

# Suicide Conceptualization in Adolescents through Semantic Networks

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**Abstract**—Suicide is a global, multidimensional and dynamic problem of mental health, which requires a constant study for its understanding and prevention. When research of this phenomenon is done, it is necessary to consider the different characteristics it may have because of the individual and sociocultural variables, the importance of this consideration is related to the generation of effective treatments and interventions. Adolescents are a vulnerable population due to the characteristics of the development stage. The investigation was carried out with the objective of identifying and describing the conceptualization of adolescents of suicide, and in this process, we find possible differences between men and women. The study was carried out in Saltillo, Coahuila, Mexico. The sample was composed of 418 volunteer students aged between 11 and 18 years. The ethical aspects of the research were reviewed and considered in all the processes of the investigation with the participants, their parents and the schools to which they belonged, psychological attention was offered to the participants and preventive workshops were carried in the educational institutions. Natural semantic networks were the instrument used, since this hybrid method allows to find and analyze the social concept of a phenomenon; in this case, the word suicide was used as an evocative stimulus and participants were asked to evoke at least five words and a maximum 10 that they thought were related to suicide, and then hierarchize them according to the closeness with the construct. The subsequent analysis was carried with Excel, yielding the semantic weights, affective loads and the distances between each of the semantic fields established according to the words reported by the subjects. The results showed similarities in the conceptualization of suicide in adolescents, men and women. Seven semantic fields were generated; the words were related in the discourse analysis: 1) death, 2) possible triggering factors, 3) associated moods, 4) methods used to carry it out, 5) psychological symptomatology that could affect, 6) words associated with a rejection of suicide, and finally, 7) specific objects to carry it out. One of the necessary aspects to consider in the investigations of complex issues such as suicide is to have a diversity of instruments and techniques that adjust to the characteristics of the population and that allow to understand the phenomena from the social constructs and not only theoretical. The constant study of suicide is a pressing need, the loss of a life from emotional difficulties that can be solved through psychiatry and psychological methods requires governments and professionals to pay attention and work with the risk population.

**Keywords**—Adolescents, semantic networks, speech analysis, suicide.

## I. INTRODUCTION

**S**UICIDE has been present throughout the history of humanity, and has been subject of various conceptions and representations [1]. For some cultures, the suicidal act was not punished or condemned, and was important for the survival of

the group, an example of this can be seen in cultures where the weakest of a village decided to abandon it and die so that those who stayed had more resources. Also, some acceptable cultural forms of suicide such as seppuku or hara-kiri, Japanese rituals of samurai suicide, and the mass suicide of the disciples of Confucius, who made this decision after their teacher's books were burned as a sign of protest [2].

In classical Greece, the problem of suicide was addressed as a political analysis in which authors such as Aristotle and Plato condemned the suicidal act, seeing it as a problem, with a negative view of the act that even impregnated legal aspects, since suicide was a crime and the punishment mainly affected the relatives of those who made the decision to take their own lives [1].

The Roman Empire inherited part of the vision of Greece about suicide. Authors like Cicero had a dual vision of it, on the one hand he condemned suicide, but also approved it when it was realized as a form of heroism, love, self-denial and honor, while Constantino penalized suicide and hardened punishments for the suicide's family [1].

In the Middle Ages, the Greco-Roman ideas continued, mixing with the vision of the church, among the main debates was the interpretation of the sixth commandment: you will not kill. The postulates contributed by Saint Augustine in his work *The City of God* presents a stance against suicide; he understood that one will not kill or kill oneself, since killing oneself means killing [1]. These interpretations would influence the work of Thomas Aquinas who redefined the church's vision of suicide by placing it as an affront to God [1].

In the Renaissance period, ideas that promoted the revision of Greco-Roman arguments on certain topics emerged, including those related to suicide. Inspired by the French Enlightenment and the Renaissance, the reduction of the social condemnation of suicide, at this time, was an important step, they had a more comprehensive attitude towards it and the legal penalties were not as severe [7].

In the 17<sup>th</sup> and 18<sup>th</sup> centuries, a reversion to previous conceptualizations was observed, since suicide was conceived as an act of social shame. Later on, and following the changes of the French Revolution, the act was decriminalized in Europe and the first studies and statistical reviews on the subject were started [1].

