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Suicidal Traits in Marilyn Monroe's *Fragments*

An LIWC Analysis

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Abstract. *Background:* Linguistic inquiry and word count (LIWC), a computerized method for text analysis, is often used to examine suicide writings in order to characterize the quantitative linguistic features of suicidal texts. *Aims:* To analyze texts compiled in Marilyn Monroe's *Fragments* using LIWC, in order to explore the use of different linguistic categories in her narrative over the years. *Method:* Selected texts were grouped into four periods of similar word count and processed with LIWC. Spearman's rank correlation was used to assess changes in language use across the documents over time. The Kruskal-Wallis test was applied to compare means between periods and for each of the 80 LIWC output scores. *Results:* Significant differences ($p < .05$) were found in 11 categories, the most relevant being a progressive decrease in the use of negative emotion words, a reduction in the use of long words in the third period, and an increase in the proportion of personal pronouns used as Monroe approached the time of her death. *Conclusions:* The consistently elevated usage of first-person personal singular pronouns and the consistently diminished usage of first-person personal plural pronouns are in line with previous studies linking this pattern with a low level of social integration, which has been related to suicide according to different theories.

Keywords: suicide, language, Marilyn Monroe, LIWC

Marilyn Monroe was found dead of an overdose of barbiturates in August of 1962, and her death was deemed by the coroner's office as a "probable suicide." Litman (1996), the chief psychiatrist on the coroner's psychological autopsy team, reported that Monroe had obtained prescriptions for the sleeping pills, had taken enough pills to kill anyone, and had then started calling people to tell them she was in deep trouble. Quoting Litman, this could be considered "a self-inflicted death, where there is a great risk but also a good chance for rescue." The author reports that she had previously made similar suicide attempts and had always been rescued. On this occasion, however, help arrived too late.

Who was Marilyn Monroe? While some of her biographers focus on the picture of a smiling pin-up with self-destructive behaviors (Summers, 1985), others emphasize her interest in literature, her desire to be a mother, and her dissatisfaction with her public image. Many of these topics and her personal dilemmas are present in the writings recently compiled in *M. Monroe's Fragments* (Buchthal & Comment, 2010). The aim of our work was to analyze the use of different linguistic categories in these texts and to

explore whether changes previously described in the literature as suggestive of suicide also appear in her narrative as she approached her death.

The study of suicide notes is a classic topic in suicidology. However, as Lester (2010) has pointed out, the study of suicide notes suffers from the brevity of many notes and their focus on dispositions and last wills, giving limited insights into the psychodynamics of the suicidal mind. Therefore, it is arguable that longer documents can be of greater interest in understanding suicidal behavior (Lester, 2010). Difficulties in devising a universal method for content analysis uninfluenced by the researcher's own tendencies have prompted the development of computerized tools for linguistic analysis that allow for statistical analysis with minimal theoretical intervention. One of the most recognized instruments for text analysis is the linguistic inquiry and word count (LIWC), devised by Pennebaker, Francis, and Booth (2001). The latest version (Pennebaker, Francis, & Booth, 2007), LIWC2007, analyzes written text on a word-by-word basis for 80 output variables, including four general descriptor categories, 22 standard linguistic dimensions, 32 word categories tapping psychological constructs,

seven personal concern categories, three paralinguistic dimensions, and 12 punctuation categories.

In 2001, Stirman and Pennebaker applied the LIWC to analyze the work of suicidal poets. They performed an analysis of nearly 300 poems from the early, middle, and late periods of nine suicidal poets and nine nonsuicidal poets. Their results showed that the writings of suicidal poets contained more words pertaining to the individual self and fewer words pertaining to the collective than did those of nonsuicidal poets. The authors related this finding with decreasing levels of social integration in the suicidal group, in accordance with Durkheim's (1951) social integration/disengagement model of suicide. No significant differences were found between the two groups in the use of negative or positive emotion words. However, the most inspiring finding of this seminal work was the confirmation that linguistic predictors of suicide can in fact be discerned through computerized text analysis.

