Results

As previously reported, for each of the word sets defined we analyzed changes in similarities and nearest neighbors. We will analyze results for each of these sets, separately. They will be computed by using Word2Vec, with the following parameters: vector size set at 300; window set at 5; minimum count set at 10. We will refer to the corpus relative to the tweets that are prior the polarizing event as the “before corpus”, while the other will be referred to as the “after corpus”.

Victim-related words

The three victim-related words we chose are “victim”, “innocent” and “murdered”. By using the Procrustes functions, which align the two vector matrices produced by the Word2Vec, we found that their similarities in the before and after corpus are, respectively, 0.9282, 0.9958, 0.9866. It appears, therefore, that no relevant changes can be noticed and, out of the three terms, “victim” has been subject to the bigger change.

When inspecting the 30 nearest neighbors for “victim” in each corpus, it first appears that in the before corpus there are stronger associations with the geographical locations of the murders. Furthermore, in both models it appears the term has a high similarity with the words “poor” and “yet another”. An analysis of the intersection between the 300 common neighbors of the word “victim” for both models reveal a significantly higher similarity of this term with more violent ones for the before corpus. Some of those include “brutally”, “stabbed”, “raped”, “barbarically”, “massacred”, which are all indicative of sensationalist narratives that focus on macabre and brutal details of the event.

This argument, however, changes radically when we consider the term “murdered”. Although we can find many of the previous words among their common neighbors, the differences in similarity scores between the two models are considerably lower. Consider, for example, the term “brutally”. Its similarities to the word “victim” changed from 0.8921 in the before corpus to 0.7053 in the after corpus. The similarities of this word to “murdere”, changed instead from 0.9944 to 0.9892. This may be due to the fact that “murdered”, in Italian, is a significantly stronger word than “victim”, and its use may imply a different tone for the rest of the sentence.

It can therefore be concluded that, when using more neutral words that refer to the victim, people tended to express more sensationalist narratives before the polarizing event.

Murderer related words

The terms we selected to represent the concept of murderer are “crazy”, “delinquent”, “monster”, “killer”, “murderer”, “guilty”, “criminal”. Their similarity across the two models has remained stable, with scores ranging from 0.9868 (for “crazy”) to 0.8961 (for “criminal”).

An analysis of the neighbors for each of these words indicates a strong focus on the killers' nationality (or migrant status) for both corpora. Furthermore, there are numerous terms that refer to mental illnesses or mental derangement.

For example, among the top 30 neighbors of the before corpus, for the word "killer", we can find "jealous", "left", "separation", which all implicitly point to an act of passion-driven madness as the motive of the killing. Similarly, among the neighbors for "monster" and "guilty" we can find words like "deranged", "crazy", "wrath", "delirium", which all portray the killer as a mad individual. It must be pointed out, however, that most of these words are not present in the intersection between the 300 nearest neighbors of the two corpora, for this specific set. For example, the among the 30 nearest neighbors of the before corpus for the word "monster", we can find "delirium". This word, however, is not present in its nearest neighbors of the after corpus, where we can find instead the term "deranged", which expresses the same concept.

We can therefore say that both before and after the polarizing event, there is the tendency (although with different terms) to portray the killer as an anomaly, as a love-stricken individual gone to madness. This narrative tries to partially relieve the murderer of its responsibility, and underlines the exceptionality of the phenomenon in an effort to downplay the normality of such tragic events.

Negative emotional words

The chosen set to represent the negative side of emotional relationship is composed of the words "rejection", "revenge", "infidelity", "jealousy", "anger". We wanted to explore whether there is a change in how these emotions are used in relation to the femicides. The similarity across models was high for all of these terms. Their scores range from 0.9960 (for "rejection") to 0.8886 (for "jealousy").

For the word "jealousy" we didn't find any significant results among the common neighbors for the two models. Most words were referred to the killer, or to some of the aspects of the relationship with the victim. Similarity scores across the two models, however, differed by a few percentage points. It must also be pointed out that there is a strong association of this word with the term "motive". In the before corpus, its similarity score is 0.9707, while in the after corpus it is 0.9415.

As for the term "rejection", there are many significant words in the intersection between its neighbors in the two models. Some of those are "rape", "beat", "dangerous", "pathological", whose similarity scores did not vary between the two corpora. Among the nearest neighbors for the before corpus we can find terms like "psychopath", "miserable". Among those for the after corpus we can instead see "ferocity" and "misogynistic". Despite in both corpora the term "rejection" is associated to gruesome details of the killings and madness-induced behavior, it appears that after the polarizing event the element of misogyny is introduced.

These two terms reveal us that once again there is a strong focus on relationship-related words, as well as macabre details of the killings, which are typical of

sensationalist narratives. Furthermore, we yet again see that the killer is portrayed as a mad individual, blinded by his love for the victim.

Results for the word “anger”, however, stemmed towards a different direction from what we imagined. Most of the associated words in the common neighbors had an incredibly sad tone. Among them are included the terms “sadness”, “cry”, “atrocious”, “tragic”, “heart-wrenching”. Similarity scores for all of these words are above 0.90, for both corpora, and differ from each other by at most 5 decimals. In the top nearest neighbors of after corpus, however, we can observe terms and expressions like “funeral”, “sacrifice”, “rest in peace”, “grief”, that are not present among the top nearest neighbors for the before corpus. Another significant term which is exclusive to those of the neighbors for the after corpus is “burn”, which does not surprise us. After the Cecchettin murder, one of the most common slogans used was in fact “burn it all down”. It can therefore be assumed that in after the polarizing event, the term “anger” assumed an even sadder tone than before, but the popularity of this slogan revamped feelings of more “traditional” rage.

