Original research

Changes in the content of diary entries
by a suicide as the date of death draws near

David Lester [1, ✉]

[1] Stockton University
Galloway, New Jersey, USA

Abstract: The diary for the four years prior to her death of a young woman who died by suicide, was examined to see whether trends in the content could be identified as the day of her death drew near. Many linear trends were observed over the last month, the last five months and the last four years of the diary which may provide insights into the psychodynamics of this particular suicide. For example, over the last month of her life, Sara focused less on the past, made more references to herself, used more tentative words (such as "maybe"), used more question marks, and had a greater focus on cognitive processes (such as "think").

Keywords: suicide, diaries, cognition

There has been interest in how suicides behave in the hours, days and weeks prior to their suicidal actions. Information on changes in their behavior might provide some insight into the minds of suicidal individuals as they approach the time of their death and also provide clues that clinicians and significant others might observe. Clements, Bonacci, Yerevanian, Privitera and Kiehne (1985) and Keith-Spiegel and Spiegel (1967) both noted that staff notes on psychiatric in-patients in the 24 hours prior to their suicides indicated an improvement in mood. Lester (2010) observed calming in the mood of a young man left two tape recordings for his parents six and two hours prior to his suicide. These results were surprising because an improvement in mood would seem to indicate a reduced risk of suicide rather than an increased risk, but they also serve as a warning to mental health professionals that an improvement in mood is not a reason to minimize the risk of suicide in a patient.

✉ David Lester, Ph.D., Psychology Program, Stockton University, 101 Vera King Farris Drive, Galloway, NJ 08205-9441 or e-mail: lesterd@stockton.edu .

Pennebaker and Stone (2004) studied the diary of a young college student (called Katie, a pseudonym) in the year before she killed herself and noted an increase in positive emotions and a decreased in negative emotions over the last six months of her diary. This result was also surprising since the improvement in mood took place over a much longer period than expected – six months rather than 24 hours. The question arises, therefore, whether these changes in mood were unique to this young woman or is it a general trend?

An opportunity to answer this question presented itself with the diary of a 33-year-old single woman who killed herself (the pseudonym Sara will be used for this article) and who left a diary that extends up to the day that she died. Sara appears to be an intelligent young woman who dropped out of college because, as she states, a lack of motivation. She works as a part-time waitress and dates lower class men most of whom are alcohol and drug abusers. Her suicide occurs after an on-and-off 18-month relationship with one of these men after he tells her that he does not want to be with her.

In their study, Pennebaker and Stone used a computer program, the Linguistic Inquiry and

Word Count (LIWC: Pennebaker, Francis, & Booth, 2001) to analyze changes in the content of Katie's diary. This program counts the presence of 74 linguistic categories such as words denoting positive emotions, negative emotions, death, religion, and social relationships. The present analysis used the LIWC to search for changes in the content of Sara's diary over time.

Method

As noted above, the LIWC (Pennebaker, et al., 2001) was used to analyze the diary entries. Apart from the word count and the words per sentence, the other measures are expressed as percentages. For example, the measure for anger is the percentage of words expressing anger relative to the total word count. It is possible, of course, for a particular word to fit into two or more categories. For example, a swear word may also be a sexual word.

The present analysis focused on the 10 entries in the diary in the last month of Sara's life, the 38 entries in the last five months of her life, and the 62 entries in the last four years of her life. Five months prior to her death, Sara attempted suicide and was ordered by the court into outpatient counseling. She attended counseling regularly and took an antidepressant. In the five months between her suicide attempt and her death by suicide, Sara mentioned the word "suicide" nine times in her diary.

Results

There were ten entries in the last month of Sara's life (the month of May). Nine of the 73 variables showed significant linear changes over this month (two-tailed $p < .05$) and ten showed linear trends ($p < .10$), more than would be expected by chance (see Table 1).

Table 1
Linear changes in the word content in Sara's diary (Pearson correlations shown). Only variables with at least one statistically significant correlation are shown.