In recent years the LIWC method has been used to study the characteristics of texts written by suicidal individuals. In their analysis of texts written by Henry Hellyer, Baddeley, Daniel, and Pennebaker (2011) summarized that one would expect the following changes in language use as the moment of suicide approaches: an increase in the use of negative emotion words, an increase in the use of first-person singular pronouns, and a decrease in first-person plural pronouns. The authors also suggest that, when analyzing writings of periods close to the moment of suicide, an increase in the use of positive emotion words is also to be expected, as Lester (2009) found in his analysis of the last year of Cesare Pavese's diary.

Dogra et al. (2007) observed some differences between the suicidal behavior of men and women. For instance, women complete fewer suicides than men do, with the exception of China. In a 2008 study, Lester notes that women make more suicide attempts and prefer to use medication rather than hanging or using firearms to take their lives. These gender differences have also been analyzed using the LIWC. Pennebaker and Stone (2004) report that, using LIWC analyses, they found a specific linguistic profile in women, who, relative to men, use more social words, more references to home and negations as well as more pronouns, including self-references and references to others. Furthermore, they find that women use fewer words related to occupation and money, fewer articles and prepositions, and fewer long words and spatial words. In a later revision of a large corpus of essays, Newman, Groom, Handelman, and Pennebaker (2008) found that, compared to men, women tend to use more social words, more words related to emotions, and more pronouns, specifically in their first-person singular and third-person forms, but fewer long words, fewer words per sentence, and fewer prepositions, articles, swear words, and references to money and numbers. In 2010, Lester, Haines, and Williams compared suicide notes of Australian men and women and found that the notes written by women included more words concerned with cognition and insight, were more present-oriented,

and seemed more concerned with positive emotions, themselves, and significant others.

Given these differences between the texts written by men and women, we found it useful to review previous analyses of texts written by women who committed suicide, using the LIWC software.

In 2004, Pennebaker and Stone analyzed the diary of a young woman named Katie, written during the 6 months prior to her death by suicide. They observed a decrease in the use of personal pronouns, social words, negative emotions, and references to eating and death, and an increase in words reflecting positive emotions, question marks, and references to religion as she approached the time of her death. Compared to the control group, Katie used more first-person singular pronouns and significantly fewer social words and first-person plural pronouns across all periods.

Lester and McSwain (2010) analyzed the poems written by Sara Teasdale for over 30 years until her death by suicide, and found trends such as a decrease in positive emotions and positive feelings over time, fewer references to herself, to others, to religion, and to physical states and functions, a decrease in the number of references to the present, and an increase in the number of references to the future. In 2011, the same authors analyzed the poems written by Sylvia Plath over the last 7 years of her life and found an increase in the use of words related to positive and negative emotions, and in reference to death, religion, and metaphysical issues. During her last year of life, Silvia Plath used more words related to the present and the future and to positive emotions, with the proportion of negative emotions remaining constant. There was also a decrease in the use of causation and insight words and past tense verbs as the time of her death by suicide approached.

To sum up, it appears that, according to the available literature, linguistic categories that must be taken into account when analyzing suicidal texts are related to the use of pronouns, negative and positive emotions, social words, verb tenses, cognitive and biological processes, and references to religion and death.

Bearing these contributions in mind, the purpose of our study was to analyze the texts written by Marilyn Monroe and recently compiled in *Fragments* (Buchthal & Comment, 2010) in order to explore the use of different linguistic categories and determine whether the previously described changes appear in her narrative as she approached her death.