One of the first scientific works was the *Anatomy of Melancholy* written by Robert Burton in 1621, which presents a clinical vision but still with certain philosophical connotations on the subject, and for the first time, associated the suicidal act with depression. Later, in 1790, Moore in his

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book *A Full Inquiry into the Subject of Suicide*, presented observations about families with a tendency to commit suicide, giving the act a genetic component [24]. These visions were more or less predominant in the study of suicide. In 1897, the phenomenon would be addressed by Émile Durkheim through a perspective that had not been considered before: the sociological one [26]. In his work *Suicide*, Durkheim explains that it is partly due to a weakened social structure, which causes individuals to feel less identified with the group and adopt a position that they would use to classify suicide into four types: selfish, altruistic, anomic and fatalistic. He also makes a historical analysis, in which he observes that each society has a specific time and moment for the appearance of suicide.

From the medical-psychological discipline, Freud says that suicide is related to his proposal of the death instinct and its relation to the sexual or life instinct, under this contextualization, he catalogs it as an individual and unique act [19], [24], [28].

Entering the 19<sup>th</sup> century, the suicidal act was already studied scientifically and began to propose concepts for its understanding. In 1950, psychiatrists still thought that only the mentally ill committed suicide; later on, investigations showed that this phenomenon also occurred in people who did not have a psychopathological diagnosis and that it was a behavior affected by multiple variables [8].

By the third quarter of the century, in 1978, Rush and Beck would be among the first authors to speak of suicidal ideation as a forerunner of consummated suicide; in addition, they connect it to cognitive factors, claiming that these ideas were aimed at ending the anguish caused by situations that are considered unresolvable by people. They propose that these ideas are presented in what they call the cognitive triad, in which people with suicidal ideation have negative ideas, perceptions of an imperfect self, a hostile and ruthless world, and a hopeless future [30].

As the study approaches increased, the suicidal act was considered as a result of a more complex process. Suicide was the final stage of a process in which ideas, thoughts and suicidal plans preceded consummated suicide, and these early stages began to take on great importance in the study of the suicidal phenomenon.

Within the multiple perspectives that study the process that develops prior to suicide; one of them is the interpersonal theory of suicide proposed by Thomas Joiner in 2005, in which he says that the suicidal act is consummated when two interpersonal constructs are present in a person: the ability to commit suicide and suicidal desire. For a suicide to be accomplished, both factors must be present in the person [32].

From the interpersonal theory of suicide, it is proposed that for there to be a desire to commit suicide, the person must develop two perceptions; the first is the feeling of being isolated from others or alienated by society - a sense of frustrated belonging, named as thwarted belongingness; and the second is to feel as a burden for others, called by the authors perceived burdensomeness [25].

When studying the phases prior to suicide, it is important to

remember that suicidal desire is necessary but not sufficient or determinant to provoke a suicidal attempt; therefore, in addition to suicidal desire, the person must also be capable of committing suicide [20]. The capacity of a person to commit the suicidal act occurs when the subject has acquired a tolerance to pain that develops through habituation processes, such as when the subject has been repeatedly exposed to painful experiences [20] and, has overcome the fear that death represents [25].

Within the many studies with a quantitative approach, there are elements that support the importance of understanding social discourses around suicide, since this is extremely important when contextualizing and studying the phenomenon. To really understand suicide and the discourses related to it, it is necessary to analyze the ideas that people have about it - understanding the conceptualizations that are socially related to suicide. The present research has a qualitative perspective of the research of suicide, and focus on the social construction and thoughts about it [18].

Among the most used qualitatively methods in the study of meanings and constructions around suicide, two stand out: psychological autopsy and semantic networks.

The term "psychological autopsy" originates in the late 50's in California when doctors began to investigate dubious deaths in a suicide research center. Dr. Robert Litman and his team established the essential elements of the method for the investigation and recovery of data to understanding the motives that led a person to make the decision to commit suicide and whether it was accident [15].

The psychological autopsy is a research method, widely used in forensic and psychological research today, by which retrospective information is collected regarding the victims of completed suicide; with this tool, it is expected to obtain a clear and precise vision about the individual who committed the suicidal act, as well as to inquire into his personality, mental health, social relations and seek to obtain possible causes or situations that led to making the decision [14].

In Latin America, specifically in Uruguay, one of the most recent studies was carried out with the aim of knowing the maternal representation of suicidal children and adolescents, also seeking to investigate their relationship with their parents. The investigation showed that the participants made suicide warnings prior to consummating the act; in the children, these warnings were manifested as a game in which death was staged, for example putting bags on the head. In addition, most of the young people were not in psychiatric or psychotherapeutic treatment at the time of death [10].

