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# **Comparison and Clustering the Alternatives of Love in Divan of Hafiz**

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**Abstract.** Hafiz is one of the finest lyric poets of Iran. He learnt a lot from scholars and writers. This research delays with the alternatives of the word “Love” in Divan of Hafiz. First, these words are determined and their counts are computed. Then, we classify them in sixteen categories. Finally, the counts of the words and the categories are compared using chi-square test and cluster analysis. The clustering results showed that the word “Way” and the category “Human” have the most applications as the alternatives of the word “Love” in Divan of Hafiz.

**Keywords:** Conceptual Metaphor, Love, Hafiz, Statistics, Data Analysis, Text Mining.

## **1. Introduction**

Metaphor is regarded as a complex figurative literary device with miscellaneous dimensions. For instance, it plays an ornamental role in language. However, Lakoff and Johnson (1980) thoroughly modified this type of approach to metaphor in a coherent and systematic manner. Gibbs and Steen (1997) verified this attitude by stating that metaphor is able to reveal human mind much more effectively, which is considered to be beyond its mere literary function. Lakoff originally utilized the cognitive semantics terminology, which is a portion of cognitive linguistics. By definition, semantics examines meanings linguistically, and language is regarded as a man's broader cognitive aptitude. Cognitive semantics demonstrates that contemplation and cognition bring about language knowledge, thereby paving the way for learning, reasoning and conducting analyses (Safavi, 2008). Lakoff and Johnson (1980) indicated that through metaphor it is likely to comprehend and experience objects via other objects. Lakoff (1993) utilized a model for this purpose, which sounds like that corresponding to the conceptual system areas. It is noteworthy that cognitive linguistics has depicted metaphor as an element defining the concepts on the basis of other concepts by making use of the abstract as objects and the concrete as the source. Comprehending one conceptual part based upon another one leads to a conceptual metaphor (kövecses, 2002). Lakoff has discriminated between conceptual metaphors and those which are metaphorical and linguistic. This underscores the natural conceptuality of metaphor rather than its linguistic features. Alternatively, whereas conceptual metaphors convey the abstract, the linguistic metaphor is verbal and represents the identical concepts. The experience domain, which is the source one, is matched with another experience area, that is, the target domain (Yu, 1998). Hence, man applies a miscellany of abstracts, including love, prosperity,

adversity, defeat, triumph and the like by using the concrete. For instance, when it comes to this statement that I have lost my life, it is inferred that life has been compared to war.

## **.2. Hafiz and Love**

One of the major emotional phenomena in life and literature is love. People have used physical phenomena to describe the abstract concepts of love; some have likened it to wine, sun, sickness and sorrow. Beside the history of Greek philosophy, the discussion of love has also been taken in to account in the Islamic philosophy's history (Pourjavadi, 2008). As Khorramshahi states that love in literature of Persian has two main aspects: first, the love that exists in the works of Rudaki and Saadi. The second is the mystical love that was created in Sanayi poetry, and then came to perfection in the poetry of Attar and Maulana (Khorramshahi, 1994).

*Khawaja Shams-ud-Din Muhammad Hafez-e Shirazi (1325-1389)* known by his pen name *Hafiz* and as "*Hafiz*", is one of the finest lyric poets of Iran. He learnt a lot from scholars and writers. Hafiz was worked in two fields, science of religion and literary science. He has been the author of many Ghazals of love, spirituality and objection, and he is still important to the Iranians and his influence can be felt to this day and many of his poems are used as proverbs or speeches. In his poem he described historical events and details of life in Shiraz. For example, he refers to Sufism and criticizes some of their conduct. Hafiz has not written much poetry. He only composed when he was divinely inspired, and therefore he averaged only about 10 Ghazals per year. All of his known poetry has been gathered in his book, called *Divan of Hafiz*. In terms of style, the major portion of Divan is expressed in Ghazal (sonnet) style. Figure 1 shows his tomb is in Musalla Gardens, along the banks of Ruknabad River in Shiraz, which is referred to as *Hafzieh*.