Method

Selection Process

The book *Fragments* (Buchthal & Comment, 2010) includes a series of personal notes, letters, and poems written by Marilyn Monroe, the majority of them never published before. Most of the texts were dated either by herself or by

Table 1. Selected texts grouped by periods

Period (dates)	No. entries	No. words	Mean no. words per entry	Life events
1 (1943–1951)	8	2341	292	From her first marriage to her first film success
2 (1952–1955)	15	2838	189	Marriage to and divorce from Joe DiMaggio, founding of her own production company, classes at the Actors' Studio, first contact with psychoanalysis
3 (1956–1959)	21	2786	133	Marriage to Arthur Miller
4 (1960–1962)	6	3806	634	Psychoanalysis with Dr. Greenson, divorce from Arthur Miller, difficulties in meeting her work commitments, brief psychiatric admission, and relationships with J. F. and Robert Kennedy

the book's editor, based on the events reported in the texts. We can find manuscripts dating as early as 1943, and the final entry was made in 1962, the year of her death. In our study we excluded 13 poems and notes that were undated as well as two other superstructured texts: one a list of authors and another a list of tasks, dated 1955 and 1950, respectively. The omitted texts together total 1,356 words.

Procedure

The selected texts were grouped into four periods of biographical significance. There were no significant differences between these periods regarding their word count (Table 1).

Each text was first converted to an individual text file and then grouped into the periods previously described (Table 1). Their content was then analyzed using the LIWC2007 program (Pennebaker et al., 2007), which analyzes text files and yields scores as percentages of the total number of words in 80 categories, including four general descriptor categories (total word count, words per sentence, percentage of words found in the dictionary, and percentage of words containing more than six letters), 22 standard linguistic dimensions (e.g., percentage of pronouns, articles, auxiliary verbs), 32 word categories tapping psychological constructs (e.g., affect, cognition, biological processes), seven personal concern categories (e.g., work, home, leisure activities), three paralinguistic dimensions (assents, fillers, nonfluencies), and 12 punctuation categories (periods, commas, etc.).

First a descriptive analysis of the data was done and then Spearman's rank correlation tests were used to assess changes in language use across the documents over time. Subsequently, the Kruskal-Wallis test was applied to compare means between the periods and for each of the 80 LIWC output scores, in order to explore the distribution of each one of the variables in each of the different periods. Finally, posthoc analyses were applied to the significant variables to determine whether there were any differences between the periods, and if so, in which direction.

Results

The analysis of all 50 documents using Spearman's rank correlation coefficient indicated significant correlations ($p < .05$)

in nine categories. Monroe's use of personal pronouns increased over time (Spearman's $\rho = .335, p = .017$), as did her use of third-person singular pronouns (Spearman's $\rho = .284, p = .046$), words related to health (Spearman's $\rho = .305, p = .031$) and death issues (Spearman's $\rho = .312, p = .027$) as well as punctuation marks such as semicolons (Spearman's $\rho = .329, p = .020$) and apostrophes (Spearman's $\rho = .407, p = .003$). On the other hand, there was a decrease in her use of words related to negative emotions (Spearman's $\rho = -.397, p = .004$), anxiety (Spearman's $\rho = -.288, p = .043$), and religion (Spearman's $\rho = -.330, p = .019$) as she approached the moment of her death.

Given the weak correlations found, the Kruskal-Wallis test was applied to compare the means for the four periods and for each of the 80 LIWC output scores, in order to examine whether there were any nonlinear changes across the four periods studied. Significant differences ($p < .05$) were found in the following 11 categories: proportion of use of words with more than six letters, personal pronouns, third-person plural pronouns, swear words, words related to negative emotions, and words related to religion as well as the proportion of use of punctuation marks such as the colon, the semicolon, the exclamation mark, the apostrophe, and other particles. Given its lack of significance for the present research, the incidence of punctuation mark usage will not be taken into account in the discussion.

The results obtained are shown in Table 2 and the distribution of the variables is displayed in Figure 1 and Figure 2. Given that the personal pronoun category combines sev-

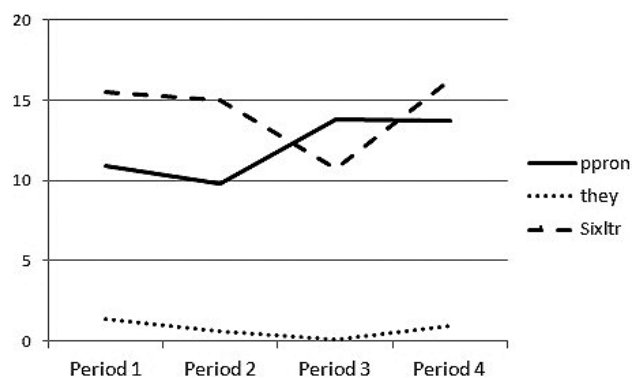


Figure 1. Mean scores for the proportion of use of personal pronouns, third person plural pronouns, and words with more than six letters across the four periods analyzed.