In Mexico, a study was conducted with the objective of describing psychological and social factors associated with six cases of women and men identified in the city of Saltillo, Coahuila. They were analyzed according to psychological and social axes and in four categories: precipitants or stressors, lethality, motivation and intentionality [31].

The psychological autopsy has extended its use as an element used for judicial purposes, in Latin American countries such as Costa Rica [4] and Colombia, although in the latter it is used for isolated cases [3]. However, the

psychological autopsy encounters some methodological problems when it comes to collecting the family members' narratives since these can be biased by the process of mourning and other variables; however, this does not mean that qualitative techniques fall short when it comes to studying the phenomenon, other methodological tools that support the recovery of psychological meanings is semantic networks.

Semantic networks are the conceptions that people make of an object in their environment, researchers access to the meanings expressed in the language that social objects have. They use studies on social cognition and language to support their validity [33].

It is a mixed method in which the people surveyed generate words that, according to them, define the word stimulus and they are listed and then hierarchized according to the order of importance that each word has with the respondent [13]. Semantic networks have been used in investigations and approaches to the phenomenon of suicide.

In a study conducted of the psychological meanings that a group of young people between 19 and 22 years of age had about the concepts of "life" and "death" were addressed [11]. It was found that young people defined life based on the way they enjoy life and related affections. In both sexes, the common dimensions refer to aspects of personal development, values and beliefs. Men defined it with concepts of nature, whereas women were more oriented towards aspects of affiliation. With regard to death, in this study, all participants define it using words associated with feelings of sadness, loneliness, tears and pain, in addition to referring to it as rest and a static state. In the analysis by sex, men mentioned poverty, disease, hatred, war, vices and pollution; the women defined with words such as final, transcend, loss, despair, fear and peace.

An investigation was conducted with students from a public university in the State of Mexico to discover if the psychological meanings related to the words "to die" and "to take their own lives" were the same. In the study, the defining factors for "death" were: sadness, fear, end/ending, crying/tears, tranquility, pain, natural/normal, peace, loneliness and family. On the other hand, the list of defining words of "take your own life" were: depression, sadness, cowardice, fear, problems, loneliness, pain, dumbness/stupidity, crying and anguish/anxiety [6].

## II. OBJECTIVE

The general objective of the research was to describe the conceptualization of a group of adolescent men and women about suicide.

The specific objectives proposed were the following:

- Establish the semantic fields associated with suicide through a discourse analysis and the application of semantic networks.
- Describe the social discourses associated with suicide generated by men in semantic networks.
- Describe the social discourses associated with suicide generated by women in semantic networks.
- Compare the social discourses associated with suicide

generated through the words by the participants.

## III. METHOD

A non-experimental, transversal, descriptive design with a mixed qualitative approach was used [12].

The participants were adolescents between 11 and 18 years old from the city of Saltillo, Coahuila. The interest in this segment of the population first arises because according to INEGI (2015), about 30% of the total population of the municipality is in this range of age and also because the suicide rate in this age has been increasing in this city [17].

The sample was non-probabilistic, the semantic networks were applied to 13 natural groups of the participating schools selected by the principals of the institution, the total number of participants was 418, 197 men, 216 women, and five adolescents did not refer their specific sex. The inclusion criteria were: acceptance to participate in the study, being within the range of specified age, live in the municipality of Saltillo and find themselves studying. Regarding the exclusion criteria, they were established only on the basis of an adequate adjustment to the inclusion criteria.

The applied instrument was a natural semantic network [27], with the evocative stimulus of the word suicide. Participants were asked to write a minimum of five words and a maximum of 10 that came to mind when thinking about the word stimulus, later they were told to rank the words they generated according to which they consider more related to suicide, giving it the value of one and progressively to all the other words depending on its proximity to the concept. The semantic weights were established in a range of 10 to one, according to the weight given to the words by the participants.

Regarding the procedure that was followed in the investigation, the subjects were first explained the activities to be carried out and the use that would be given to the results, they were asked to participate voluntarily, and with the adolescents who accepted the semantic network was applied [29].

The data were emptied into Excel sheets for its organization and analysis, a dictionary was created and the words belonging to semantic fields closely related to each other, or with the same meaning, but with different conjugations, for example "sad-sadness" were grouped. Later the calculations proposed of the size of the network, semantic weights and qualitative semantic distances of each word/category were made. Finally, the network graphs were generated to observe the accommodation of the words [27].

### A. Research Question

How are the social discourses about suicide in adolescents in the city of Saltillo, Coahuila?

