

Methodology for detection of suicidal ideation in texts from the analysis of suicide notes

Metodología para la detección de ideación suicida en textos a partir del análisis de notas suicidas

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Abstract

Suicide is today one of the leading causes of death in the world. People at risk of suicide commonly leave messages around them, and that often includes social media. Therefore, early detection of suicidal risk is a fundamental prevention factor. At present, the search for suicide risk based on text analysis does not consider fundamental factors such as the analysis based on suicide notes. This research proposes a new text analysis for the detection of suicidal risk based on the study of suicide notes.

Resumen

El suicidio es hoy una de las principales causas de muerte en el mundo. Las personas en riesgo suicida dejan comúnmente mensajes a su alrededor, y eso muchas veces incluye a las redes sociales. Por ello, la detección temprana de riesgo suicida es un factor fundamental de prevención. En la actualidad, la búsqueda de riesgo suicida a partir del análisis de textos no considera factores fundamentales como es el análisis a partir de notas suicidas. La presente investigación propone una nueva metodología de análisis de textos para la detección de riesgo suicida tomando como base el estudio de notas suicidas.

Suicide notes, PLN, Suicide

Notas suicidas, PLN, Suicidio

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Introduction

Suicide can be defined as the act of taking one's own life, whether or not a person is in an optimal condition. It is a multifactorial and complex phenomenon, and its study must be viewed from various aspects.

According to the World Health Organisation (WHO), suicide is one of the leading causes of death in the world. In its most recent study (WHO, 2021), it was determined that one in every 100 deaths that occur in the world is due to suicide.

It is important to consider that there are different types of suicide, and not all suicides are preventable, such as altruistic suicide, in which the person seeks to use his or her own life to send a social message. But most suicides can be detected and prevented at an early stage.

Suicide involves three phases: ideation, which is when the person is just having suicidal thoughts, attempted suicide, which is when the person has already attempted to take his or her own life, and finally completed suicide, which is when the person unfortunately loses his or her life.

Both in the phases of attempted suicide and completed suicide, where the attention and risk detection should fall on the people close to the person who lost their life, it is not relevant to carry out a suicide risk detection in texts, because the risk factors are already very high and easy to locate. Therefore, our main task will be the detection of those at suicidal risk who are in the ideation phase.

Both the emotions and the feelings of a person at risk of suicide are not in the condition we expect them to be in. This is because, according to some psychologists, many of the patients at suicidal risk may be going through a phase of disengagement from reality. And, although this has not been formally proven, it is important that the analysis of texts for risk detection can emerge from the study of suicide notes, where we can understand the expressions of people with suicidal ideation.

However, current techniques for suicide risk detection tend to focus on the analysis of emotions or feelings, so it is possible that they may be making omissions in detection.

Therefore, the present research proposes a new methodology for the detection of suicidal risk in texts based on the analysis of posthumous or suicidal notes.

State of the Art

Analysis of posthumous notes

In order to carry out a text analysis based on the study of suicide or posthumous notes, one of the greatest challenges is to obtain copies of the notes. In (Leenars, 1988), an important finding was that only 12-15% of suicides leave a note, a situation that is still the case today. For this reason, over the last 30 years, experts in the field have set themselves the task of collecting as many posthumous notes as possible in order to establish criteria for their classification.

Another key element in establishing a generalised methodology was the comparison of posthumous notes between countries. In (Ashhan, 2007), (Leenaars, 1992), (Leenaars, 2001), (Leenaars, 2002), (Leenaars, 2003), (O'Connor, 2004) and (Chávez-Hernández, 2009), comparisons were made between suicide notes from countries such as: Russia, the United States, Mexico, Turkey, Ireland and Australia and they managed to determine that they have many more coincidences than differences.

On the other hand, in (Lester, 1982), (Leenaars, 1992) and (Leenaars, 2001), it was determined that adolescents have higher scores than adults in cognitive constriction, use of indirect expressions, rejection and aggressiveness, and mechanisms related to identification-flight. They are usually preoccupied. Therefore, the detection of suicidal risk is more likely in adolescent texts as it is more evident.

Classification of posthumous notes

The classification of posthumous notes has evolved over time, mainly since 2011.

In (Chávez-Hernández, 2011) 142 suicide notes from the state of Guanajuato in Mexico were analysed. In this study, they managed to establish 11 classification categories for them.

Subsequently, in (Cook, 2016), they established a novel methodology for the detection of suicidal risk in texts. Their percentages were established between 61% and 85% correct and it worked for Spanish in Spain. However, they used suicide detection scales for this and not suicide notes.

Meanwhile, in (Ceballos-Espinoza, 2016), 203 notes from 96 suicides in Chile were analysed. They found 24 significant differences depending on: age, marital status and gender.

Finally, in (Ceballos-Espinoza, 2019) they analysed 203 suicide notes in Chile collected between 2010 and 2013. They found that it was possible to classify them into four main aspects.

Proposed Methodology

To begin to describe the methodology, it is important to mention that it is based both on the study carried out in (Ceballos-Espinoza, 2019), and in general in the context of the state of the art study.