Figure 1: *Hafzieh*: Tomb of Hafiz in Shiraz

However, in general, the meaning or image of love in the common language is an abstract concept, but this concept is much more abstract in the mystical term. In mystical discussions, this concept is perceived as other human emotions that occur between God and man, and they are likened to objective concepts for better understanding (Pourebrahim, 2013). The nature of mystical language is so that the purpose of the mystic in using metaphor differs from others. If (cognitive) mysticism is to find a relation between the world's phenomenon and placing them in the mind structure, then mysticism in proportion to its own meaning is a cognitive activity and the metaphors used in this arena are also cognitive (Behnam, 2010). Kane (2009) explored the engagement of Emerson with Hafiz. Kolahi and Goodarzi (2010) compared the frequency of the use of semantic adjustment strategies in versed and free-verse styles in the English translations of Hafiz poetry. Bahrami (2012) studied the Strategies used in the translation of allusions in poetry of Hafiz. Sajjadi and Mahdavi (2013) explained influence of Hafiz on Goethe and investigated penetrating of globalization on international education, according to the Goethe and Hafiz's view. Roozbeh (2018) considered the poems Emerson and Hafiz against one another and studied them watchfully in order to demonstrate the influence of the precursor poet on the belated poet.

This research delays with the alternatives of the word “Love” in Divan of Hafiz. First, these words are determined and their counts are computed. Then, we classify them in sixteen categories. Finally, the counts of the words and the categories are compared using chi-square test and cluster analysis.

### 3. Methodology

This section is devoted to discuss about the data collection, data analysis and data analysis techniques. The details of the collected dataset are expressed in the First Subsection. Subsection Two summarizes some studies that applied different data analysis techniques. In Subsection Three, the data analysis techniques that are used to investigate the considered dataset are given.

#### 3.1. Data Collection

In this research, all the lines in Divan of Hafiz are covered. First, the words that are applied as alternatives of the word “Love” are determined and classified in sixteen categories, namely Human, Place, Animal, Nature, Object, Plant, Ultra, Sickness, Heat, Way, Drunkenness, Tale, Voice, Point or Circle, Art or Work, Sedition, Load.

Table 1 summarizes the categories and the corresponding words.

Table 1: The categories and the corresponding words that applied as alternatives of “love”

Category	Word
Human	Friend, Killed, King, Musician, Robber, Loved, Lover, Speaker, Teacher, Merchant, Human, The doctor, Wise, Source of emulation, Mystic
Place	Desert, Neighbourhood, Threshold, Sanctum, Caravan, Mastabeh

Nature	Fountain
Object	Charter, Flag, Pearl, Lasso, Ball
Plant	Sapling
Ultra	Secret, Knowledge, Question, Idea
Sickness	Pain, Sorrow, Melancholy
Heat	Fire, Spark, Baked
Way	Way
Drunkenness	Wine, Pub
Tale	Story
Voice	Voice
Point or Circle	Point, Circle
Art or Work	Art ,Work
Sedition	Sedition
Load	Load

### 3.2. Data Analysis

Text mining analysis is used to extract knowledge from text datasets. Mahmoudi et al. (2018) studied the alternatives of the word “Love” in Divan of Moulana. First, these words were determined and their counts were computed. Then, they classified the words in eleven categories. Finally, the counts of the words and the categories were compared using chi-square test and

cluster analysis. Mahmoudi and Abbasalizadeh (2018a) studied the alternatives of the word “Love” in Saadi’s poetry. First, these words were determined and their counts were computed. Then, they classified the words in twelve categories. Finally, the counts of the words and the categories were compared using chi-square test and cluster analysis. Mahmoudi and Abbasalizadeh (2018b) studied the Divan of Khaghani. They classified the lines into three categories and compared the frequency of different categories for the lines and odes. Also, they investigated the existence of trend in the consecutive lines. Mahmoudi and Abbasalizadeh (2018c) studied the similarities between different orders of Quran’s revelation by using regression analysis and hierarchical clustering method. Mahmoudi and Abbasalizadeh (2018d) applied different text analysis methods to study the Divan of Khaghani. Mahmoudi and Abbasalizadeh (2018e) studied the God’s traits in Quran. They investigated that which group of God’s traits (beauty or divine grace) is more repeated and also what difference there is between the Meccan and Medinan suras in the description of God.

### **3.3. Statistical Methods**

The collected dataset are analyzed using the SPSS 25 and R 3.4.1. First, the descriptive statistics about the counts for the alternatives of love are reported. Then, the chi-square test is employed to compare the counts of the words and the categories. Finally, these words and categories are clustered by applying the K-Means clustering technique.

## **4. Results**

This section delays with the results of data analysis. The descriptive statistics about the counts for the alternatives of love are reported in Subsection One. The results of chi-square tests and K-Means clustering technique are respectively reported in Subsections Two and Three.