Table 2. Categories with significant differences across periods

LIWC categories	Statistics	1st	2nd	3rd	4th	<i>p</i>
Words > 6 letters	Mean (<i>SD</i>)	15.51 (5.83)	15 (3.91)	10.74 (5.33)	16.30 (6.27)	.008
	Median (min-max)	17.06 (8.11–23.81)	15.56 (3.81–21.33)	10.62 (0–26.23)	15.11 (10.39–27.27)	
Personal pronouns (I, them, her)	Mean (<i>SD</i>)	10.91 (3.50)	9.79 (4.08)	13.79 (4.52)	13.73 (4.40)	.053
	Median (min-max)	12.07 (4.76–14.77)	9.16 (3.25–19.05)	14 (6.12–22.03)	14.55 (8.18–19.48)	
3rd person plural (they, their, they'd)	Mean (<i>SD</i>)	1.39 (2.29)	0.62 (0.81)	0.08 (0.21)	0.91 (0.97)	.006
	Median (min-max)	0.64 (0–6.82)	0.48 (0–2.86)	0 (0–0.64)	0.75 (0–2.22)	
Swear words (damn, piss)	Mean (<i>SD</i>)	0.50 (0.66)	0.07 (0.19)	0.10 (0.44)	0.01 (0.02)	.031
	Median (min-max)	0.12 (0–1.67)	0 (0–0.61)	0 (0–2)	0 (0–0.04)	
Negative emotion (hurt, ugly, nasty)	Mean (<i>SD</i>)	4.19 (2.49)	3.16 (1.93)	2.44 (1.55)	1.33 (0.91)	.039
	Median (min-max)	4.25 (0.74–8.26)	3.11 (0–7.36)	2 (0–5.18)	1.37 (0–2.61)	
Religion (altar, church)	Mean (<i>SD</i>)	0.38 (0.48)	0.32 (0.37)	0.11 (0.39)	0.10 (0.17)	.050
	Median (min-max)	0.12 (0–1.14)	0.33 (0–1.04)	0 (0–1.79)	0 (0–0.41)	

Table 3. Proportions of use of personal pronoun subcategories for each period

LIWC categories	Statistics	1st	2nd	3rd	4th
1st person singular (I, me, mine)	Mean (<i>SD</i>)	7.99 (1.99)	6.50 (4.17)	9.44 (4.15)	7.34 (2.77)
	Median (min-max)	7.80 (4.76–11.25)	5.16 (0.65–14.63)	9.42 (0–18.96)	7.39 (2.60–10.87)
1st person plural (we, us, our)	Mean (<i>SD</i>)	0.03 (0.08)	0.11 (0.29)	0.28 (0.66)	0.06 (0.12)
	Median (min-max)	0 (0–0.23)	0 (0–0.95)	0 (0–2.56)	0 (0–0.30)
2nd person (you, your, thou)	Mean (<i>SD</i>)	0.46 (0.55)	1.81 (2.15)	1.43 (2.21)	1.50 (1.94)
	Median (min-max)	0.18 (0–1.25)	0 (0–5.77)	0 (0–9.09)	0.65 (0–4.66)
3rd person singular (she, her, him)	Mean (<i>SD</i>)	1.05 (1.47)	0.76 (1.03)	2.56 (3.59)	3.92 (5.80)
	Median (min-max)	0 (0–3.33)	0.33 (0–3.30)	0.55 (0–10.87)	1.57 (0.75–15.58)
3rd Person plural (they, their, they'd)	Mean (<i>SD</i>)	1.39 (2.29)	0.62 (0.81)	0.08 (0.21)	0.91 (0.97)
	Median (min-max)	0.64 (0–6.82)	0.48 (0–2.86)	0 (0–0.64)	0.75 (0–2.22)

eral subcategories, including the proportion of their use in the first- and third-person singular and plural and in the second person, the average scores for their proportion of use in each period are shown in Table 3.