Positive emotional words

The set of positive emotional words includes “happy”, “respect”, “passion” and “love”. After exploring the common use of negative emotional words, we wanted to investigate whether there is a parallel focus on the “brighter side” of relationships.

Out of these four words, three had high similarities across models. The word “love”, however, had a score of 0.6928, indicating that its semantic meaning varied greatly. Among its nearest neighbors in the before corpus we can find “freedom”, “mothers”, “educate”, “teach”, “learn”. As for the neighbors in the after corpus, tougher words present: “criminal”, “femicide”, “aggressor”, “monster”, “jealous”, “killer”, “bastard”, “crazy”. It appears that the focus went from more education-related and pleasant words, to much more negative terms that are tied to the killer. The concept of love has thus assumed a negative connotation after the polarizing event.

Similar results are obtained if we analyze the nearest neighbors for the word “respect”. In the neighbors for the before corpus, words like “education”, “educate”, “cultural”, “rights” can be identified. Their presence, however, is minimal in the common neighbors for the two corpora, and the similarity scores differ significantly. As an example, the verb “educate” has a similarity score of 0.9489 in the before corpus, which falls to 0.7892 in the after corpus. It can thus be assumed that prior to the polarizing event education was considered more important.

Crude words

The use of crude words, such as gruesome details and body parts, is a common technique used to dehumanize victims of murders. The process of dehumanization leads to a consequent emotional detachment from its subject. To explore this topic, we defined a set of “crude” words. These are “blood”, “strangled”, “violence”,

“torture”. Their similarity scores across models are high, indicating that their semantic meaning was not subject to significant variations.

The most interesting finding lies in the remarkably high frequency of the names of numerous femicide victims among the nearest neighbors of “blood”, “corpse”, and “strangled, for both corpora. It can be argued that the term “corpse” is commonly used in news reports to describe any discovered deceased individual involved in the case. Its similarity with the names of the victims is thus a logical consequence, rather than indicative of dehumanizing narratives. The same, however, cannot be said for the word “blood”, which is of limited practical utility. We are thus confident enough to say that victims of femicides are subject to dehumanization practices through the focus on macabre details, in both corpora.

Modal words

Modal words are used to express the sense of need and urgency. Therefore, exploring their evolution may provide useful insights on how differ the priorities expressed by people before and after the polarizing event. The set chosen for this purpose is composed of the terms “duty”, “fundamental”, “need”, “urgent”, “necessary”, as well as the expression “it is needed”.

The across model similarities for these terms is very high, with the lowest score being 0.9822. It appears therefore that similar matters are considered to be urgent, in both corpora.

If we analyze the common neighbors, for both corpora, of all of these terms combined, we find that they express the concept change from different perspectives. Words like “humanity”, “listen”, “emotions”, “debates”, “dialogue”, “prejudices”, “sensibility”, “knowledge” underline the fact that a social dialogue between all the parties involved is crucial if we want to overcome the issue of gender-related violence. Knowledge is created by the exchange of ideas, which cannot occur if we do not get rid of prejudices, listen one another and understand that cooperation is essential for change.

On the other hand, alongside these terms we can find stronger words, like “battle”, “demolish”, “decay”, “fall”, “condemn”, “radical”, “fight”, “eradicate”. It appears that the call for action is composed of more aggressive and radical interventions as well. It is suggested that some people consider gender-related violence as the byproduct of some issues which are deeply rooted in our society. A strong, firm and also violent response may therefore be among the possible solutions for change.

Out of all the terms we mentioned, it must be noted that their similarity scores are very high and almost identical for both corpora. This therefore suggests that public perceptions on the matter of “social change” has remained unaffected by the polarizing event. Our initial expectations were to find much more violent neighboring terms in the after corpus.

Patriarchy words

Among the core discussions that sparked after the Cecchettin murder, an unprecedented interest was put on the concept of “patriarchy”. Despite this term has widely been used in the past, its role in modern society had yet to be confronted by Italy, prior to this murderous case. The words we chose to explore this complex phenomenon are “oppression”, “sexism”, “discrimination”, “man”, “patriarchy”. Four of these five words had high similarity scores in the over-time comparison, which ranged from 0.9892 (for “oppression”) to 0.9572 (for “man”). The term “patriarchy”, however, falls at the bottom of the list, with a similarity score of 0.8343.

Most of these words are associated with common terms that express the same concepts in different ways. As an example, we will use the word “discrimination”, which summarizes very well the results we found. Among its common neighbors we can observe strong words that underline the gravity of this phenomenon. Some of those are “systemic”, “emergency”, “alarming”, “extreme”, “contrast”, “battle”. Other words are instead related to the concept of disparity and violence over someone, which are intrinsic to discrimination. Among others, are included the terms “misogyny”, “disparity”, “psychological”, “physical”, “sexism”. It must be pointed out that all the words just mentioned have very high similarity scores, both in the before and after models. Furthermore, the across-model differences for such scores are minimal, and therefore non-significant.

The term “patriarchy” was instead more difficult to analyze. We noticed that, despite the number of common neighbors between the two models was high, their similarity scores for the after corpus were on average significantly lower than those for the before corpus. Such results, however, were drastically different from what we expected. For this reason, we checked for any imbalances of this term’s frequency in our corpora. It turned out that the word “patriarchy” has 178 occurrences in the before corpus, and 1366 in the after corpus. Such a disparity lead us to believe that the results we obtained were excessively biased and non-interpretable.