#### 4.1. Descriptive Statistics

Table 2 and 3 summarize the count and relative count (percent) of the categories and the words that are applied as alternatives of love, respectively.

Table 2: The counts and relative counts (percent) of the categories that are applied as alternatives of love

Category	Count	Percent
Human	27	19.0
Ultra or Meaning	18	12.7
Way	17	12.0
Place	15	10.6
Sickness	15	10.6
Drunkenness	11	7.7
Art or Work	10	7.0
Voice	7	4.9
Tale	6	4.2
Object	5	3.5
Heat	4	2.8
Point or Circle	2	1.4
Load	2	1.4
Nature	1	0.7
Plant	1	0.7
Sedition	1	0.7
Total	142	100.0

Tables 2 and 3 indicate that the category “Human” with count=27 (19.0%) and the word “Way” with count=17 (12.0%) have the most applications as the alternatives of the word “Love” in Divan of Hafiz.

Table 3: The counts and relative counts (percent) of the words that are applied as alternatives of love

Word	Count	Percent
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Way	17	12.0
Secret	10	7.0
Sorrow	10	7.0
Wine	8	5.6
Voice	7	4.9
Story	6	4.2
Work	6	4.2
Knowledge	5	3.5
King	4	2.8
Neighbourhood	4	2.8
Art	4	2.8
Friend	3	2.1
Teacher	3	2.1
Threshold	3	2.1
Caravan	3	2.1
Pain	3	2.1
Pub	3	2.1
Musician	2	1.4
Speaker	2	1.4
Human	2	1.4
Doctor	2	1.4
Wise	2	1.4
Desert	2	1.4
Sanctum	2	1.4
Idea	2	1.4
Melancholy	2	1.4
Fire	2	1.4
Load	2	1.4
Killed	1	0.7
Robber	1	0.7
Loved	1	0.7
Lover	1	0.7
Merchant	1	0.7
Source of Emulation	1	0.7
Mystic	1	0.7
Mastabeh	1	0.7
Fountain	1	0.7
Charter	1	0.7
Flag	1	0.7

	Pearl	1	0.7
	Lasso	1	0.7
	Ball	1	0.7
	Sapling	1	0.7
	Question	1	0.7
	Spark	1	0.7
	Baked	1	0.7
	Point	1	0.7
	Circle	1	0.7
	Sedition	1	0.7
	Total	142	100.0

#### 4.2. Comparison between the alternatives

This subsection reports the results of chi-square test to compare the counts of the words and the categories that are applied as alternatives of love in Divan of Hafiz. As can be seen in Table 4, there are significant differences between the counts of the considered categories and words ( $p < 0.001$ ).

Table 4: The results of chi-square test to compare the counts of the categories and words that are applied as alternatives of love

	Chi-Square Test Statistic	P-Value (p)
Category	133.732	<0.001
Word	507.340	<0.001

#### 4.3. Clustering Analysis

In this subsection, we clustered the alternatives of love in three groups (high count, medium count, and low count) using their counts. As can be seen in Table 5, the word Way and the category Human have the most uses as the alternatives of love in Divan of Hafiz.

Table 5: The results of K-Means clustering to cluster the categories and words that are applied as alternatives of love

	High Count	Medium Count	Low Count
Category	Human	Place, Ultra, Sickness, Way, Drunkenness, Art (Work)	Other Categories
Word	Way	Secret, Sorrow, Wine, Story, Voice, Work	Other Words

## 5. Discussion

One of the most important issues in Islamic mysticism is love. Love in Persian poetry is expressed in two forms: human love for man and human love for God. Although the concept of love generally is an abstract concept in slang, but in the mystical term, the degree of abstraction of this concept is greater. Hafiz is one of the greatest poets and mystics in Iran and the world who has played an important role in expanding mystical ideas. Love is one of the main concepts defined by him, expressed in various ways in his works.

This research delayed with the alternatives of the word “Love” in Divan of Hafiz. First, these words were determined and their counts were computed. Then, we classified them in sixteen categories. Finally, the counts of the words and the categories were compared using chi-square test and cluster analysis. The results of chi-square tests determined that there are significant differences between the counts of the considered categories and words ( $p < 0.001$ ). Also, the results of K-Means clustering technique showed that the word “Way” and the category “Human” have the most applications as the alternatives of the word “Love” in Divan of Hafiz.

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