In the posthoc analyses performed, comparisons between periods resulted in the following significant differences: Differences were found between the first and second periods in the proportion of use of swear words ($p = .045$), which decreased; in the comparison between the first and third periods in the proportion of use of third-person plural pronouns ($p = .005$), swear words ($p = .008$), and words related to religion ($p = .044$), all of which were found to have decreased in use; in the comparison between the first and fourth periods no significant differences were found; between the second and third periods there were differences in the proportion of use of personal pronouns ($p = .018$), which increased, and in the use of words with more than six letters ($p = .001$), third-person plural pronouns ($p = .003$), and religion words ($p = .010$), all of which decreased; in the comparison between the second and fourth periods differences were found in the use of words related to negative emotions ($p = .016$), which decreased; finally, in the comparison between the third and fourth periods, differences were found in the use of words with more than six letters ($p = .041$), and third-person plural pronouns ($p = .006$), all of which increased.

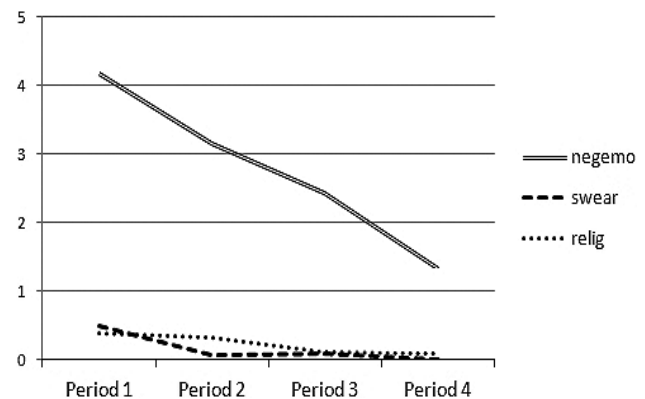


Figure 2. Mean scores for the proportion of use of swear words and words related to negative emotions and religion across the four periods analyzed.

Following the suggestion by Baddeley et al. (2011), we observed the distribution of the proportion of use of first-person singular pronouns and first-person plural pronouns. Across the four periods, Monroe used more first-person pronouns in their singular form than in their plural form, with the following mean usages in the first (7.99 vs. 0.03), second (6.50 vs. 0.11), third (9.44 vs. 0.28), and fourth period (7.34 vs. 0.06). However, significant differences were

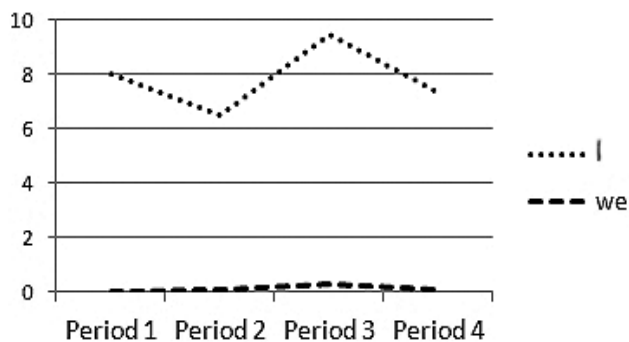


Figure 3. Mean scores for the proportion of use of first person singular and first person plural pronouns across the four periods analyzed.

not found in either the use of first-person singular or first-person plural pronouns between any of the four periods, and the difference in use between the two types of pronouns did not increase over time (Figure 3). Taking the sample of the text as a whole, the general mean proportion of use for first-person singular pronouns was 8.07 ($SD = 3.87$), and the value was 0.16 ($SD = 0.46$) in the case of first-person plural pronoun use.

