35.8)		
Patience	87 (91.6)	5 (5.3)		3 (3.2)		
Adult	28 (29.5)		22 (23.2)	45 (47.4)		
Health	36 (37.9)	3 (3.2)		56 (58.9)		
Life	5 (5.3)	2 (2.1)		83 (87.4)		5 (5.3)
lie	76 (80)				2 (2.1)	17 (17.9)
Festival	39 (41.4)	8 (8.4)	7 (7.4)	40 (42.1)	1 (1.1)	
Worship	45 (47.4)		14 (14.7)	36 (37.9)		
Funeral	45 (47.4)		35 (36.8)	10 (10.5)	5 (5.3)	
Wedding	90 (94.7)	2 (2.1)	3 (3.2)			
Wise	55 (57.9)			40 (42.1)		

TABLE III: THE STATISTICS OF THE USED SCHEMATA

Words	Psychological Characteristics					
	Analogical Reasoning & Extraversion/ Introversion		Self-Esteem		Anxiety	
	Chi-square value	p-value	Chi-square value	p-value	Chi-square value	p-value
Tree	31.657	0.000*	6.998	0.030*	1.683	0.431
Pyramid	5.622	0.132	2.154	0.142	0.229	0.632
Bread	31.696	0.000*	5.390	0.068	1.819	0.403
Fish	2.560	0.465	1.510	0.219	0.353	0.552
Dragon	27.230	0.000*	10.479	0.005*	10.479	0.005*
Boxer	4.907	0.179	0.481	0.488	1.821	0.177
Wind	25.060	0.000*	4.499	0.105	0.168	0.919
Mud	25.375	0.013*	13.454	0.009*	9.527	0.049
Lightness	32.213	0.000*	17.059	0.001*	12.507	0.006*
Salt	18.687	0.005*	5.030	0.081	1.974	0.373
Patience	30.624	0.000*	11.391	0.003*	2.633	0.268
Adult	10.235	0.115	3.854	0.146	2.005	0.367
Health	35.850	0.000*	1.597	0.450	1.430	0.489
Life	6.248	0.715	2.948	0.400	2.298	0.513
lie	45.157	0.000*	2.199	0.333	1.038	0.595
Festival	60.996	0.000*	7.485	0.112	4.983	0.289
Worship	20.383	0.002*	0.083	0.959	3.134	0.209
Funeral	25.955	0.002*	5.408	0.144	6.978	0.073
Wedding	20.559	0.002*	1.591	0.451	1.591	0.451
Wise	4.205	0.240	14.525	0.000*	0.732	0.392

\* p-value<0.05

A peripheral point that can be expressed is that although the strategies used in the representation of the words were not the main purpose of the study, it is interesting to mention different strategies used by the participants. As mentioned above and demonstrated in TABLE I, suggested strategies by Ricci Bitti and Poggi [11] were six cognitive strategies. However, this study showed different results. In fact, in 50 percent of the words, the results were exactly similar to Ricci Bitti and Poggi's suggestions, but the other words were different. TABLE IV displays the strategies that the participants employed for the representation of 30 words.

In some words like Tree, Pyramid, Statue, Singer, Boxer, Coldness, Hotness, Phone, Weight, Pencil, Comb,

Festival, Worship, Wedding and Wise, suggested strategies were used but in the presentation of other words except Life a combination of strategies was observed. For the word Life, a different strategy, i.e. culture, was used instead of the suggested strategy, i.e. negation.

#### IV. DISCUSSION AND CONCLUSION

It is important to find the shape of the words in the mind. So, we tried to observe the student's bodily communication carefully and determine different image schemata used. The results showed that the relationship between the image schemata used in bodily communication and different psychological characteristics is not the same.

TABLE IV: WORDS USED IN THE STUDY AND STRATEGIES USED BY THE PARTICIPANTS

Words Used in the Study	The Representational Strategies Used
Woman	Shape, Representer's Typical Actions and Referent's Typical Actions
Tree	Shape
Pyramid	Shape
Statue	Shape
Beard	Shape, Effect and Representer's Typical Actions
Bird	Referent's Typical Actions and Shape
Fish	Referent's Typical Actions and Shape
Dragon	Referent's Typical Actions and Shape
Singer	Referent's Typical Actions
Boxer	Referent's Typical Actions
Coldness	Effect
Hotness	Effect
Wind	Effect and Shape
Mud	Effect, Shape and Representer's Typical Actions
Lightness	Effect and Shape
Phone	Representer's Typical Actions
Salt	Representer's Typical Actions, Effect and Culture
Weight	Representer's Typical Actions
Pencil	Representer's Typical Actions
Comb	Representer's Typical Actions
Patience	Representer's Typical Actions and Culture
Adult	Shape and Referent's Typical Actions
Health	Effect and Representer's Typical Actions
Life	Effect
Lie	Negation, Effect, Culture, Representer's Typical Actions and Shape
Festival	Culture
Worship	Culture
Funeral	Culture, Shape and Effect
Wedding	Culture
Wise	Culture

In fact, those personal characteristics that are more innate and stable have impact on image schemata and so the shape of the words in mind. In other words, more innate psychological characteristics such as analogical reasoning and extraversion/ introversion cause more significant difference in using various image schemata when the words are represented nonverbally than other personal characteristics such as anxiety and self-esteem that can be changed related to some personal, economical, social, and other factors.

The significant impact of different psychological characteristics can be shown in the hierarchy below:

**Analogical Reasoning & Extraversion/ Introversion > Self-Esteem > Anxiety**

The relationship of bodily communication performance with cognitive and personality variables that has been investigated by Gezgin [1] supports some results of this study. So, we can conclude that based on bodily communication, the shape of the words in mind are influenced by personal variables; but the role of these psychological factors is not the same, especially in the schemata used.

In addition, the predicted strategies by Ricci Bitty and Poggi [11] were proved in only half of the words. It may be due to cultural or social differences.

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