### B. Hypothesis

- Within the speech analysis, the categories that will be presented more frequently will be in reference to death, and symptoms or disorders associated with suicide.
- Semantic networks between men and women will present differences in terms of the words generated by both

groups.

IV. RESULTS

The results were analyzed in two ways, first generating general groupings with semantic fields so a speech analysis could be done, according to the words referred by all the participants, with the final aim of clarifying the conceptualization of the notion of suicide in the studied adolescents. A second and more specific analysis was elaborated, to find the conceptualization of the suicide differentiated by sex, so the comparison between men and women was done through semantic networks to establish a greater precision for the development of the comparison between these two groups.

Seven grouping categories were generated for the speech analysis, established based on which were the highest score words. The group with the highest score was called death, and encompassed words that referred “to death”, “to take your life”, “want to die”, “suicide”, etc., while the second group were words that associated to the possible triggers; participants referred words like “problems”, “loneliness”, “fights” and “failures”. In third place, the group of mood and emotions was defined, where adolescents made references to words such as “sadness”, “fear”, “anger”, “despair and “guilt”, and the fourth group was composed by all the words associated with the methods used to carry out a suicide; in this category the participants mentioned “hanging”, “shooting” and “ingesting pills”. In the place, the psychological variables were included; in this sense words such as “depression”, “insanity”, “anxiety”, eating disorders such as “bulimia” and “anorexia” were added. In the sixth group, words that qualified suicide as an act that was not appropriate or valid were found, making reference to the fact that this was “an absurd action”, “a crime”, “an error”, among others. Finally, the seventh category included specific objects used such as “knife”, “rope”, “pills”, “gun”, etc.

For the second analysis, done with semantic networks, the population was divided according to their sex, resulting in a group of men with 197 participants and one of women with 216, counting with a similar amount between one group and another and allowing a comparison.

The first significant difference between men and women was the number of words presented; men reported a total of 146 different words associated with suicide and women a total of 245.

Regarding the number of words associated with the concept, there was a slightly different effect because 12 men and eight women reported the maximum of 10 words related to the concept of the suicide, a result that was not expected due to the characteristics in terms of verbal capacity in the function of sex.

In the referred words, a great similarity between men and women was found and the differences were more in terms of the hierarchy that was given to them; the results found in both sexes are presented in Table I, and Figs. 1 and 2, with the respective weights and semantic distances.

TABLE I  
RELATION OF WORDS, WEIGHTS AND SEMANTIC DISTANCES BY SEX

Word	Women		Word	Men	
	Semantic Weight	Semantic distance		Semantic Weight	Semantic distance
Death	1723	0	Death	1804	0
Problems	447	74.05	Sadness	405	77.55
Sadness	420	75.62	Hang oneself	379	78.99
Hang oneself	368	78.64	Suicide	238	86.81
Cut oneself	304	82.35	Problems	206	88.58
Depression	243	85.89	Pain	202	88.80
Suicide	234	86.41	Cut oneself	195	89.19
Loneliness	197	88.56	Loneliness	182	89.91
Fear	159	90.77	Fear	181	89.97
Pain	128	92.57	Throw oneself	172	90.47

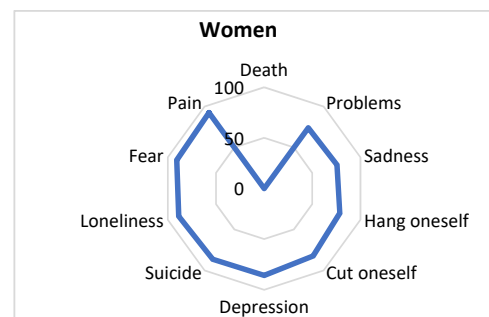


Fig. 1 Semantic networks result for the women's group

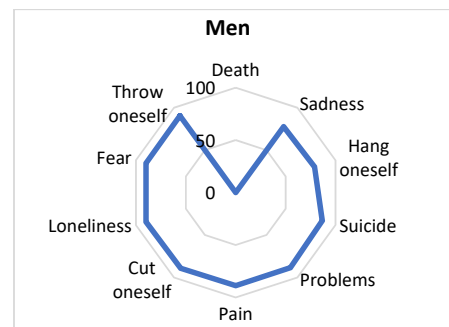


Fig. 2 Semantic networks result for the men's group

In a more detailed analysis, it was found that in both sexes the word most related to suicide was death; in both cases it was the word with the greatest semantic weight. It is important to note that the weights are very similar to each other (women: 1723 and men: 1804), and the semantic distance between this blade and the rest of those reported was considerable. In the subsequent hierarchy, there are differences in positioning, but in both sexes, nine of the 10 words referred are repeated (problems, sadness, hang oneself, cut oneself, suicide, loneliness, fear and pain). The only difference between men and women was that the first reported, the word “throw oneself”, and the women noted the word “depressed”.