It is important to bear in mind that there were periods with a value of zero for the proportion of use of such variables as religion, swear words, and “they” (explaining the significant differences found between periods for those variables). Taking this point into consideration, the most salient results to be considered appear to be the reduction in the use of words with more than six letters in the third period (usage increased again in the fourth period), the progressive decrease in the use of negative emotion words as Monroe approached the time of her death, and the increased proportion of use of personal pronouns in the third and fourth periods.

Discussion

The decrease in the use of long words in the third period could indicate a decrease in the cognitive complexity of Monroe's writing during those years, which recovered in the fourth period, as would be expected given her efforts to improve her education.

Regarding the progressive decrease in the use of negative emotion words found, Pennebaker and Stone (2003), in a study of writing samples of people of between 8 and 85 years of age, indicate that people tend to use more positive emotion words and fewer negative emotion words as they age. However, this does not appear to explain our results, given that Monroe was only 36 years old when she died, and these authors note the beginning of this trend lies at around that age (but not before, as in our case).

The decrease in the use of negative emotion words has been previously found when studying the texts of one sui-

cidal female (Pennebaker & Stone, 2004), although in that study the time period analyzed corresponded only to what she wrote in her last 6 months of life. When analyzing longer periods of time, this variable either did not change significantly (Lester & McSwain, 2010), or there was an increase in its proportion of use. For example, Lester and McSwain (2011), in their analysis of texts written by Silvia Plath in the last 7 years of her life, found an increased use of negative emotion words (which remained constant during her last year of life). Baddeley et al. (2011) also pointed to a similar trend in the writing of people who had ended their lives. However, neither Pennebaker and Stone (2004) nor Stirman and Pennebaker (2001) found the use of emotion words to be of particular diagnostic use. It is not surprising that an increase in the use of negative emotions could be related to depression (Rude, Gortner, & Pennebaker, 2004) and therefore also be related to suicide in many cases. But this is not necessarily true in impulsive suicides where features such as depression and hopelessness are less marked (Spokas, Wenzel, Brown, & Beck, 2012). Nor would it be necessarily the case in subjects with low suicidal intentionality, since it has been found that regardless of the person's sex, subjects with high suicide intentionality show higher levels of depression (Gorenc, Kleff, & Welz, 1983) and vice versa. According to the Suicide Intent Scale (SIS) performed by Beck, Schuyler, and Herman (1974), which measures the suicidal intentionality and in its first part covers the objective circumstances of the suicidal act itself (preparation and manner of execution, the setting, and behaviors that could facilitate or obstruct intervention), Monroe's suicidal intentionality would be called into question since we have no indication that she had left a will and/or suicide note. In addition, she maintained telephone contact with people who might have helped her (in fact this had occurred on previous occasions). As explained above, a lower level of depression would be expected in Monroe's case, so that fewer negative emotion words would be expected in her discourse as well.

An increase in the use of personal pronouns toward the later periods, as we have found in *Fragments*, has not been previously described in suicide text analyses. Looking at the data in Table 3, it appears that this increase is explained by the increased use of personal pronouns in the first-person singular (in the third period) and in the third-person singular (in the third and fourth periods). The use of the first person corresponds to the speaker (central point of speech) and has an enunciative function, while the third person refers to someone who is absent from the conversation (he, she), and is used to refer to what has been said. Pennebaker and Stone (2003) pointed out that pronouns are potent correlates of social structure and psychological health, suggesting that the flexibility in their use (particularly between first-person singular and first-person plural) would be a positive feature of psychological health. In turn, Chung and Pennebaker (2007) proposed that the use of third-person pronouns (she, he, they) could be linked to adaptive coping that would eventually lead to physical

health benefits, while the use of first-person singular pronouns suggests attention focused on the self and was found to be higher in depressed people. It seems that in these last years of Monroe's life, she expressed her own point of view more in her writings, while at the same time making reference to third persons. Meanwhile, her personal life was marked by her marriage to and divorce from Arthur Miller and her relationship with the Kennedys. During this time, her psychoanalyst, Dr. Greenson, also became a figure of reference for her.