First, it is important to understand how effective mobilisation occurs prior to the act of suicide. The person, as previously mentioned, may go through different stages in the phenomenon of suicide. During the phase of suicidal ideation, it is more likely to find texts attached to both positive and negative affect. If the process progresses, the person may reach the depressive phase.

Finally, if the person is close to the suicidal act, their texts will reflect that they are in a state of collapse, in a state of despair. While in the positive and negative affects the person goes through emotions such as intersubjectivity and helplessness, during the depressive phase and the despair phase the person is in an evasive moment.

Such a process of effective mobilisation prior to the suicidal act can be seen in Figure 1.

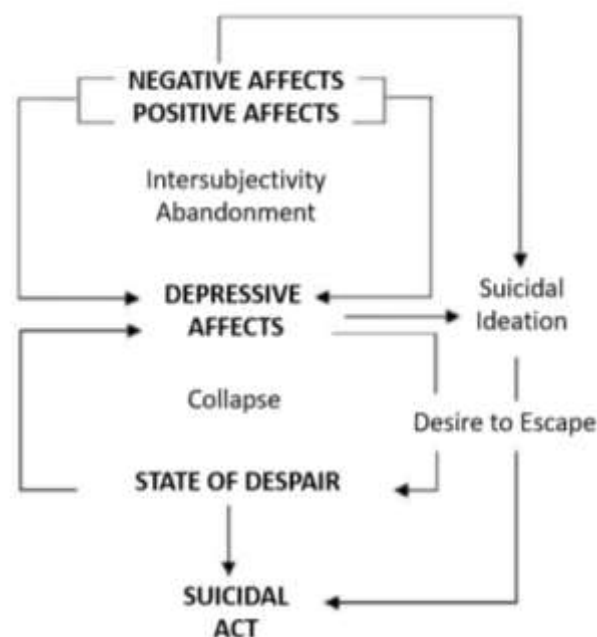


Figure 1 Effective mobilisation prior to the suicidal act
Source: (Ceballos-Espinoza, 2019)

Once this process is understood, we can then establish four main criteria for the classification of texts in the detection of suicidal risk: negative affect, positive affect, depressive affect and state of despair.

Positive affect

During the phase of positive affect it will be possible to identify mostly farewell texts, always in a positive and thankful sense. This phase can be confusing to identify, as it could be identified as an absence of risk. In Notes 1, 2 and 3, it is possible to read three examples of Positive Affect texts.

Note 1:

"Thank you for always supporting me. Thank you for forgiving me for all my mistakes. Thank you for loving me so much, because I feel and felt loved always."

Note 2:

"Chinita. I couldn't take it anymore, believe me I'm leaving loving you just as I always have with the dream of having wanted to form a home together, I love you and I will always love you and wherever I am I will take care of you."

Note 3:

"Now I am going to be free I will no longer bother you, but I wish the best for you, in spite of everything, I loved you very much."

Negative affect

Contrary to the negative affect phase, at this stage it is possible to identify farewell texts, but mostly in the sense of anger and annoyance. This phase is much easier to identify, as despair starts to become intrinsically present. In notes 3 and 4 it is possible to see two examples of texts with negative affect.

Note 4:

"I thank you for all the love, containment and affection you showed me, but without the love of children a man is nothing. I am tired, bored, I can't make sense of anything that has happened. I have nothing to fight for anymore."

Note 5:

"I want to apologise to everyone for my cowardice and for doing what I did, but try as I might I couldn't get over it. And this new love failure has plunged me into great sorrow, knowing that I will never be able to be happy with a partner."

Depressive affects

This type of text is easy to identify, compared to the two previous phases. In them, despair is already latent, and many times they can be either positive or negative. In notes 5 and 6 it is possible to see two examples of texts in a state of despair.

Note 6:

"I thank you for all the love, containment and affection you showed me, but without the love of children a man is nothing. I'm tired, bored, I can't make sense of anything that has happened. I don't have anything to fight for anymore."

Note 7:

"I want to apologise to everyone for my cowardice and for doing what I did, but try as I might I couldn't get over it. And this new love failure has plunged me into great sorrow, knowing that I will never be able to be happy with a partner."

State of despair

In these texts, despair is already the central context. The person usually shows regret at the bottom of them. In notes 7, 8 and 9 it is possible to see three examples of texts in a state of despair.

Note 8:

"...if I have come to this, it is because I see no way out anywhere."

Note 9:

"...when my wife took up with someone else. That ended up breaking me down."

Note 10:

"Forgive me for the stupidity I am about to commit, but I can't go on with this pain and sorrow any longer, which I have been carrying inside me since my separation [...]; I can't go on with my life like this."

Conclusions

Following the analysis of the state of the art, it was possible to identify the best criteria for classifying texts for the detection of suicidal risk. It was established that the best methodology is the one proposed in (Ceballos-Espinoza, 2019), which focuses mainly on four categories: positive affect, negative affect, depressive affect and state of despair.

Future work will seek to implement this methodology in the analysis of social networks of real case studies, as well as to compare this methodology with other existing ones that do not focus on the analysis of posthumous notes.

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