Semantic distances also showed variations in both groups; women having slightly higher distances from the second to the tenth word compared to men who preset distances less than a

point in the fifth to the tenth word. Also, when analyzing if the words with smaller semantic distances were grouped among them, it was found that in the women, two groups of two words were formed; the first with the words “problems” and “sadness”, with a distance of 1.56, and the second with the words of “depressed” and “suicide”, with a distance of 0.52 between both words. In men, two groups could also be established; in the first group, only the words of “sadness” and “hang oneself” with a distance of 1.44, and the second group would include from the fifth to the tenth words referred, since there is a considerable degree of cohesion between them, observing distances less of one point, generating a group composed of the words problems, “pain”, “cutting”, “loneliness”, “fear” and “throw oneself”.

In a comparison of the speech analysis to the semantic fields, the words generated by male and female adolescents, in terms of trigger factors in both men and women the words of “problem”, “loneliness” and “pain” were referred; in mood and emotions both sexes referred to “sadness” and “fear”. As far as methods were concerned, men mentioned three “hanging”, “cutting” and “throwing themselves”, while women cited only the first two. For the psychological variables, only women reported the word “depressed” and in the group of men no reference to that semantic field was found. One of the most relevant pieces of data was that together, men and women reported in the speech analysis words related to the non-validity of suicide and specific objects, but if analyzed by semantic fields this is no longer presented.

## V. CONCLUSIONS

The problem of suicide in Mexico, and specifically in the State of Coahuila, has become important in recent years due to the increase in numbers of deaths [17]. Currently, there are government departments, private and public institutions and civil society groups that seek to establish preventive actions to decrease the death rate by suicide; however at the moment, it seems that these actions are not achieving their purpose.

The lack of in-depth studies that analyze the conceptualization of suicide from the social actors that are at risk of committing it makes it difficult for promote actions to have an impact, which is why this research through the use a specific method aims to reach a different understanding of the phenomenon to be the most adequate solution to efficiently focus the interventions and resources on the prevention of suicide [5].

Adolescents are in a complex age, with specific characteristics that has its own risks and difficulties [16], [23]. A general conceptualization of suicide for adolescents in Saltillo, Coahuila, Mexico seems to be related to an action to seek death, which is generated from a variety of triggers where moods, symptoms or psychological variables play an important role, and to carry it out they use specific objects or methods and finally it seems not to be an action validated by most adolescents.

Regarding sex, it was found that women seem to have a wider conceptualization of suicide, which could be related to a

higher incidence of suicide attempts in this sex. The positioning of the words can also generate hypotheses to be considered for subsequent investigations, like what happened with the word “problem”. In an initial approach, it could be thought that adolescent problems could be the triggers for suicide ideation; this could be accepted in the women group because this word is placed in second place, but in men it is located in fifth place. Thus, it would seem that by the analysis of hierarchy in the words, men present a simpler and more direct logic in suicide (death – sadness) in contrast to women, who apparently present more intermediate factors (death - problems – sadness). As well, it is relevant that the emotion of sadness, which is a negative healthy emotion [9], and others that are equally considered natural in life, are taken as related to suicide by adolescents. This could be related to difficulty in controlling and processing emotions at this age, and could also be used as a possible aspect to work in preventive programs.

Within the fine differences of the analysis, we find that women refer to less methods of carrying out a suicide compared to men; it is possible that this has a relation with the less lethal methods choices in women; however this does match with experience that both men and women most commonly in completed suicides use the method of hanging.

The results in the groups of men, women and general results, where compared and some differences were observed, but it is necessary to point out that the semantic networks were applied with different dictionaries; in the general analysis, broad semantic fields were established to include in factors the words referred by the subjects, allowing this to have a more comprehensive conceptualization of the words generated by the sample, and when the analysis was established by sex, it was sought to be as fine and precise as possible. As referred by the subjects, it is likely that, due to these differences, the comparison may be biased to some extent.

Because of the development and increase of suicide, the importance of the preventive actions is imperative for all actors involved. With the results obtained in the research, the next step is to generate and implement successful programs to address suicide [21], [22].

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