	Last month	Last 5 months	Last 4 years
	n=10	n=38	n=62
Word count	-0.56*	0.01	-0.06
Words per sentence	-0.51	0.02	-0.28**
Question marks	0.71**	0.22	0.09
Dictionary words	0.16	0.39**	0.36***
Words with >5 letters	0.28	-0.14	-0.31**
Pronouns:			
all	0.50	0.22	0.58***
I	0.66**	0.02	0.22*
We	-0.65**	-0.12	-0.19
Self	0.57*	-0.04	0.16
You	0.40	0.23	0.28**
Other	-0.34	0.08	0.31**
Assent	0.60*	0.09	0.20
Article	-0.66**	-0.31*	-0.58***
Prepositions	-0.72**	0.10	-0.11
Numbers	-0.36	0.03	-0.22*
Emotions:			
Negative emotions	0.29	0.28*	0.26**
Anger	-0.31	0.31*	0.39***
Sad	-0.06	0.05	0.22*
Cognitive mechanisms	0.57*	0.37**	0.38***
Causes	0.07	0.31*	0.25**
Insight	0.49	0.23	0.24*
Discrepancies	0.36	0.18	0.33***
Tentative words	0.72**	0.28*	0.25*
Senses	-0.43	-0.08	0.21*
Social	-0.13	0.12	0.35***
Communications	-0.29	0.04	0.24*

References to:			
others	-0.25	0.17	0.35***
friends	0.55*	0.07	0.10
humans	0.68**	0.14	0.09
Time:			
in general	-0.39	-0.37**	-0.26**
Past	-0.61*	-0.09	0.08
Present	0.57*	0.28*	0.31**
Future	0.49	0.34**	0.16
Space	-0.80***	-0.13	-0.27**
Up	-0.62*	-0.26	-0.24*
Down	-0.76**	0.20	0.05
Including words	-0.58*	0.21	-0.27**
Excluding words	0.49	-0.02	0.23*
Occupations	0.24	0.39**	0.49***
Jobs	0.07	0.31*	0.39***
Achieve	0.10	0.49***	0.48***
Leisure	-0.29	-0.42***	-0.22
Home	-0.03	-0.40**	-0.05
Sports	-0.59*	-0.04	-0.30**
TV	-0.37	-0.27*	-0.13
Music	-0.41	-0.08	-0.27**
Religion	0.01	-0.19	-0.28**
Sexual	0.05	0.13	0.31**
Swear words	-0.34	0.36**	0.22*

* two-tailed < .10

** two-tailed < .05

*** two-tailed < .01

The psychologically significant changes were:

1. A decreased word count per entry
2. More question marks
3. More references to herself
4. Fewer references to herself plus others (e.g., we)
5. More references to friends and other people
6. Less focus on the past and more on the present
7. More focus on cognitive processes (the use of words such as cause, know, think)
8. More use of tentative words (such as maybe, perhaps, guess)

There were 38 entries in Sara's final five months (from January through May), and 17 linear trends were identified. Three of these trends were also found over the final month of Sara's life: more words associated with cognitive processes, more use of tentative words and more focus on the present. Over the final five months, there was also more focus on the future, and this was almost statistically significant over the final month also.

Over the last four years of her life (with 62 entries), 33 trends were identified. The increase in words associated with cognitive processes, tentative words and words indicating the present tense were also statistically significant, indicating that these trends were long-term trends.

Since the goal of the study was to search for changes in the diary that might indicate an imminent suicide, linear trends found in the last month but not in the last five months or the four-year period were identified (see Table 1). The decreases were word count, references to self plus others, prepositions, references to the past, and references to movement downwards. The increases were question marks, references to friends, and references to humans in general. Several other trends were found in the final month but not in the final five months: an increase in references to herself, and decreases in articles, references to space and to movement upwards, inclusive words, and sports.

Regarding the variables of interest suggested by previous studies of diaries, for all three periods, there were no significant trends in positive emotions, and negative emotions increased only over the last five months and the whole four years, but not in the past month. Thus, the findings from Katie's diary did not generalize to this diary.

Discussion

This study of the diary of a young woman who died by suicide was designed to explore whether trends found in the analysis of a similar diary (Pennebaker & Stone, 2004) of an increase in positive emotions and a decrease in negative emotions could be replicated. Sara's diary did not show these trends. However, many linear trends were observed over the last month, the last five months and the last four years of the diary which may provide insights into the psychodynamics of this suicide. For example, over the last month of her life, Sara focused less on the past, made more references to herself, used more tentative words (such as "maybe"), used more question marks, and a had greater focus on cognitive processes (such as "think"). It was as if Sara was questioning what she should do at the present time, and reducing her focus on others and on the past. This does not necessarily mean that she will choose to die by suicide, but perhaps that she may be about to make some decision.

How general are the trends identified for Sara? Whereas research has been conducted on samples of over 250 suicide notes (e.g., Gunn, Lester, Haines, & Williams, 2012), only studies of a few diaries have appeared, probably because such diaries are rare and because the significant others of the writers are often reluctant to share them with researchers. However, Lester (2014) presented case studies of seven diaries from people who died by suicide, both quantitative and qualitative studies. Hopefully, in the future, larger samples of the diaries of those who died by suicide will be collected and more general trends identified.

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