Moreover, we have already noted that there is neither an increase in the use of pronouns in the first-person singular nor a decrease in the use of pronouns in the first-person plural across the four periods of her writing, as Baddeley et al. (2011) found in their analysis of the writings by Hellyer as he approached the moment of his death. In the present study, the greater use of the first-person singular (expected in any writing, because in general people tend to express themselves more in the first-person singular than in the plural) is maintained for all periods analyzed, with no significant differences found between periods. The same pattern of use – namely, more pronouns in the first-person singular than in the plural – is observed in the study of the diary written by the suicidal young woman named Katie mentioned earlier (Pennebaker & Stone, 2004). The results from that study revealed a greater use of the first-person singular and less frequent use of the first-person plural in Katie's diary in comparison with the writings collected from a control group. In the present work, however, the time period is much longer, and there are no writings by others with which to form a control group. *Fragments* is a miscellaneous collection of thoughts, poems, and letters whose content is similar to that of any number of cardboard boxes kept in attics all over the world. But, on scientific grounds, whose box is *Fragments* to be compared to? It is possible that the increased use of pronouns in the first-person singular observed in the analyses of the texts written prior to the suicides of Hellyer (Baddeley et al., 2011) and Pavese (Lester, 2009) may not be a good indicator in the case of female suicides, as the same does not occur in the analyses of suicidal women's writings. Among women there could be a more stable pattern of language given that, as Newman et al. (2008) pointed out, women generally use more first-person singular pronouns than men do. Finally, it must be noted that in the aforementioned article (Newman et al., 2008), the mean use of first-person singular pronouns by women was overall lower than in Monroe's texts, while the mean use of first-person plural pronouns was overall higher. This observation could lead us to infer a chronic sense of isolation in the texts left behind by Monroe, a feeling that was related to suicide by Durkheim (1951) in his aforementioned integration/disengagement model of suicide. A similar link has been discussed more recently by Joiner (2005) in his interpersonal theory of suicide, which proposes that the feeling of thwarted belongingness could be linked to suicidality. This theory also introduces other explanatory variables such as perceived bur-

densomeness and habituation to dangerous behaviors (e.g., previous suicide attempts), which leads to higher pain tolerance and makes people lose sight of the danger signals that should accompany self-injury.

Conclusion

Our results showed a consistent use of high percentages of first-person singular pronouns and of low percentages of first-person plural pronouns, which is in line with previous studies linking this pattern with a sense of isolation and a low level of social integration. Following Durkheim's integration/disengagement model and also current models such as Joiner's interpersonal theory of suicide (2005), this sense of thwarted belongingness could be linked to suicidality.

The decrease in the use of negative emotion words found in our analysis of *Fragments* is not expected in depressive patients, but it is arguable that the linguistic pattern associated with a low intentionality suicide should be different from that of a depressive suicide in which there is usually a higher degree of intentionality. Depression is related to suicide, though not all suicidal individuals are clinically depressed, and it is therefore important to refine the inquiry for linguistic features stressing the differences in suicidal typology.

In Monroe's case, the delay in getting assistance on the night of her death has led to all sorts of theories. It is beyond the scope of our work to address this topic, but the issue of death covered up as suicide is of considerable forensic interest, not only for the study of celebrities' deaths, but also on routine clinical grounds. The LIWC could be a useful forensic instrument in analyzing suicide notes as well as samples of texts written by suicidal individuals or by people who have made suicide attempts, in order to reach a deeper understanding of the phenomenon and contribute to its prevention.

Lastly, we must take into account the limitations of our work. The characteristics of the tool used (LIWC) make it unable to detect the contextual meaning of words or their ironic and sarcastic nuances. In addition, we must consider the absence of texts from the weeks prior to Monroe's death, the limited word count in the fragments, and finally, the scarcity of studies to compare her texts with.

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